Understanding panic disorder in adolescents: lived experience, identification, and treatment.

A thesis submitted in fulfilment of the requirements of:

Doctor of Philosophy

School of Psychology and Clinical Language Sciences

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Holly Baker

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Declaration

I confirm that this is my own work and the use of all material from other sources has been properly and fully acknowledged.

Holly Baker

July 2021

Contribution to the papers

The conceptual framework and the outline of this thesis (i.e., a survey of CAMHS clinicians and a meta-analysis of psychological treatments for adolescents with anxiety disorders was developed by Dr Polly Waite (PW). I (HB) developed the concept of a qualitative study of adolescents' experiences of panic disorder.

I (HB) was the lead researcher for all research reported in the papers included in this thesis. I received regular input from my supervisors (PW and Dr Amelia Hollywood (AH)), I led the planning for each of the papers, completed data collection and data analysis. I completed, submitted and revised the ethics application for the CAMHS paper and contributed to the writing of the ethics application for the qualitative study. I wrote first drafts of all three papers. I prepared and submitted three papers for publication and led revisions of manuscripts following reviewers' comments. My contribution and other researchers' contributions to each paper are outlined below.

Paper 1: The Identification and Psychological Treatment of Panic Disorder in Adolescents: A Survey of CAMHS Clinicians.

The framework of the survey including the broad research questions was developed by PW prior to me starting my PhD. I led the planning for the survey and developed the research questions. I designed the survey and revised this based on discussions and feedback from Professor Cathy Creswell (CC) and PW. I led the recruitment strategy and recruited all participants utilising the National Institute for Health Research (NIHR) Clinical Research Network (CRN). I led the analysis of survey data and worked with PW on coding questions

for analysis. I regularly discussed the results with PW. I wrote the first draft of the manuscript and revised it after receiving feedback from co-author PW.

My estimated percentage contribution to this paper is 85%.

Paper 2: The Effectiveness of Psychological Therapies for Anxiety Disorders in Adolescents: A Meta-Analysis

A systematic review of the effectiveness of psychological therapies for anxiety disorders in adolescents was developed and completed by Dr Jessica Karalus (JK) as part of her DClinPsy. This was a systematic review of studies published between January 1990 June 2015 and did not include a meta-analysis. The primary research question, search terms and data extraction forms developed and used by JK were incorporated into the framework of the meta-analytical review.

I (HB) led the planning for the meta-analysis, wrote the data-analysis plan, revised the primary research question and included additional research questions. I adapted data extraction forms and chose the quality rating scale to be used in the study. I ran updated searches and screened all abstracts from the new searches. I completed data extraction for all papers. I led quality rating assessments of all papers. I worked together with JK to review the quality rating assessments. I led the meta-analysis data analysis strategy and I worked together with Dr Pete Lawrence (PL) on coding in the statistical package R and worked together with PL to carry out the analysis. I regularly discussed results with PW, CC and PL. I wrote the first draft of the manuscript and revised it after receiving feedback from co-authors (CC, PW, PL & JK).

My estimated percentage contribution to this paper is 80%.

Paper 3: "You just kind of drown in everything": An Interpretative Phenomenological Account of Adolescents' Experience of Panic Disorder.

I (HB) led the planning of this qualitative study, including designing the research question, choosing the methodology and developing the topic guide. I contributed to the recruitment of participants to the study by contacting all GPs throughout Berkshire with details of the study, and attended meetings with local schools, and the Department of Education at the University of Reading. I also explored other recruitment sources (e.g., advertising on radio and local transport. I conducted all interviews and transcribed and coded all interviews. I developed preliminary and final themes and revised them during meetings with PW and AH. I wrote the first draft of the manuscript and revised it after receiving feedback from PW and AH.

My estimated percentage contribution to this paper is 85%.

Candidate's name and signature	Supervisor's name and signature
Holly Baker, 21st July 2021	Polly Waite, 21st July 2021

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Abstract

Panic disorder is a debilitating anxiety disorder that affects between 1-3% of adolescents. However, little is known about the identification, treatment or lived experience of adolescents with panic disorder. Understanding these factors are crucial in improving outcomes for adolescents with panic disorder. The aims of this thesis were to gain an understanding of 1) the identification of panic disorder among adolescents within child and adolescent mental health services (CAMHS) and determine what treatments are offered to adolescents with panic disorder (paper 1), 2) to examine psychological treatment outcomes for adolescents with anxiety disorders (paper 2), and 3) to gain a qualitative understanding of adolescents' lived experience of panic disorder (paper 3). A mixed methods approach was used to address these aims. Findings identified that CAMHS clinicians struggle to identify panic disorder, and when identified, adolescents are unlikely to be offered treatment evaluated for use among young people with panic disorder. In Paper 2 we identified that of adolescents who receive psychological treatment for anxiety disorders, predominantly CBT, only 36% were in remission from their primary anxiety disorder post-treatment. Treatment outcomes for adolescents with primary panic disorder were only reported in two of 17 review studies. Paper 3 identified that adolescents experienced panic disorder as an overwhelming intense physical and psychological experience, that had a negative impact on social and academic functioning and self-concept. Taken together, the findings of this thesis have clear implications for improving the identification and treatment of panic disorder in adolescents, as well as increasing understanding of panic disorder among clinicians, schools, and young people.

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1 General Introduction

1.1 Defining adolescence

Adolescence can be viewed as a distinct developmental stage (Steinberg, 2014), broadly defined as the transitional period between childhood and adulthood (Erikson, 1968; Jaworska & MacQueen, 2015). Adolescents face specific developmental, biological, social and academic challenges (Kilford et al., 2016), and encounter greater changes than at any other phase of life except during infancy (Feldman & Elliot 1990). Importantly, adolescence is recognised as a time of particular vulnerability to developing mental health problems (Blakemore, 2019). For the purposes of the studies included in this thesis, we defined adolescence as 11-18 years of age, on the basis that 11 is the average age at which external indicators of puberty become apparent (American Psychological Association, 2002) and is the most commonly used age range to define adolescence (Curtis, 2015) and 18 is the legal age of responsibility (i.e., when young people begin to take on adult roles) and the age at which child and adolescent mental health services end in many countries. Furthermore, young people within this age range share common characteristics, encountering similar social, developmental and academic challenges, such as being in full-time education, living with parents or under adult guardianship (Perry et al., 1993).

1.2 Anxiety disorders in adolescence

The Diagnostic and Statistical manual of Mental Disorders (DSM-5) (American Psychiatric Association, 2013) specifies a number of anxiety disorders that share features of excessive fear, anxiety and related behaviours, namely: separation anxiety disorder, specific phobia, social anxiety disorder (SAD), generalized anxiety disorder (GAD), selective mutism, panic disorder and agoraphobia. Adolescence is a time of increased risk for developing

anxiety disorders (Copeland, Angold, Shanahan, & Costello, 2014; Kendall & Peterman, 2015), and are among the most common mental health problems experienced by adolescents (Costello, Copeland, & Angold, 2011; Polanczyk, Salum, Sugaya, Caye, & Rohde, 2015; Vizard, Pearce, & Davis, 2018). Between 7.9% of 11-16-year-olds (Vizard et al., 2018) and 10.7% of 12–19-year-olds meet diagnostic criteria for at least one anxiety disorder (Costello et al., 2011). The characteristics of anxiety disorders differ between children and adolescents. Separation anxiety disorder is usually experienced in younger children (mean onset 7 years of age) and is characterised by anxiety when separated from a caregiver and fears that something bad will happen to either themselves or the caregiver. As children become adolescents, rates of separation anxiety decline, while SAD (anxiety in social situations or interactions and fears of negative evaluation by others) increases (Copeland et al., 2014; Costello et al., 2003; Kendall et al., 2010; Waite & Creswell, 2014). Panic disorder, characterised by abrupt, repeated panic attacks, experienced as an intense burst of fear that peaks within minutes (American Psychiatric Association, 2013), also increases during adolescence, as does agoraphobia (Copeland et al., 2014; Costello et al., 2011), which is experienced as a fear of places or situations that might result in a panic attack and fears of being unable to escape or seek help (American Psychiatric Association, 2013). Additionally, comorbidity of mood disorders, school attendance problems and school dropout also increase in adolescence (Van Ameringen et al., 2003; Waite & Creswell, 2014). Consequently, anxiety disorders during adolescence are particularly problematic due to their negative impact on education and social interaction. Anxiety disorders experienced during adolescence may persist into adulthood (Pine et al., 1998) and are associated with a risk of developing other mental health problems (Pine, Cohen, Gurley, Brook, & Ma, 1998), such as depression, alcohol dependence and suicidal behaviour (Kendall & Peterman, 2015; Kendall, Safford,

Flannery-Schroeder, & Webb, 2004; Woodward & Fergusson, 2001), as well as negative long-term impairments in social and occupational functioning (Alonso et al., 2018).

1.3 Development, prevalence and comorbidity of panic disorder in adolescents

Although panic disorder commonly begins during adolescence (Von Korff et al., 1985) and has a severe impact on adolescent functioning (Kearney et al., 1997), research examining panic disorder among this age group has largely been neglected. Panic disorder[1] is uncommon among pre-adolescent children (under twelve years of age), with prevalence estimates of less than 0.5% of the population (American Psychiatric Association, 2013; Cartwright-Hatton et al., 2006). However, onset of panic disorder peaks during adolescence between 15 and 19 years of age (Von Korff et al., 1985), is experienced by around 1% of the adolescent population (Essau et al., 2000; Vizard et al., 2018) and increases to around 3% among older adolescents (17-19 year-olds) (Merikangas, 2010; Vizard et al., 2018). Panic disorder is more prevalent among girls (1.7%) than boys (0.5%) (Vizard et al., 2018). In retrospect, adults frequently report first experiences of panic attacks during adolescence (Moreau, 1992; Von Korff et al., 1985), suggesting that the condition commonly develops during adolescence and persists into adulthood, with estimates that 2-3% of adults in the general population experience panic disorder (American Psychiatric Association, 2013).

[1] Symptoms of panic disorder include physical sensations such as palpitations, sweating, feeling short of breath, chest pain, dizziness, numbness, or tingling and may be accompanied by depersonalisation and fears of losing control, dying, or going crazy, persistent worries about having panic attacks in the future and the perceived consequences of panic attacks, such as having a heart attack. These anticipatory anxieties lead to significant changes in behaviour to avoid panic attacks. This avoidance is frequently connected to situations or triggers of previous panic attack episodes, or of activities perceived to increase the likelihood of panic attacks, such as exercise. Importantly, panic disorder includes the experience of panic attacks that are unexpected, occurring with no apparent external cue or trigger and the individual feels as though the attack has 'come out of the blue' (American Psychiatric Association., 2013).

Comorbidity of other mental disorders is high among adolescents with panic disorder with 90% experiencing another anxiety or mood disorder (Birmaher & Ollendick, 2004). Furthermore, earlier onset of panic disorder correlates with increased comorbidity, increased likelihood of recurrence after a period of remission, and poorer longer term life outcomes (Ramsawh et al., 2011). Adolescents with panic disorder are particularly vulnerable to social isolation due to the avoidance of situations where panic attacks occur (Pincus et al., 2010). This has a detrimental impact on daily functioning and general wellbeing. Older adolescents with panic disorder experience increased suicidal ideation and suicide attempts compared to those without an anxiety disorder, and those with other anxiety disorders (Boden et al., 2007). Given the pattern of development of panic disorder, the severe impact on functioning and ongoing personal, social and economic impact of panic disorder (Batelaan et al., 2007; Smit et al., 2006), understanding panic disorder specifically among adolescents is critical.

1.4 Clinical characteristics and experience of panic disorder in adolescents

Panic disorder was recognised as a psychiatric condition in 1980, when it was added to the DSM III, (Angst, 1998). In the decade that followed there was an increase in research examining panic disorder, predominantly in adults, and the few studies of young people under 18 years of age were limited to reviews and case studies (e.g., Casat et al., 1987; Last & Strauss, 1989). Although there is some more recent evidence within the literature about characteristics of panic disorder specifically in children and adolescents, there are some inconsistencies in the findings. Furthermore, the data specifically relating to adolescents is limited due to samples including broad age ranges (e.g., 5-21 years), resulting in an unclear picture relating specifically to adolescents. Although adolescents may experience similar somatic symptoms (e.g., shortness of breath, palpitations) and cognitions (e.g., fear of losing

control or fear of dying) to adults during panic attacks (Doerfler et al., 2007; Kearney et al., 1997), there appear to be differences in the type of symptoms experienced compared with adults. Children and adolescents (aged 8-17 years) with panic disorder (who were referred to a specialist cardiac clinic due to experiencing non-cardiac chest pain (NCCP)) experienced on average 6.52 (DSM-5) panic disorder symptoms (Achiam-Montal et al., 2013), with the most commonly experienced somatic symptoms being chest pain (88.9%) and dizziness (77.8%) (Achiam-Montal et al., 2013). In a study of children and adolescents (aged 5-21 years) presenting to an anxiety disorder clinic, panic disorder symptoms were compared with other anxiety disorders. Among those with panic disorder the most commonly experienced symptoms were palpitations and shaking (Diler et al., 2004). Cognitive symptoms are experienced by 54.5% of adolescents, including 52% reporting fear of dying (Achiam-Montal et al., 2013). However, Biederman et al. (1997) found children and adolescents (aged 4-17 years) had lower rates of choking, chest pain, depersonalisation, numbness, and fear of dying, but higher frequency of shortness of breath, feeling faint and nausea than adults. These inconsistencies in findings are likely due to the type of sample, for example all participants in the Achiam-Montal et al., 2013 study were referred due to experiencing NCCP, and it is therefore unsurprising that chest pain was the most commonly reported symptom among this sample. It is also important to consider that the inclusion of both children and adolescents means the conclusions we can draw specifically about adolescents from this data are limited, particularly given the low rates of panic disorder among pre-adolescent children (American Psychiatric Association, 2013; Cartwright-Hatton et al., 2006).

Despite quantitative reports of symptoms and cognitions among adolescents with panic disorder, there is a gap in the literature of qualitative research examining this phenomenon; therefore, we lack a more experiential account of adolescents' lived experience

of panic disorder. This is important as qualitative research can provide deep, rich, and detailed information, giving insights that may not be identified using quantitative measures, and that may have important clinical implications. Qualitative research methods are particularly useful for exploratory research questions in the field of mental health, where little is already known about the phenomenon (Harper & Thompson, 2011), such as panic disorder among adolescents. Although there have been a range of qualitative explorations of mental health conditions in adults (e.g., McManus et al., 2010; Wisdom et al., 2008), there are very few studies exploring adolescents' experience of anxiety disorders. There have been some qualitative studies examining depression among adolescents (Lachal et al., 2012; McCann et al., 2012; Midgley et al., 2015; Watson et al., 2019). These studies have identified important clinical aspects of depression specific to adolescents, that are not diagnostic features of the disorder. For example, the experience of social isolation and withdrawal have particular salience for adolescents (Lachal et al., 2012), and adolescents provided descriptions of depression that challenge current understanding of clinical features of the disorder (Watson et al., 2019). These findings demonstrate that adolescents' experience of psychological conditions may differ from adults, emphasising the value and importance of in-depth qualitative examination of adolescents' lived experience.

Although there has been one study of adolescents' experience of panic attacks (Hewitt et al., 2021) to our knowledge, there have been no qualitative studies of adolescents with a diagnosis of panic disorder or their lived experience of the condition. Hewitt et al. (2021) carried out a qualitative interview study of ten 14-18-year-olds (mean age 16.7 years) who had experienced panic attacks within the past year. Data was analysed using Interpretative Phenomenological Analysis (IPA) and six themes were identified that included panic attacks being an overwhelming experience, adolescents feeling out of control and like a battle within

themselves. Hewitt et al. (2021) also identified that mental images enhanced the intensity of panic attacks, adolescents felt isolated and disconnected from other people, and panic attacks had a negative impact on adolescents' identity. However, this study did not include adolescents with a diagnosis of panic disorder, and only examined adolescents from a limited age range (14-18 years), who had experienced panic attacks.

1.5 The identification of panic disorder in adolescents

The limited data about adolescents' somatic and cognitive symptoms or lived experience of panic disorder may contribute to difficulties in identification within routine mental health services, and we do not currently know how well clinicians are able to identify panic disorder in younger people. Anxiety disorders more broadly can be difficult to identify, and identification of anxiety specifically among adolescents is generally poor (Hill et al., 2016). Overlapping symptoms of anxiety disorders and other disorders (Alessi et al., 1987; Doerfler et al., 2007) may contribute to problems with identification of panic disorder in adolescents, potentially having implications for the type of treatment offered. Furthermore, the identification of panic in adolescents may be particularly sensitive to the type of questionnaires and interview schedules used to assess panic. Adolescents may respond differently or be less insightful in reporting panic symptomatology than adults (for example unexpected panic attacks) (Clark et al., 1994) and these factors also contribute to difficulties in identification of panic disorder in adults (Clark et al., 1994). Additionally, many adolescents present to medical services with chest pain and other somatic symptoms rather than seeking psychological treatment (Achiam-Montal et al., 2013). Therefore, overlap of somatic panic disorder symptoms and physiological symptoms of cardiac conditions, may further complicate identification. In a study of 132 children and adolescents recruited from

paediatric cardiac clinics, when assessed using the Anxiety Disorders Interview Schedule Child and Parent Version (ADIS-C/P; Albano & Silverman, 1996), 20.5% were identified as having panic disorder, and a further 11% had sub-threshold panic disorder (Achiam-Montal et al., 2013). Therefore, it is likely that in medical settings there may be a high proportion of young people with panic disorder who are not receiving psychological diagnoses or treatment. However, to date, there has been no examination of how well specialist child and adolescent mental health clinicians are able to identify panic disorder in adolescents, or what type of treatments are being delivered in cases where panic disorder is identified.

1.6 Treatment of anxiety disorders including panic disorder in adolescents

The most commonly evaluated treatments for anxiety disorders are psychological treatments including CBT (Creswell et al., 2014) and currently there are no pharmacological treatments licenced to treat children and adolescents with anxiety disorders (Kodish et al., 2011). Psychological treatment studies of anxiety disorders in adolescents, including panic disorder, have largely been transdiagnostic and have used samples across broad age ranges. Consequently, outcomes specifically for adolescents with panic disorder within these studies are largely unknown. Transdiagnostic treatments are designed to target core features that are common across anxiety disorders (e.g., 'Coping Cat' (Kendall, 2006), 'C.A.T. Project' (Kendall, 2002)). Treatments have typically involved anxiety management and graded exposure, with treatments being delivered in around 14 sessions and commonly include parents being involved in treatment.

Although there are a large number of studies evaluating transdiagnostic forms of CBT for children and adolescents with a range of anxiety disorders (Warwick et al., 2017),

randomized controlled trials (RCTs) of CBT have included broad age ranges in their samples (e.g., James et al., 2020, reported ages ranging from 0-19 years, and just 20% of included studies used adolescent only samples). There is evidence to suggest that there may be differences in treatment efficacy in adolescents compared with younger children. For example, the Child and Adolescent Multimodal (CAMS) trial, involving 488 children and adolescents, found that adolescents aged 12-17 years were significantly more likely to retain their primary anxiety disorder at the end of treatment than children aged 7-11 years (36.1% of adolescents versus 51.7% of children in remission) (Ginsburg et al., 2011). However, in a meta-analysis of CBT for anxiety disorders in children and adolescents, James et al. (2020) found conflicting evidence that there were no significant differences in remission rates between children and adolescents (under 12 years and over 12 years). However, James et al., (2020) concluded this was likely due to age related measurement issues, rather than reflecting true age effects. Therefore, treatment outcomes specifically for adolescents remain unclear.

An additional problem is that participants with panic disorder are frequently excluded from RCTs of anxiety disorder treatments. In a review of anxiety disorder treatment studies (James, James, Cowdrey, Soler & Choke, 2015), only six out of the 41 studies reviewed included young people with panic disorder (Barrington, Prior, Richardson, & Allen, 2005; Chalfant, Rapee, & Carroll, 2007; Cobham, 2012; Hudson et al., 2009; Nauta, Scholing, Emmelkamp, & Minderaa, 2003; Sung et al., 2011). Where they were included, children and adolescents with panic disorder only accounted for between 2% and 9% of the total samples.

In addition to the need to clarify treatment outcomes specifically for adolescents with anxiety disorders, including panic disorder, there is also a need to be able to deliver

psychological treatments effectively. Given time and cost restraints within United Kingdom (UK) National Health Service (NHS) services (Ludlow et al., 2020), briefer treatments may be an effective way of increasing accessibility and reducing the time and economic burden on services. Over the past fifteen years a research group in the United States of America (USA) has taken a panic disorder treatment (Panic Control Treatment; PCT) found to be effective in reducing panic among adults (Barlow & Craske, 1988; Barlow et al., 1989; Barlow et al., 2000), and adapted the treatment for use with adolescents. In an RCT, Pincus et al. (2010) evaluated the efficacy of PCT for adolescents (PCT-A), using the manualised treatment protocol 'Mastery of Anxiety and Panic for Adolescents: Riding the Wave' (MAP-A). This treatment involved interoceptive exposure (exposure to bodily sensations), situational exposure, and exposure to agoraphobic situations due to adolescents' high levels of agoraphobic avoidance. These components were combined with cognitive restructuring, psychoeducation about hyperventilation during panic attacks and conditioned responses to physical sensations. Parents were given handouts that explained panic disorder and the skills taught to adolescents in treatment. Parents were given instructions on how to encourage and support their child, and to discuss questions about treatment with the therapist. Parents also participated in the last ten minutes of four treatment sessions where adolescents explained what they had learnt in treatment. Post-treatment, 26 adolescents (mean age 15.75 years) who received PCT-A, had significantly reduced panic severity (Clinician Severity Rating; CSR) compared with 'self-monitoring' controls, with large treatment effects (d = 1.09). These treatment gains were maintained at six-month follow-up. Although successful in reducing panic, some participants suggested that a briefer treatment would be beneficial and more manageable, however the brief form of adult PCT (self-study modules and seven treatment sessions) was not as effective as the full treatment (12 sessions) among adults (Craske et al., 1995).

Due to factors specific to the USA, such as patients having to travel long distances to treatment centres, adolescents faced barriers to receiving specialist treatment for panic disorder. Therefore, to increase accessibility of treatment in the USA, an intensive treatment was developed, that included six treatment sessions over eight days, followed by weekly phone calls for four weeks to support ongoing practice of treatment skills. Chase et al. (2012) compared this intensive PCT-A treatment with the standard weekly PCT-A treatment. Those receiving intensive treatment had significantly reduced clinician rated panic severity (CSRs) ($t(24) = 7.87$, $p < .001$) with large effects ($d = 3.6$) and treatment gains were comparable to those who had a weekly treatment ($t(25) = 7.70$, $p < .001$, $d = 2.7$). These treatment gains were maintained at six-month follow-up. Although effective, this intensive version would be difficult to deliver in the context of child and adolescent mental health services (CAMHS) in the UK, due to existing pressures on specialist services and the clinical workforce (Ludlow et al., 2020). While brief treatments for anxiety disorders have been evaluated among pre-adolescent children (Creswell et al., 2017), the effectiveness of brief treatments among adolescents have not yet been examined.

There is a cognitive treatment for adults with panic disorder developed in the UK (CT), based on the cognitive model of panic [2] (Clark, 1986; Clark & Ehlers, 1993). This treatment includes psychoeducation about the cycle of panic, exploring negative beliefs about physical sensations, behavioural experiments to test out beliefs and interoceptive exposure tasks. The treatment involves twelve sessions and three booster sessions in the three months

[2] Proposes that normal physiological anxiety responses (such as a raised heartbeat or sweating) are misinterpreted in a catastrophic way (e.g., increased heart rate interpreted as a heart attack) and the individual perceives there is an immediate danger, causing further apprehension, increased bodily sensations and catastrophic misinterpretation that culminates in a panic attack. Although panic attacks are triggered by cognitions relating to misinterpretation of bodily sensations, individuals often do not connect these factors, and feel the attack has come 'out of the blue' (Clark, 1986; Clark & Ehlers, 1993).

following treatment. CT has been well evaluated and found to be effective in reducing panic rates in adults with 90% being panic free post treatment, 75% at 6 month follow up and 85% at 15 month follow up (Clark, 1994). CT has also been delivered in a brief treatment format (BCT) delivered in five weekly sessions followed by two booster sessions in the following three months. BCT incorporated the same components as the full version of treatment (identifying and challenging misinterpretations, cognitive restructuring, interoceptive exposure) and patients completed a self-study module before each therapy session. Self-study modules included psychoeducation about the panic cycle, challenging thoughts, avoidance, and misinterpretation of bodily sensations. BCT among adults, was found to be effective in reducing panic rates, both post-treatment (71% panic free) and at 12-month follow-up (79% panic free). Treatment effects for BCT were large (post-treatment d = 2.9; 12-month follow-up d = 3.2). (Clark, 1999). However, this form of cognitive treatment (CT) has not yet been adapted for or evaluated among adolescents in either a full or brief format.

In addition to there being few RCTs of treatment specifically for adolescents with panic disorder (PCT-A), and no developmental adaptation or evaluation of CT for panic in adolescents, another problematic issue, is that current guidance for clinicians in treating panic disorder specifically among adolescents in the UK is very limited. While the National Institute for Health and Care Excellence (NICE) recommended adults with panic disorder receive 7-14 hours of weekly CBT sessions (NICE CG22 and CG113, NICE, 2011), there are currently no NICE recommendations for treating adolescents with panic disorder. As such, it is currently unclear what treatments are being delivered to adolescents within routine clinical services.

1.7 Aims of this thesis

The aims of this thesis were 1) to gain a clearer picture of the identification of panic disorder among adolescents within UK specialist CAMHS and determine what treatments may be offered within CAMHS services to adolescents identified as having panic disorder, 2) to carry out an in-depth examination of RCTs of psychological treatments that have focused on adolescent only samples, to gain an understanding of treatment outcomes specifically for adolescents with anxiety disorders, including panic disorder [3], and 3) to gain a qualitative understanding of adolescents' lived experience of panic disorder.

1.8 Outline of the papers

The three papers included within this thesis explore issues of identification, treatment and experience of adolescents living with panic disorder with the aim of addressing gaps in the existing body of literature on panic disorder.

Paper 1: The Identification and Psychological Treatment of Panic Disorder in Adolescents: A Survey of CAMHS Clinicians

As yet, rates of identification within National Health Service (NHS) Child and Adolescent Mental Health Services (CAMHS) have not been examined and we do not know what treatments are being offered to adolescents in cases where panic disorder, or a high level of panic disorder symptoms, is identified. Therefore, a first step was to survey CAMHS clinicians, from all professional clinical backgrounds, who were working in CAMHS services

[3] As there are only two RCTs of psychological therapy specifically for adolescents with panic disorder and this is not enough to conduct a meaningful analysis of outcomes specifically for panic disorder, we expanded our review to include any primary anxiety disorder diagnosis, including panic disorder.

in England and treating adolescents with anxiety disorders. This paper considers whether clinicians can identify panic disorder or panic symptoms from a clinical vignette of an adolescent with panic disorder. The paper also aims to gain an understanding of clinicians' professional backgrounds, including the training undertaken more broadly, as well as training in anxiety disorders in children and young people and in panic disorder. We also explored what treatments clinicians would offer to adolescents presenting with panic disorder within their service.

On the basis of the previous literature surrounding panic disorder our research questions were: 1) what training have clinicians had in panic disorder and in delivering psychological therapies, 2) if clinicians could identify panic disorder/symptoms from a clinical vignette describing an adolescent with panic disorder, 3) whether there were significant differences in the identification of panic disorder/symptoms depending on clinicians' professional backgrounds, 4) what treatments are currently being delivered in CAMHS for panic disorder, and 5) what were clinicians' experiences of working with adolescents with panic disorder.

Paper 2: The Effectiveness of Psychological Therapies for Anxiety Disorders in Adolescents: A Meta-Analysis

As previously discussed, there has been no previous meta-analysis that has solely examined the effectiveness of psychological treatments using studies with purely adolescent samples and there is a gap in the literature about treatment outcomes specifically for adolescents with anxiety disorders, including panic disorder. Although reviews that have included broader age ranges (e.g., Reynolds et al., 2012, James et al., 2020) have used either

moderator analysis or sub-group analysis to explore differences between adolescents and younger children, methodologically these are not as robust as meta-analysis and cannot be generalised. Although sub-group analysis is a useful tool for investigating differences between treatment effects across sub-sets of studies (e.g., examining studies with samples using differing age ranges, or studies that delivered CBT in a group format), this type of analysis is purely observational, and is not based on randomised comparisons. These analyses are prone to false positives and false negatives, the chances of this increases with the more sub-group comparisons that are made. When sub-group analysis includes only a small number of studies, the analysis may be statistically underpowered to detect true effects leading to further potential misleading results. Therefore, definitive conclusions cannot be made on the basis of sub-group analysis results (Higgins & Green, 2011). Similarly, meta-regression (moderator analysis) is a useful method for exploring heterogeneity or different study characteristics. However, meta-regression is best used as an exploratory tool to identify where differences lie as this method is prone to biases, confounds and as such overinterpretation can be potentially misleading (Higgins & Thompson, 2004). The most appropriate method therefore was to carry out a full meta-analytic review of RCTs including studies with adolescent only samples, providing a more robust quantitative synthesis of existing studies, addressing this gap in the literature. There is also a gap in the literature regarding moderators of treatment outcomes specifically among adolescents, with no previous reviews examining moderators within this unique developmental period. Therefore, meta-regression was also used as an appropriate exploratory tool to examine a range of potential moderators of treatment outcomes specifically for adolescents, with a view to identifying moderators that may warrant further investigation and thereby informing directions for future research in the field.

On the basis of previous treatment outcome studies our hypotheses were that: psychological therapies would be more effective in 1) reducing anxiety disorder symptoms and 2) achieving remission from the primary anxiety disorder, when compared with controls, at post-treatment and follow-up time points. We further hypothesised that 3) the effectiveness of psychological therapies for treating anxiety disorders in adolescents would be moderated by the following treatment/demographic variables: CBT (including computer based CBT (cCBT)) vs non-CBT intervention, mode of treatment delivery (individual, group, mixed group and individual, cCBT), age, number of treatment hours, disorder specific vs. generic anxiety treatment, active vs. passive control group, clinic vs. community sample, type of primary anxiety disorder, ethnicity (white or other ethnicity), gender (percentage female), parental involvement (involvement vs no involvement) and socio-economic status, at post-treatment and follow-up time points.

Paper 3: Adolescents' lived experience of panic disorder: An Interpretative Phenomenological Analysis

To our knowledge, there have to date been no qualitative studies examining panic disorder among adolescents, and only one study of panic attacks among adolescents (Hewitt et al., 2021), meaning little is known about adolescents lived experience of panic disorder. Qualitative research methods are particularly useful for exploratory research questions in mental health, such as adolescents' experiences of panic disorder, where little is already known about the phenomenon (Harper & Thompson, 2011). It allows the personal experiences of a small number of individuals to be considered in depth. There is a need to understand adolescents' lived experience of panic, beyond diagnostic symptoms, as well as how these experiences may impact identification, diagnosis, and treatment of young people.

Indeed, Midgley et al. (2015) further emphasise the need for diagnostic measures to be developed based on adolescents' qualitative descriptions of their condition.

Therefore, we carried out an exploratory qualitative interview study and used Interpretative Phenomenological Analysis (IPA) as an appropriate methodology, addressing the gap in the literature regarding adolescents' lived experience of panic disorder. This study addressed the research question: what is the lived experience of adolescent's (aged 11-18 years), with a primary diagnosis of panic disorder?

1.9 Summary

Adolescence is a distinct period of development that confers a vulnerability to developing mental health conditions. Anxiety disorders are among the most commonly experienced conditions during adolescence. Panic disorder peaks in onset during this time and is a particularly debilitating disorder. Randomized controlled trials of treatments for anxiety disorders have examined broad age ranges that include children and adolescents and frequently exclude adolescents with panic disorder. As such, treatment outcomes for adolescents with anxiety disorders, including panic disorder, are largely unknown. Although there are two panic disorder specific studies where outcomes specifically for adolescents are known (Chase et al., 2012; Pincus et al., 2010), the intensive format of this treatment would be difficult to deliver in the context of UK CAMHS services and these treatment outcomes may not be generalisable to a UK setting.

Although there is some evidence that adolescents share similar somatic and cognitive symptoms of panic disorder, gaps in the qualitative literature mean that we lack a more experiential account of panic disorder among adolescents. Limited evidence around the characteristics of panic in adolescents, as well as high rates of comorbidity with other anxiety disorders mean that there may be difficulties in the identification of panic among adolescents. Furthermore, we do not know if mental health professionals are able to identify panic disorder among adolescents. There has been limited research into treatments specifically for adolescents with panic disorder. Furthermore, NICE currently do not give guidelines for treating adolescents with panic disorder and we do not know what treatments are being offered to adolescents in routine clinical services.

Therefore, the three studies in this thesis, collectively aim to develop a deeper understanding of panic disorder specifically among adolescents, including the experience of living with panic disorder, in addition to the identification and treatment of panic disorder. Specifically, the papers examine 1) the identification and treatment of panic disorder among adolescents within CAMHS services, 2) the effectiveness of psychological treatments specifically for adolescents with anxiety disorders including panic disorder and 3) the lived experience of panic disorder for adolescents. The findings of these studies will be presented individually in the following chapters and the implications from all three studies will be synthesised and discussed in the concluding chapter.

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2 Paper 1: The Identification and Psychological Treatment of Panic Disorder in Adolescents: A Survey of CAMHS Clinicians

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The identification and psychological treatment of panic disorder in adolescents: a survey of CAMHS clinicians

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Background: Panic disorder is experienced by around 1% of adolescents and has a significant impact on social and academic functioning. Preliminary evidence supports the effectiveness of panic disorder-specific treatment in adolescents with panic disorder; however, panic disorder may be overlooked in adolescents due to overlapping symptoms with other anxiety disorders and other difficulties being more noticeable to others. The aim of this study was to establish what training National Health Service (NHS) Child and Adolescent Mental Health Services (CAMHS) clinicians have received in psychological therapies and panic disorder and how they identify and treat panic disorder in adolescents. **Method:** CAMHS clinicians from a range of professions (n = 427), who were delivering psychological treatments to children and adolescents with anxiety disorders, participated. They completed a cross-sectional, online survey, including a vignette describing an adolescent with panic disorder, and were asked to identify the main diagnosis or presenting problem. **Results:** Less than half the clinicians (48.6%) identified panic disorder or panic symptoms as the main presenting problem from the vignette. The majority of clinicians suggested CBT would be their treatment approach. However, few identified an evidence-based treatment protocol for working with young people with panic disorder. Almost half the sample had received no training in cognitive behaviour therapy (CBT), and around a fifth had received no training in delivering psychological treatments. **Conclusions:** Only half of CAMHS clinicians identified panic disorder from a vignette and although CBT treatments are widely offered, only a minority of adolescents with panic disorder are receiving treatments developed for and evaluated with young people with panic disorder. There is a vital need for clinician training, the use of tools that aid identification and the implementation of evidence-based treatments within CAMHS.

Key Practitioner Message

- Panic disorder affects around 1% of adolescents, adversely impacting social, academic and long-term life functioning.
- There is preliminary evidence for the effectiveness of a panic disorder-specific treatment of panic disorder in adolescents.
- Clinicians struggle to identify panic disorder or suitable treatment protocols for treating adolescents, although most would use CBT as the treatment approach.
- There is a vital need for clinician training, tools that aid identification of young people with panic disorder and evidence-based treatments that can be delivered in routine clinical settings.

Keywords: Adolescence; anxiety; cognitive therapy; questionnaires

Introduction

Panic disorder is characterised by repeated, unexpected panic attacks, involving physical symptoms, such as a racing heart, dizziness and chest pains, along with a fear of recurring attacks and changes in behaviour to avoid further attacks (American Psychiatric Association, 2013). Peak onset of panic disorder is between 15 and 19 years of age (Von Korff, 1985) and is experienced by around 1% of adolescents (Essau, Conradt, & Petermann, 2000; Vizard, Pearce, & Davis, 2018), increasing to around 3% among older adolescents aged between 17 and 19 years (Merikangas et al., 2010; Vizard et al., 2018). There are high levels of comorbidity, with around 90% of adolescents with panic disorder experiencing another anxiety or mood disorder (Birmaher & Ollendick, 2004). It has a significant impact on social and academic functioning and normal development in young people (Kearney, Albano, Eisen, Allan, & Barlow, 1997). Early onset is associated with increased comorbidity with other disorders, increased likelihood of reoccurrence after periods of remission and poorer longer-term life outcomes (Ramsawh, Weisberg, Dyck, Stout, & Keller, 2011). Left untreated, the condition typically continues into adulthood (Moreau, 1992). Consequently, it is crucial that young people with this debilitating disorder are accurately identified and receive timely, effective treatments.

There appear to be difficulties for clinicians in identifying adolescents with panic disorder, possibly due to

overlapping symptoms with other comorbid disorders (especially anxiety disorders) where panic attacks may be common, diagnostic overshadowing (e.g. seeing recurrent panic attacks or behavioural avoidance as being part of another problem, such as generalised anxiety disorder or behavioural difficulties, rather than as panic disorder), or other difficulties being more noticeable and therefore becoming the focus of attention (e.g. difficulties attending school; Alessi, Robbins, & Dilsaver, 1987; Doerfler, Connor, Volungis, & Toscano, 2007). This is highlighted by Doerfler et al. (2007) who examined referrals for 35 young people aged 6–18 years who were referred to a paediatric psychopharmacology clinic, and on assessment, met diagnostic criteria for panic disorder. None of the young people were referred for the treatment of panic disorder or agoraphobia, which occurred in 50% of the sample). Instead, they were referred for an externalising or mood disorder. Once assessed, the most common comorbid externalising conditions were attention deficit hyperactivity disorder (81%) and oppositional defiant disorder (57%), while the most common internalising conditions were separation anxiety disorder (89%) and generalised anxiety disorder (86%).

The most commonly evaluated treatments for a range of anxiety disorders in children and adolescents are psychological interventions, in particular, cognitive behaviour therapy (CBT; Warwick et al., 2017). Although there are a large number of studies evaluating a generic form of CBT [e.g. 'Coping Cat' (Kendall, 2006), 'C.A.T. Project' (Kendall, 2002)] for young people with a range of anxiety disorders, very few studies include young people with panic disorder and where they do, specific outcomes for adolescents with panic disorder are unknown. In a meta-analysis of CBT for anxiety disorders in children and adolescents, James, James, Cowdrey, Soler, and Choke (2013) found a remission rate of 59% post-treatment. However, of the 41 randomised controlled studies included, only six included young people with panic disorder (Barrington, Prior, Richardson, & Allen, 2005; Chalfant, Rapee, & Carroll, 2007; Cobham, 2012; Hudson et al., 2009; Nauta, Scholing, Emmelkamp, & Minderaa, 2003; Sung et al., 2011) and young people with panic disorder accounted for only 2%–9% of the total samples.

There is preliminary evidence for the effectiveness of a panic disorder-specific CBT treatment for adolescents aged 11–17 years (Hoffman & Mattis, 2000), using the manualised treatment protocol, 'Mastery of Anxiety and Panic for Adolescents: Riding the Wave' (MAP-A) (Pincus, Ehrenreich, & Mattis, 2008). In a small randomised feasibility study, 13 adolescents aged 14–17 years who received 11 weekly sessions of MAP-A showed significantly greater reductions in clinician severity ratings of panic disorder than controls, with a large effect size ($d = 1.09$; Pincus, May, Whitton, Mattis, & Barlow, 2010). In a randomised study among 11 to 17 year-olds ($n = 54$), of an intensive version of the treatment, conducted over eight consecutive days, significantly greater reductions in panic severity were found at six weeks post-treatment in the MAP-A group compared with the wait list control group [$F(1, 37) = 11.48$, $p < .01$; Elkins, Gallo, Pincus, & Comer, 2016].

Due to the limited evidence to date, there is a lack of guidance for how clinicians should treat panic disorder in young people. The U.K. National Institute for Health and Care Excellence (NICE) makes no recommendations for assessing or treating children and adolescents with panic disorder, although for adults, the recommended treatment is 7–14 hr of weekly CBT sessions (NICE CG22 and CG113, NICE, 2011).

Given the significant burden that panic disorder presents in adolescence and into adulthood, successful early identification and treatment within routine clinical services are crucial. The preliminary evidence supporting the use of a panic disorder-specific treatment in adolescents suggests there is clinical utility in using a diagnostic framework (e.g. DSM-5, American Psychiatric Association, 2013) to make sense of the young person's difficulties and guide treatment decisions.

As we currently know very little about whether panic disorder is being identified or how it is being treated within routine services, the aim of this study was to survey National Health Service (NHS) Child and Adolescent Mental Health Services (CAMHS) clinicians in England to establish (a) what training clinicians have had in delivering psychological therapies and panic disorder, (b) if clinicians identify panic disorder/symptoms from a clinical vignette describing an adolescent with panic disorder, (c) whether there are significant differences in the identification of panic disorder/symptoms depending on clinicians' professional backgrounds, (d) what treatments are currently delivered in CAMHS for panic disorder, and (e) what were clinicians' experiences of working with adolescents with panic disorder.

Method

Design

The survey used a cross-sectional, self-report questionnaire design. Ethical approval for this study was granted by the School of Psychology & Language Science Ethics Committee at the University of Reading. Approval was also granted by the Health Research Authority (HRA; reference: 18/HRA/1564) to conduct the study with (NHS) staff.

Participants

To be eligible to participate, clinicians had to be currently working clinically in NHS CAMHS in England and delivering psychological treatments to children and adolescents with anxiety disorders. Clinicians came from 51 NHS Healthcare Trusts (organisations within the NHS providing healthcare services across broad designated geographical areas), from all 15 National Institute for Health Research (NIHR) Local Clinical Research Network (LCRN) areas and included 46 out of the 48 counties in England, covering both urban and rural areas of England. A total of 427 participants completed the survey. A broad range of CAMHS professionals participated, including clinical psychologists, psychiatrists and nurses. See Table 1 for further information about sample characteristics.

Recruitment

Participants were recruited through NHS Healthcare trusts in England, either directly or via the LCRNs. LCRNs emailed healthcare trusts within their respective regions and encouraged participation. Trusts were also contacted directly via email by the first author, and if they agreed to participate, they distributed an invitation email to CAMHS clinical staff, along with an information sheet containing a link to the online consent form and questionnaire. Because we wanted to examine how well clinicians were able to identify panic disorder, study materials described the study in broad terms and referred to anxiety

Table 1. Characteristics of CAMHS clinicians (n = 427)

Characteristic	% (n)	Mean (standard deviation), range
Gender		
Female	78.7 (336)	–
Age		
18–25	7.0 (30)	–
26–35	32.1 (137)	–
36–45	26.5 (113)	–
46–55	24.6 (105)	–
56–65	9.1 (39)	–
66+	0.7 (3)	–
Professional background		
Community psychiatric nurse	22.2 (95)	–
Clinical psychologist	20.8 (89)	–
Psychiatrist	11.9 (51)	–
Social worker	9.4 (40)	–
Psychotherapist	8.9 (38)	–
Trainee[a]	5.2 (22)	–
Occupational therapist	4.4 (19)	–
Nurse[b]	3.8 (16)	
Assistant psychologist	3.7 (16)	–
Psychological well-being practitioner	1.9 (8)	–
Counsellor	1.2 (5)	–
CBT therapist	1.4 (6)	
Other[c]	5.2 (22)	–
Experience and working practice		
Years of clinical practice	–	M = 10.02 (SD = 9.78), <1–40
Years employed in current trust	–	M = 6.84 (SD = 7.29), <1–40
Employed full-time in CAMHS	68.6% (293)	–

[a]'Trainees' were training in clinical psychology (n = 7, 1.6%), CBT (n = 5, 1.2%), children's well-being practitioner (n = 5, 1.2%), psychiatrist (n = 2, 0.5%), play therapist (n = 1,0.2%), mental health nurse (n = 1, 0.2%) and 'CYP IAPT' trainee (n = 1, 0.2%).
[b]Nurses were mental health, learning disability and general nurses.
[c]'other' were art therapists (n = 3, 0.7%), systemic practitioners (n = 4, 0.9%), support workers (n = 5, 1.2%), interpersonal therapist (n = 1, 0.2%), forensic psychologist (n = 1, 0.2%), speciality and associate specialist doctor (n = 1, 0.2%), counselling psychologist (n = 3, 0.7%).

in adolescents, rather than specifically mentioning panic disorder. A reminder email was sent to clinicians 1–2 weeks after the first invitation. Some participating trusts also promoted clinician participation at team meetings and on staff intranet systems. Participants were offered the opportunity to enter a prize draw to win one of two £100 Amazon vouchers as an incentive to participate. Recruitment took place between 1 April and 31 December 2018.

Procedure

Once participants had read the information sheet and given informed consent, they completed an online self-report questionnaire, which took approximately 10–15 min to complete. Paper copies of the survey were available on request. Although participants gave their name as part of the consent process and were asked to provide details of the NHS Trust that employed them for NIHR reporting purposes, survey responses were anonymised by allocation of a unique identification number created at the time of participation. Identifying information was removed from the data set and the data unlinked so that responses were anonymous.

Measures

A questionnaire was designed specifically for this study (see Appendix S1). Participants were not informed that the study was specifically about panic disorder but were asked to participate in a study about anxiety disorders more broadly among adolescents in CAMHS. Participants provided demographic information and details of their professional background and experience. They then read a clinical vignette of a 15-year-old girl and were asked to suggest (a) what they thought the main diagnosis or primary presenting problem was and (b) what treatment she should be offered. On the basis of the information provided in the vignette, the girl met DSM-5 criteria for a diagnosis of panic disorder (American Psychiatric Association, 2013) and reflected how a young person with panic disorder typically presents (i.e. with a history of other anxiety difficulties). The symptoms described did not fulfil criteria for any other DSM-5 diagnosis. Only after completing the vignette questions, were clinicians then asked questions explicitly related to panic disorder in young people. This included questions about their experience of working with young people with panic disorder, how panic disorder is treated in CAMHS, their training in delivering psychological therapies and perceived training needs. Participants were required to complete all required questions in each section before being able to move to the next section and were unable to go back to previous sections ensuring earlier responses could not retrospectively be amended. Clinicians provided demographic information and details about their professional background, years spent as a qualified/practicing clinician and information about their service through both open and closed questions. Questions about the primary presenting issue or diagnosis for the vignette, known guidelines or protocols for both the vignette and working with young people with panic disorder, the age of young people first presenting with panic symptoms or disorder, the nature of their difficulties, clinicians' training needs and available funding for training were all provided as open questions. Questions related to clinicians' recommended treatment approach for the vignette, recommended number of sessions, whether they would work primarily with the young person and/or parents/carers, their experience in working with young people with panic disorder and their previous training in working with young people with DSM-5 anxiety disorders were all provided as closed questions. Free text boxes were provided in some instances in order to provide more information, that is to elaborate on a response or to provide information if none of the preselected answers were applicable and the clinician had selected 'other'. The vignette and questions were developed in collaboration with clinicians (PW and other clinical psychologists specialising in child and adolescent anxiety disorders within the research group), and members of the Anxiety and Depression in Young People (AnDY) Research Advisors Group (young people with lived experience of anxiety and depression). The questionnaire was piloted by a clinical psychologist specialising in child and adolescent mental health, and adaptations were made.

Sample size

A priori precision-based sample size calculation was carried out (http://epitools.ausvet.com.au), which indicated that 385 clinicians were required for 0.05 precision level, 95% confidence interval and 5% margin of error based on an infinite population. Consequently, with a final sample of 427, we are able to generalise our results confidently to the wider population of CAMHS clinicians.

Data analysis

For each question, frequencies were examined, producing proportions of clinician's responses in percentages. All frequencies and percentages were based on completer data. For open-ended questions, a coding system was developed by the authors in line with the responses received. This was then piloted on a subsample and refined before the full data set was then independently double-coded by the authors. Agreement between coders was high (K = .76 to K = 1.00). Where discrepancies

arose, this was discussed in order to come to an agreement. Survey responses were analysed using IBM SPSS (Version 24). To examine differences in the identification of panic disorder for the clinical vignette between professional groups, qualified clinicians with a core profession were classified into three groups, which were defined on the basis of the professional backgrounds of the participants: (a) professionals trained in psychological therapies using diagnostic frameworks (clinical psychologists and psychiatrists), (b) healthcare/social care professionals not primarily trained in psychological therapies (nurses, occupational therapists and social workers) and (c) professionals primarily trained in psychological therapies (counsellors, counselling psychologists, psychological well-being practitioners, CBT/IPT/art therapists, systemic practitioners and psychotherapists). We examined differences in identification rates between these groups using a chi-square analysis and post hoc pairwise comparisons.

Results

Clinicians' professional backgrounds and training

The percentage of participants who had received training in CBT was 53.6% (n = 229) and 35.3% (n = 151) gave further information about the nature of this training; of these participants, 18.5% (n = 28) had completed the training as part of their professional qualification (e.g. DClinPsy), 43% (n = 65) had completed a one-year postgraduate training course in CBT (unspecified whether for working with children and young people or adults), 11.3% (n = 17) had completed a one-year postgraduate training course in CBT specifically for children and young people and 6% (n = 9) specifically for adults. A fifth (n = 32, 21.2%) had received CBT training as part of a workshop of between 1 and 5 days. Of the 46.4% of participants (n = 198) who had not trained in CBT, just under a quarter (n = 100, 23.4%) had trained in non-CBT treatment approaches (e.g. systemic family therapy or psychotherapy), while 19.0% (n = 81) had not received any training in the delivery of psychological treatments and 4% (n = 17) did not specify. When asked about training in working with young people with anxiety disorders, 61.8% (n = 264) of clinicians had received training in the treatment of one or more of any DSM-5 anxiety disorders and 41.2% of clinicians (n = 176) had received training on panic disorder in children and young people. When asked about what training clinicians felt they needed 60.9% responded (n = 260), and 33% of these (n = 87) wanted training in psychological treatment approaches generally, and 20% (n = 51) specifically wanted CBT training. More than half of all clinicians who participated (n = 250, 58.5%) indicated that they would like to receive training in panic disorder in young people.

The identification of panic disorder

When presented with the vignette of an adolescent with symptoms consistent with a DSM-5 diagnosis of panic disorder, less than half the clinicians identified panic disorder (n = 187, 43.8%) or panic symptoms (n = 21, 4.9%) as the primary diagnosis or presenting problem. A further 11.2% (n = 48) identified panic symptoms as secondary, with another anxiety disorder as primary. Table 2 provides details of all primary diagnoses or problems suggested by clinicians.

Table 3 gives the percentage and number of clinicians from each professional background who identified panic disorder or panic symptoms as the primary presenting problem. When we compared responses from qualified clinicians from different professional backgrounds, there was a significant association between participants' profession and the likelihood of identifying panic disorder or panic symptoms as primary (χ^2 (2) = 34.712, p = .00), with 69.6% of Group 1 (clinical psychologists and psychiatrists, n = 138), 40.8% of Group 2 (nurses, social workers and occupational therapists, n = 169) and 32.8% of Group 3 (psychotherapists, counsellors, counselling psychologists, CBT/IPT/art therapists, systemic practitioners and psychological well-being practitioners, n = 67), identifying primary panic disorder/symptoms. Post hoc pairwise comparisons using Bonferroni adjustment found professionals trained in diagnostic frameworks (Group 1) were significantly more likely to identify panic disorder compared to Group 2 (χ^2 (1) = 25.235, p = .00) and Group 3 (χ^2 (1) = 24.908, p = .00). There were no significant differences between Groups 2 and 3 (χ^2 (1) = 1.294, p = .255).

Table 2. Clinicians' suggestions of primary diagnoses/presenting problem (n = 421), treatment approach (n = 427) and number of sessions required (n = 410) for the clinical vignette

	% (n)
Diagnosis or primary presenting problem	
Panic disorder	43.7 (187)
Panic symptoms	4.9 (21)
Anxiety (unspecified) with panic	4.9 (21)
Generalised anxiety disorder with panic	3.7 (16)
Social anxiety disorder with panic	1.9 (8)
Separation anxiety disorder with panic	0.2 (1)
Agoraphobia	0.5 (2)
Anxiety (unspecified)	22.0 (94)
Generalised anxiety disorder	7.0 (30)
Social anxiety disorder	6.1 (26)
Separation anxiety disorder	2.3 (10)
Nonanxiety disorder	1.2 (5)
Treatment approach	
Cognitive behaviour therapy	87.1 (372)
Brief solution focused therapy	4.4 (19)
Family therapy	3.0 (13)
Psychotherapy	2.1 (9)
Other (specified)[a]	1.6 (7)
Other (unspecified)	1.6 (7)
Number of sessions to be offered	
<4	0.9 (4)
4–8	38.6 (165)
9–12	46.1 (197)
13–20	11.2 (48)
21+	1.4 (6)

[a]'Other' treatment approaches were psychoeducation (n = 3, 0.7%), art therapy (n = 2, 0.5%), narrative approach (n = 1, 0.2%) and anxiety group work (n = 1, 0.2%).

The treatment of panic disorder

As shown in Table 2, when clinicians were asked what their treatment approach would be, 87.1% (n = 372) said they would offer CBT, with almost half the sample (n = 197, 46.1%) suggesting between 9 and 12 treatment sessions. When asked if they were aware of any treatment protocols appropriate to use for the clinical case, just 1.2% of clinicians (n = 5) identified a protocol that had been evaluated for young people with panic disorder (i.e. 'MAP-A', Pincus et al., 2008). A further 1.4% (n = 6) identified a transdiagnostic CBT protocol that had been

Table 3. The percentage and number of clinicians from each professional background who identified panic disorder or panic symptoms as the main presenting problem in the clinical vignette (n = 421)

Professional background	Total n = 421	% (n) identifying panic disorder/symptoms
Clinical psychologist	89	69.7 (62)
Psychiatrist	49	69.4 (34)
Trainee[a]	20	60.0 (12)
Occupational therapist	18	50.0 (9)
Community psychiatric nurse	95	40.0 (38)
Social worker	40	40.0 (16)
Psychotherapist	38	39.5 (15)
Psychological well-being practitioner	8	37.5 (3)
Counsellor	5	0.0 (0)
Counselling psychologist	2	0.0 (0)
Other	57	–
Forensic psychologist	1	100.0 (1)
Support worker	5	80.0 (4)
No core profession	4	75.0 (3)
CBT therapist	6	66.7 (4)
Assistant psychologist	16	62.5 (10)
Nurses[b]	16	37.5 (6)
Systemic practitioner	4	0.0 (0)
Art therapist	3	0.0 (0)
Interpersonal therapist	1	0.0 (0)
Speciality and associate specialist doctor	1	0.0 (0)

[a]'Trainees' were training in clinical psychology (n = 7, 1.6%), CBT (n = 5, 1.2%), children's well-being practitioner (n = 5, 1.2%), psychiatrist (n = 2, 0.5%), play therapist (n = 1,0.2%), mental health nurse (n = 1, 0.2%) and 'CYP IAPT' trainee (n = 1, 0.2%).
[b]Nurses were mental health, learning disability and general nurses.

evaluated for young people with a range of anxiety disorders (including a small number with panic disorder; i.e. Kendall, 2006; Lyneham, Abbott, Wignall, & Rapee, 2003). A panic disorder-specific protocol designed for use with adults (i.e. Barlow & Craske, 1988; Clark, & Salkovskis, 2009) was identified by 10.5% of clinicians (n = 45) and 11.5% (n = 49) suggested a nonspecific CBT protocol for anxiety disorders (e.g. 'CBT protocol'). Almost half of clinicians (n = 201, 47.1%) did not identify a suitable treatment protocol, and a further 28.3% (n = 121) gave a nonprotocol answer, such as 'CYP IAPT guidelines', 'NICE guidelines' or 'local NHS guidelines'.

When clinicians were asked specifically about how they would treat young people with panic disorder, the pattern of responses was broadly similar; 0.9% (n = 4) of clinicians indicated they would use Pincus et al.'s MAP-A, 6.6% (n = 28) suggested a transdiagnostic CBT protocol, 7.5% (n = 32) identified a panic disorder-specific protocol designed for adults and the remaining 85% (n = 363) did not identify a suitable protocol.

Clinicians' experience of young people with panic disorder in CAMHS

When clinicians were asked about their experience of working with young people with panic disorder, the majority (n = 354, 82.9%) reported they saw young people with panic disorder within their CAMHS service. Over two thirds of participants (n = 293, 68.6%) reported that they had personally treated panic disorder in their current role, while 26.5% (n = 113) said they had not and 4.9% (n = 21) were unsure. Of those clinicians who responded to further questions about how young people with panic disorder presented in services (n = 305, 71.4%), around two thirds (n = 195, 63.9%) believed young people with panic disorder were entering CAMHS as adolescents aged 12–18 years. However, a third (n = 102, 33.4%) felt they were seeing young people with panic disorder starting at primary school age (7–11 years), with a further eight (2.6%) clinicians believing they were seeing young people with panic disorder below the age of 7 years.

Discussion

This national survey of CAMHS clinicians provides an insight into the training backgrounds and needs of clinicians, whether clinicians identified panic disorder/symptoms in an adolescent (and whether this significantly differed by professional background), how children and young people with panic disorder are currently treated in services and clinicians' experiences of working with young people with panic disorder. The main findings were that less than half of clinicians identified panic disorder or panic symptoms as being the main presenting problem in a clinical vignette where the young person met DSM-5 criteria for a diagnosis of panic disorder (and no other disorders). While the majority of clinicians suggested CBT should be the main treatment approach, nearly half the clinicians had not received any training in CBT and a fifth had not had *any* therapy training. Additionally, very few identified an evidence-based treatment protocol for working with young people with panic disorder.

Our results revealed that although two thirds of clinicians reported they were working clinically with young people with panic disorder, less than half identified panic disorder or panic symptoms as the primary diagnosis or presenting problem from a clinical vignette, and the identification of panic disorder or symptoms was influenced by professional background. If clinicians are not able to identify a young person's main presenting problem, it would appear unlikely that they are then delivering a specific, evidence-based treatment, such as MAP-A (Pincus et al., 2008). Nevertheless, this is consistent with the findings of Doerfler et al. (2007) where panic disorder may not be identified in young people. In our survey, clinicians frequently misidentified the young person's main difficulty as generalised or social anxiety disorder, again consistent with the existing literature (Achiam-Montal, Tibi, & Lipsitz, 2013; Doerfler et al., 2007; Masi, Favilla, Mucci, & Millepiedi, 2000). Clinicians from professional backgrounds that involved training in diagnostic frameworks (i.e. clinical psychologists and psychiatrists) were significantly more likely to identify panic disorder/symptoms than practitioners from allied health/social care backgrounds or those trained primarily as therapists. However, still nearly a third of clinical psychologists and psychiatrists did not identify panic symptoms/disorder as the primary problem. Practitioners from allied health/social care backgrounds or those trained primarily as therapists may be less likely to identify panic disorder or symptoms due to the use of a therapeutic approach that focuses on the phenomenological experience of the client, making them

reluctant to engage with the medical model due to concerns around stigma and labelling (Larsson, Brooks, & Loewenthal, 2012). It was also notable that, although sample sizes were small, some professional groups (e.g. support workers) had high rates of identification of panic disorder or symptoms, despite the use of diagnostic frameworks not being part of their core training. It is possible that the context in which they work influences the way they conceptualise a young person's difficulties. Although the majority of CAMHS clinicians would offer CBT in the case of the clinical vignette, only 13.1% identified either an evidence-based panic disorder-specific protocol or a generic treatment protocol for young people with a range of anxiety disorders including panic disorder. It is possible that this relates to significant gaps in the evidence base for treatment. Very few studies evaluating generic, transdiagnostic approaches include adolescents with panic disorder, and when they are included, they make up less than 10% of the sample and their specific outcomes have not been investigated. Around 10% of clinicians identified a panic disorder-specific protocol designed and evaluated with adults, for example cognitive therapy based on Clark's model of panic (Clark, 1986, 1994, 1999). Although this treatment approach is highly effective in treating panic disorder in adults, it has not been evaluated with adolescents and therefore its use at this stage may be premature.

This study suggests that there continue to be significant skills shortages and training needs within CAMHS. It is well recognised that professionals working with children and young people with mental health difficulties must have the necessary competencies, skills and training in order to identify the needs and improve the outcomes of the young people they work with (DoH, 2015; Hargrave, 2004). Over a decade ago, Stallard, Udwin, Goddard, and Hibbert (2007) found that while CBT was the dominant treatment approach used by CAMHS clinicians, around a third rated their CBT skills as 'inadequate or fairly basic' and two thirds identified child-focused CBT as a training need (Stallard et al., 2007). This study suggests that these issues have not been adequately addressed in the intervening period and that the training needs of CAMHS practitioners must be prioritised in the future (Edwards, Williams, Dogra, O'Reilly, & Vostanis, 2008).

Implications for researchers, training providers and clinical services

The current study suggests that there is an urgent need to develop the skills of the current CAMHS workforce, within core and postqualification training and continued professional development activities. As training and development can be resource-intensive, the development and evaluation of training programmes that can easily be disseminated to clinicians at scale (e.g. using online resources) are vital. Further research is required to improve the identification and treatment of young people with panic disorder. A first step would be to develop and evaluate assessment measures to be used within CAMHS, where due to time constraints, use of diagnostic interview schedules may be unrealistic. Given there is preliminary evidence for the effectiveness of a panic disorder-specific treatment for adolescents (Hoffman & Mattis, 2000; Pincus et al., 2010), we would encourage clinicians to use this approach within services. However, as there is only one small RCT supporting the use of this treatment in a format that could be easily delivered in CAMHS (i.e. not involving intensive treatment over consecutive days), research is required to develop the evidence base for treatments that can be delivered within routine clinical services. As transdiagnostic treatments appear to be used with young people with panic disorder, examination of whether these treatments are effective in treating panic disorder in young people specifically is important and to compare them to panic disorder-specific treatments. As around 10% of clinicians are using protocols designed for use with adults (e.g. Clark's cognitive therapy), adapting and evaluating this approach for use with adolescents may also be worthwhile.

Strengths and limitations of the current study

This study was conducted with a large number of clinicians from a wide range of professional disciplines, broadly in line with reports of the CAMHS workforce in that around a third of clinical staff were nurses, a third were clinical psychologists and psychiatrists, with the remaining third made up of other professional groups. This is consistent with Barnes, Devanney, Uglebjerg, Wistow, and Hartley (2010), where nurses made up the largest professional group (23%), followed by psychologists (10%) and psychiatrists (12%). With participation from clinicians within 51 NHS trusts within England, covering 46 out of the 48 counties in England, it provides a nationally representative picture. The survey was designed with input from experienced clinicians and service users, increasing validity. Nevertheless, as the survey was distributed by NHS trusts and CAMHS services, we lack data on nonresponders. Although these results provide a good insight into CAMHS, many young people do not reach the required thresholds for CAMHS (Crenna-Jennings & Hutchinson, 2018) and are likely to be seen in other non-NHS mental health services provided by local authorities (government organisations responsible for delivering regional public services) and voluntary sector organisations (e.g. counselling services). It will be of importance to understand what is happening in these wider services in the future. Although our findings give a good insight into NHS CAMHS in England, we cannot generalise our findings to other countries and highlight the ongoing need to gain an understanding of the international picture.

Conclusion

Panic disorder is a disabling condition that left untreated persists into adulthood with far-reaching personal, social and economic implications. Less than half of the participating CAMHS clinicians identified panic disorder or panic symptoms from a clinical vignette. Although CBT was widely used, clinicians struggled to identify protocols that have been demonstrated to be effective either with young people with panic disorder or a range of anxiety disorders including panic disorder, or in adults with panic disorder. There is a vital need for clinician training, tools that aid the identification of young people with panic disorder and evidence-based treatments that can be delivered effectively in routine clinical settings.

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Ethical information

Ethical approval for this study was granted by the School of Psychology & Language Science Ethics Committee at the University of Reading. Approval was also granted by the Health Research Authority (HRA) (reference: 18/HRA/1564) to conduct the study with NHS staff. Written consent was obtained from the subjects, as appropriate.

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Supporting information

Additional Supporting Information may be found in the online version of this article:

Appendix S1. Questionnaire for participants.

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2.1 Supplementary materials

Online supplementary materials: Online consent form and online survey

Baker, H. J., & Waite, P. (2020). The identification and psychological treatment of panic disorder in adolescents: a survey of CAMHS clinicians. *Child and adolescent mental health, 25*(3), 135-142. doi.org/10.1111/camh.12372.

Psychological treatments for anxiety in adolescents: views of CAMHS Clinicians

Page 1: Consent page

Psychological treatments for anxiety in adolescents: views of CAMHS clinicians

We invite you to take part in a National Institute of Health Research (NIHR) funded study that will explore CAMHS clinican's views and experiences of identification and treatment of adolescents with anxiety disorders.

In the context of this survey, we define adolescents as secondary school aged children (11-18 years of age).

It will take 10-15 minutes to complete this survey. It is crucial that you are currently working with and offering psychological treatment to adolescents with anxiety disorders in order to take part.

As a reimbursement for taking part you will be entered into a prize draw to win one of two £100 amazon vouchers. You (or a nominated member of your service) will also have the opportunity to take part in a webinar about the identification and management of anxiety disorders in adolescents.

We are happy to answer any questions you have about the study, please contact the researchers for further information:

Holly Baker, BSc (Hons), MSc.

e: h.j.baker@pgr.reading.ac.uk

Dr Polly Waite

e: p.l.waite@reading.ac.uk

You are free to withdraw from the study at any time.

To proceed with the questionnaire, all items of the consent form below must be initialled to indicate your consent to taking part in the study.

1. Your full name * *Required*

2. I can confirm that I have read and understand the information sheet, have had the opportunity to ask questions and, if applicable, have had these questions satisfactorally answered *** required** * *Required*

3. I understand that my participation is voluntary, that I can withdraw my consent any time, without giving a reason and without my professional role being compromised *** required** * *Required*

4. I understand that the answers to my questions will be stored in a secure location, and will contain no identifying information. I also understand that the data will be kept for 12 months and after this time they will be destroyed *** required** * *Required*

5. I understand that, should I lose the capacity to consent to be in the study, the research centre will retain any information collected prior to this point

6. I understand that the relevant sections of my data collected during the study, may be looked at by individulas from the University of Reading, 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 *** required** ** Required*

7. I understand that the data collected about me in this study will be preserved and made available in anonymised form, so that they can be consulted and re-used by others. ** Required*

8. I agree to take part in the study *** required** ** Required*

9. To be entered into the prize draw for £100 amazon vouchers please enter your email address.

Page 2: Demographic information

10. Age group

- ○ 18-25
- ○ 26-35
- ○ 36-45
- ○ 46-55
- ○ 56-65
- ○ 66+

11. Identify my gender as: ✱ *Required*

- ○ Male
- ○ Female
- ○ Other

12. If you are a qualified clinician, what is your profession? If you are still training please select 'trainee'. ✱ *Required*

- ☐ Clinical Psychologist
- ☐ Psychiatrist
- ☐ Occupational therapist
- ☐ Psychological wellbeing practitioner
- ☐ Other
- ☐ Social worker
- ☐ Counselling Psychologist
- ☐ Psychotherapist
- ☐ Community Psychiatric nurse
- ☐ Counsellor
- ☐ Assistant Psychologist
- ☐ Trainee
- ☐ No core profession

12.a. If you selected 'Other', please specify:

12.b. If you selected 'no core profession' please tell us about your role and professional background.

12.c. If you selected 'trainee' please tell us the type of training you are undertaking and what stage you are at in this training.

13. Have you undertaken any training in specific psychological treatments for example CBT, family therapy, art therapy? Please give details below. * *Required*

14. Year qualified as a clinician *Optional*

15. How many years have you practiced since qualification? *Optional*

16. Name of the CAMHS service you currently work in * *Required*

17. Number of years employed in current trust * *Required*

18. Work status * *Required*

- ○ Full time
- ○ Part time

18.a. If part time, how many hours a week do you work in CAMHS?

18.b. How much time do you spend clinically working with young people with anxiety disorders on average each week? * *Required*

Page 3: Identification and treatment of anxiety disorders in adolescents

Vignette 1

Please read the vignette below and answer some questions about it.

Case 1

Anna is a 15-year old girl who is in Year 11 at school. She lives with her mum and younger brother. Her parents are divorced, her dad lives a couple of hours away, has remarried, and has twin daughters, aged 2. Anna sees her dad every other weekend and generally has a good relationship with him although there are times when they argue and she feels he cares more about his new family than her and her brother. She is physically healthy and has no developmental difficulties. She attends the local state secondary school and reports that she feels under a lot of pressure with GCSEs coming up at the end of the academic year. She also sometimes struggles sometimes with friendships as some of the girls in her friendship group can be difficult and can exclude other members of the group.

Anna's mum describes how Anna has always been a worrier and when she started school she found it difficult to separate from her mum in the morning, would beg her to stay and had a lot of tummy aches that she suspected were related to anxiety. When Anna started at secondary school, she initially found it hard to settle and worried a lot about getting lost, that she might forget her homework, that other people wouldn't like her and she wouldn't make any new friends or that she might miss the bus.

Anna's current difficulties began around eight months ago when she had to do a presentation at school. That morning, she became really anxious about it and experienced a sudden surge of intense fear that came from nowhere and within a few minutes, it reaches a point where she felt really sick, dizzy, shaky, short of breath and her heart was pounding. She said that she felt that she was going crazy and could even die. She had a picture in her mind of her lying on the floor and all the other students in the class crowded round, looking at her. Since then, she has experienced frequent similar attacks of anxiety that sometimes come out of the blue and her main worries are that she might collapse, be sick, be seriously ill or die. This happens most weeks and as a result, she worries a lot about them happening again and that other people might think she was weird. This is causing her a lot of upset. There are days when Anna might not go in to school or goes in late and her teachers are worried about her attendance and the impact of this on her GCSE's. Anna is also now finding it difficult to use the school bus or to go into town with her friends. Anna's mum has taken her to the GP who has referred her for an assessment within CAMHS.

19. We understand there is not the full amount of information you would usually require. However based on the information given, what would you identify as the primary presenting issue or diagnosis in this case? * *Required*

20. What would be your treatment approach in this case? * *Required*

- ☐ Cognitive Behavioural Therapy (CBT)
- ☐ Family therapy
- ☐ Child and adolescent Psychotherapy
- ☐ Art therapy
- ☐ Psychoanalytic psychotherapy
- ☐ Brief solution focused therapy
- ☐ Other

20.a. If you selected Other, please specify:

21. Who would you primarily be working with in this case? * *Required*

- ○ Primarily the young person
- ○ Primarily the parent/ carer or guardian
- ○ Both

22. How many treatment sessions would you be likely to offer?

- ○ Less than 4
- ○ 4-8
- ○ 9-12
- ○ 13-20
- ○ 20 +

23. Are there any treatment guidelines that you are aware of that you would follow when working with this case? ✱ *Required*

24. Are there any treatment protocols that you are aware of that you would folllow when working with this case? ✱ *Required*

Page 4: Treatment of panic disorder in CAMHS

25. Do you see any children or adolescents with panic disorder in your service? * *Required*

26. In your current role, have you assessed or treated any children or adolescents with panic disorder? * *Required*

Please select at least 1 answer(s).

- ☐ Yes
- ☐ No
- ☐ Unsure

27. How many children or adolescents with panic disorder do you see on average in a year in your service? * *Required*

28. Are there any guidelines that you are aware of for treating panic disorder in children and adolescents? * *Required*

29. Are there any protocols that you are aware of for treating panic disorder in children and adolescents? * *Required*

30. In your experience, what age are these young people coming into CAMHS services? * *Required*

31. In your experience, what difficulties are these young people presenting with? * *Required*

32. Do you have anything else you would like to tell us about your experience of panic disorder in children and adolescents? *Optional*

Page 5: Training

33. Did you receive any specific training for working with children and adolescents with the disorders below during your qualification training? Please select any that are applicable. * *Required*

Please select between 1 and 9 answers.

- ☐ Generalised Anxiety Disorder
- ☐ Social Anxiety Disorder
- ☐ Panic Disorder
- ☐ Specific Phobia
- ☐ Separation Anxiety Disorder
- ☐ Selective Mutism
- ☐ Agoraphobia
- ☐ Substance/Medication-Induced Anxiety Disorder
- ☐ Anxiety Disorder Due to Another Medical Condition
- ☐ None

33.a. What was the nature of this training? Please specify for each disorder below. *Optional*

33.b. Have you attended any workshops or training on any of the above disorders focused on children and adolescents? * *Required*

- ○ Yes
- ○ No

33.b.i. If yes, what was the nature of the training? Please specify for which disorder and the duration and format of training. For example, online, 2 hour training on GAD.

13 / 16

34. What are your training needs for working with children and adolescents with anxiety disorders? *Optional*

35. Would you like to receive training specifically for panic disorder? * *Required*

- ○ Yes
- ○ No
- ○ Unsure

35.a. Please tell us what training you would like, for example how long would you like training to be, in what format for example face to face, online or other, and any content that you would specifically like to be included.

36. Is your service currently funding external training?

- ○ Whole day training
- ○ Half day training
- ○ Online training
- ○ Other
- ○ None
- ○ Unsure

36.a. If you selected 'other', please specify:

36.b. Would you be prepared to pay for your own training?

36.c. If yes, what would be an acceptable amount for you to spend on training?

Thank you for taking time to participate in this research by competing the questionairre.

Page 6: Thank you for taking time to participate in this research

Thank you for completing the questionnaire. You will now be entered into the prize draw to win one of two £100 Amazon vouchers. You will be contacted by email with details of the webinar on anxiety disorders in adolescence which you can attend and use towards continuing professional development.

3 Paper 2: The Effectiveness of Psychological Therapies for Anxiety Disorders in Adolescents: A Meta-analysis

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The Effectiveness of Psychological Therapies for Anxiety Disorders in Adolescents: A Meta-Analysis

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Abstract
Anxiety disorders are common in adolescence but outcomes for adolescents are unclear and we do not know what factors moderate treatment outcome for this age group. We conducted meta-analyses to establish the effectiveness of psychological therapies for adolescent anxiety disorders in (i) reducing anxiety disorder symptoms, and (ii) remission from the primary anxiety disorder, compared with controls, and examine potential moderators of treatment effects. The protocol was registered with PROSPERO (CRD42018091744). Electronic databases (Web of Science, MEDLINE, Psycinfo, EMBASE) were searched from January 1990 to December 2019. 2511 articles were reviewed, those meeting strict criteria were included. Random effects meta-analyses were conducted. Analyses of symptom severity outcomes comprised sixteen studies (CBT k = 15, non-CBT k = 1; n = 766 adolescents), and analyses of diagnostic remission outcomes comprised nine (CBT k = 9; n = 563 adolescents). Post-treatment, those receiving treatment were significantly more likely to experience reduced symptom severity (SMD = 0.454, 95% CI 0.22–0.69) and remission from the primary anxiety disorder than controls (RR = 7.94, 95% CI 3.19–12.7) (36% treatment vs. 9% controls in remission). None of the moderators analysed were statistically significant. Psychological therapies targeting anxiety disorders in adolescents are more effective than controls. However, with only just over a third in remission post-treatment, there is a clear need to develop more effective treatments for adolescents, evaluated through high-quality randomised controlled trials incorporating active controls and follow-up data.

Keywords Adolescent · Anxiety · Psychological treatment · Meta-analysis

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Introduction

Anxiety disorders are common in adolescence (Costello et al., 2011; Polanczyk et al., 2015; Vizard et al., 2018), with around 8% of 11- to 16-year olds (Vizard et al., 2018) meeting diagnostic criteria for an anxiety disorder. Anxiety disorders during this developmental stage are particularly problematic due to their negative impact on psychosocial functioning including education, social interaction, school refusal and school dropout (Van Ameringen et al., 2003). They are likely to persist into adulthood and are associated with a risk of developing other mental health problems (Pine et al., 1998), such as depression, alcohol dependence and suicidal behaviour (Kendall & Peterman, 2015; Kendall et al., 2004; Woodward & Fergusson, 2001), as well as negative long-term impairments in social and occupational functioning (Woodward & Fergusson, 2001). Consequently, the high prevalence and substantial impact of anxiety disorders during adolescence highlight the vital need for effective treatments.

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There is a continuing growth in psychological treatments for child and adolescent anxiety disorders, including both cognitive behaviour therapy (CBT) and non-CBT-based approaches (e.g. mindfulness and acceptance-based therapies Dunning et al., 2019; Vøllestad et al., 2012), delivered in a range of formats such as individual, group and computer based (cCBT), in clinic and school settings, with varying degrees of parent/carer involvement. CBT is the most extensively evaluated treatment for anxiety disorders among children and adolescents, with generally good outcomes, across different formats of delivery. When outcomes have been examined across broad age ranges (2–19 years of age), 49.4% of children and adolescents who have had CBT (not including cCBT) have been found to be in remission from their primary anxiety disorder at the end of treatment (James et al., 2020).

It is unclear, however, to what extent these findings can be generalised to adolescents with anxiety disorders, who have typically been underrepresented in treatment outcome studies. Reynolds et al. (2012) examined the six studies in their review that recruited only adolescents (aged 14–19 years) with either elevated anxiety symptoms or an anxiety disorder diagnosis and found the reduction in symptoms post-treatment to be in the very large range ($d = -1.38$), although with very wide confidence intervals (95% CI 2.65, − 0.11). Although specific outcomes for the remission of anxiety disorders in adolescents are not reported, in two meta-analyses (Bennett et al., 2013; James et al., 2020) that have examined age as a moderator of outcome, they found no significant differences between studies comparing remission of anxiety disorders for adolescents and younger age groups. While James et al. (2020) found larger treatment effects for CBT (vs. no waitlist/ no treatment) among adolescents aged 12 years or more compared to children 12 years or less, they highlighted the substantial heterogeneity in findings. The majority of the studies in their review used mixed child and adolescent samples, with less than 20% of included studies focussing specifically on adolescents.

Examining adolescents in their own right is important, as adolescence is a unique stage of development and factors associated with this developmental period may influence the effectiveness of treatment for anxiety disorders. Findings from both animal and human research suggest that during adolescence, fear expression and extinction are temporarily impaired (Ganella & Kim, 2014; Waters et al., 2017) making it more difficult to retain new, non-fearful, inhibitory information. In addition, adolescents may have severe symptoms, comorbid depression and difficulty attending school (Hudson et al., 2002; Waite & Creswell, 2014). Taken together, these factors may influence the overall effectiveness of treatment and questions about what works for whom. Notably, to date, no studies have gone beyond examining age as a moderator to investigate *what* moderates outcomes for adolescents.

Factors that have been found to be associated with better treatment outcomes across broad age ranges include having a greater number of treatment sessions (i.e. more than 11 sessions), (Reynolds et al., 2012), treatments targeting a specific disorder rather than being transdiagnostic (Reynolds et al., 2012), clinical treatment-seeking populations rather than those recruited from the general community (Weisz et al., 2015), being from White ethnic backgrounds compared to those from other ethnic groups (Weisz et al., 2017) and comparisons with wait list controls, rather than active controls or treatment as usual (James et al., 2015, 2020; Reynolds et al., 2012). In contrast, poorer outcomes have been found for children and adolescents with social anxiety disorder than those with other anxiety disorders (Hudson et al., 2015). There have been mixed findings for delivery format; while Zhou et al., (2019) concluded that group formats (of CBT) are particularly effective compared to passive control groups as well as to most other psychotherapies, James et al. (2020) concluded that the evidence does not provide clear and consistent support for group CBT having an advantage over other delivery formats and highlighted that studies that differed in terms of treatment delivery format also differed on other key characteristics. Other factors, such as gender and parental involvement, have not significantly moderated treatment outcomes in studies to date (James et al., 2015; Manassis et al., 2014; Reynolds et al., 2012). Although children and adolescents from socio-economically disadvantaged backgrounds are significantly more likely to develop mental health problems than those from less disadvantaged backgrounds (Reiss, 2013; Reiss et al., 2019), whether this disadvantage specifically moderates treatment outcomes for anxiety disorders has not yet been examined. The extent to which these factors moderate outcomes specifically among adolescents has not been evaluated, however, there are clear developmental reasons that may lead to differences. For example, adolescent patterns of fear expression and extinction (Ganella & Kim, 2014; Waters et al., 2017) may lead to different effects based on the amount of treatment hours/ sessions provided. Other factors such as the effectiveness of different modes of treatment delivery (e.g. individual, group or online) may also be unique in adolescence, due to their desire for autonomy (Zimmer-Gembeck & Collins, 2008), high levels of self-consciousness (Sebastian et al., 2008) and heightened sensitivity to others' perceptions of themselves (Kilford et al., 2016). Understanding potential moderators of treatment within this unique developmental period is vital in understanding who does and does not benefit from psychological treatments for anxiety disorders to then develop more effective treatments in the future.

This meta-analysis aims to address the current gap in the literature by examining treatment outcomes and moderators of treatment outcome for adolescents with an anxiety disorder. It specifically focuses on RCTs of

any psychological treatment (i.e. not just CBT-based approaches) using *any* delivery format (including cCBT), for anxiety disorders among adolescents. We defined the adolescent age range as 11–18 years (inclusive) based on 11 being the average age at which external indicators of puberty become apparent (American Psychological Association, 2002) and 18 being both the legal age of adulthood and the age at which child and adolescent mental health services end in many countries. In addition, typically 11–18 is the age range when young people are in secondary education, therefore adolescents in this age range have broadly similar educational and social demands and roles (Perry et al., 1993).

We aimed to answer the following research questions:

How effective are psychological therapies in (i) reducing anxiety disorder symptoms and (ii) achieving remission from the primary anxiety disorder, when compared with controls, at post-treatment and follow-up time points? (iii) Is the effectiveness of psychological therapies for treating anxiety disorders in adolescents moderated by the following treatment/demographic variables: CBT (including cCBT) vs non-CBT intervention, mode of treatment delivery (individual, group, mixed group and individual, cCBT), age, number of treatment hours, disorder-specific vs. generic anxiety treatment, active vs. passive control group, clinic vs. community sample, type of primary anxiety disorder, ethnicity (white or other ethnicity), gender (percentage female), parental involvement (involvement vs no involvement) and socio-economic status, at post-treatment and follow-up time points?

We also examined study quality as a moderator of treatment outcome. Very little is known about adverse events in RCTs of psychological treatments due to under-reporting (Duggan et al., 2014). In evaluating the effectiveness of treatments, it is crucial to understand any potential harms as well as the benefits of therapy in terms of treatment outcomes. We therefore also examined the presence of adverse events reported within the identified studies. Finally, in addition to the aims specified in our protocol, we also examined to what extent interventions were developed or adapted to be developmentally sensitive to adolescents.

Methods

The review protocol was pre-specified and registered on the International Prospective Register of Systematic Reviews (PROSPERO; protocol number: CRD42018091744 https://www.crd.york.ac.uk/prospero/). PRISMA guidelines were followed throughout (Moher et al., 2009) (Fig. 1).

Eligibility Criteria

To be included in the review each study had to meet the following criteria:

a. Participants in the study were aged between 11 and 18 years of age (inclusive) at the start of treatment.
b. Participants had a primary diagnosis of an anxiety disorder (with or without comorbid conditions).
c. All diagnostic categories related to DSM-5 or ICD 10 anxiety disorders. Where studies involved participants with OCD or PTSD (no longer classified as anxiety disorders in DSM-5), they were only included where the percentage of participants with primary OCD or PTSD was each less than 10% of the total sample.
d. Participants were randomly allocated to receive a minimum of one psychological treatment condition or one control condition.
e. The study reported an outcome measure of anxiety symptoms and/or diagnostic status. Outcome measures were conducted at post-treatment or follow-up (any duration of follow-up was included).
f. The study was published in peer-reviewed journals, in full text, from January 1990 onwards.
g. The study was published in English. Non-English papers were documented but not included due to lack of resources for translation.

Exclusion Criteria

Studies were excluded if they were:

a. Studies of adolescents with medical conditions (e.g. diabetes, asthma).
b. Studies of adolescents with learning disabilities or autism spectrum disorders.

These studies were excluded as psychological treatments for anxiety disorders would typically have been modified specifically for use with these populations, reducing comparability within the meta-analyses.

Information Sources

The Web of Science and the NHS Healthcare databases incorporating results from MEDLINE, PsycINFO and EMBASE were used. Initial literature searches were conducted between October 2013 and June 2015. A supplementary search was run in February 2018, with a final search run in December 2019. Papers published between 1990 and December 2019 were included.

Search terms for psychological treatments were devised in line with those used by Reynolds et al. (2012), who

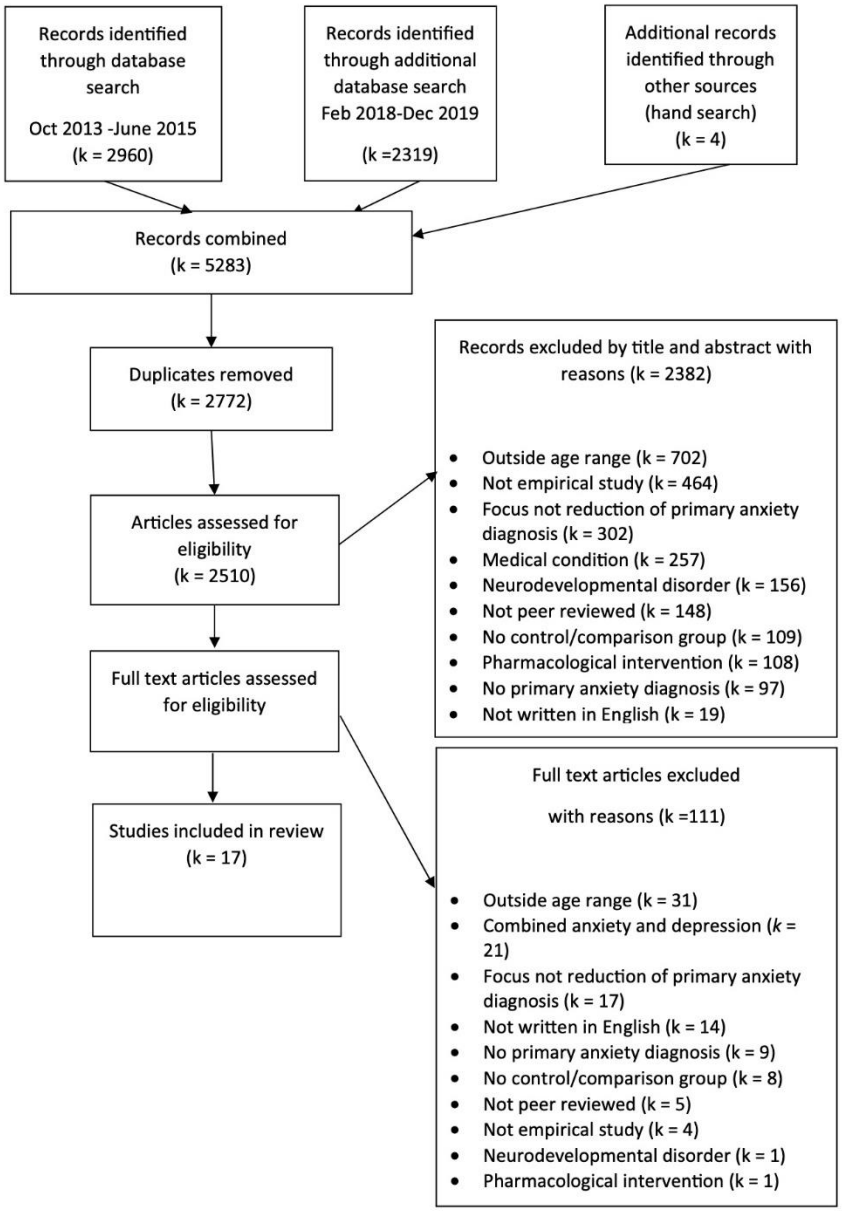

Fig. 1 PRISMA diagram of study identification and selection

examined both CBT and non-CBT treatments in their review. Key anxiety and child and adolescent terms were devised in line with James et al. (2015). We used the following anxiety key terms: anxiety, anxious, phobi*, "school refusal", panic, mute, mutism, agoraphobi*. These terms were crossed with key terms relating to psychological treatment: treatment, therapy, psychotherapy, CBT, behaviour/ behaviour therapy, IPT and attachment and with key terms to identify studies using adolescents: child* or adolescen* or school* or p?ediatri* or young or youth*. Hand searching methods of reference lists of included papers were also carried out to identify additional studies of interest.

Study Selection

Duplicate papers were removed after the initial database search. Two authors (HB and JK) independently screened titles and abstracts, comparing them against the inclusion/

exclusion criteria. Papers were excluded on the basis of meeting none of the inclusion criteria or any of the exclusion criteria. The first criterion that was not met was recorded as the reason for rejection. Where grounds for exclusion were unclear, full texts were obtained and screened. Inter-assessor reliability for whether studies met inclusion criteria at the title and abstract stage was high ($K = 0.82$). Disagreements were discussed and reviewed by HB, JK, PW and CC to reach agreement. References were managed in Microsoft Excel and Endnote.

Study Selection for Meta-Analysis

Inclusion in the meta-analysis at post-treatment or follow-up required studies to provide the number of participants in each condition, and either means and standard deviations or effect sizes for the intervention and control groups. Where standard errors were reported, these were converted to standard deviations. Where required data were unavailable, we contacted authors by email to request data. On completion of the selection process, 17 studies were eligible to be included in the review. See Fig. 1 for a PRISMA flowchart summarising the selection process (Moher et al., 2009).

Data Extraction Process

Data extraction forms were developed prior to data extraction. The following data were extracted by author HB for all papers and by author JK for all papers published up to 2014: CBT versus non-CBT intervention, mode of treatment delivery (individual, group, mixed group and individual, cCBT), age, number of treatment hours, disorder-specific versus generic anxiety treatment, active versus passive control group, clinic vs. community sample, type of primary anxiety disorder, ethnicity (white or other ethnicity), gender (percentage female), parental involvement (involvement vs. no involvement) and socio-economic status. Information about adverse events in treatment was extracted by author HB.

For continuous outcome measures at all time points, adolescent self-report was preferred over parent report because adolescents are typically considered to be more accurate than their parents in reporting their anxiety symptoms (Cantwell et al., 1997). Where studies used multiple measures, the most commonly used self-report measures across studies were extracted. Where the trial intervention targeted mixed anxiety disorders, a generic, broad-based outcome measure of anxiety symptoms was extracted. For interventions targeting a specific anxiety disorder, disorder-specific outcome measures were extracted (if reported), consistent with previous meta-analyses (James et al., 2015, 2020). Where the most commonly used measure was not used in a study, the next most common measure was selected (see Table 1). Outcome data were independently extracted by a postgraduate psychology student and inter-assessor reliability was high ($K = 0.85$). The summary measure used for continuous symptom severity data was the standardised mean difference (SMD). SMD was defined as small (0.1), medium (0.3) or large (0.5) based on recommendations of Cohen (1992).

Diagnostic outcome data for primary anxiety disorder were extracted for all participants regardless of whether they completed treatment or not [i.e. treatment completers and intention to treat (ITT)], dependent on available data. All studies used the anxiety disorders interview schedule (ADIS-C/P; Albano & Silverman, 1996) to assess adolescent's diagnostic status post-treatment. We chose to extract data on the number of patients free of their primary anxiety disorder rather than the number free of *all* anxiety disorders for both the intervention and control groups in order to examine recovery from the most impairing disorder, and because this is most commonly reported as the primary outcome in studies and other reviews and meta-analyses (James et al., 2015). The summary measure used was the risk ratio (RR) (Higgins & Green, 2011). RR were defined as small (1.22), medium (1.86) or large (3.00) based on guidelines set out by Olivier et al. (2017).

Risk of Bias (Study Quality) in Individual Studies

Risk of bias was rated by author HB and independently second rated by author JK, using the Cochrane collaboration risk of bias guidelines for assessing studies (Higgins et al., 2011). Each assessment domain was scored as high, low or unclear. Where there was disagreement, this was discussed between raters, and a joint consensus was reached.

Data Analysis

The R statistical environment was used for analysis. We used the 'robumeta' package for primary and moderator analyses (Fisher & Tipton, 2015). Where trials had more than one intervention group in a study (e.g. two different psychological interventions, compared to the same control condition), all interventions were included in the analysis. Because this violates the assumption of independence of data in meta-analysis, we used robust variance estimation, which corrects studies' standard errors to account for associations between effects within studies (Hedges et al., 2010), so that we could examine all reported effects. We conducted random effects meta-analyses separately for studies that measured outcomes for (i) anxiety symptoms (continuous data) and (ii) remission of primary anxiety disorder (dichotomous data). For diagnostic outcomes, we conducted separate analyses of ITT data and treatment completer data. Where a study did not report ITT data ($k = 8$), this was calculated conservatively by assuming that all participants who dropped out of the

Table 1 Characteristics of individual studies included in the meta-analysis

Author, year	Age range (years)	Primary anxiety disorder	Diagnostic outcome measure	Sample size	Treatment	Sample recruited from	Type of control group	Outcome measure used for analysis	Parental Involvement	Treatment hours	% Female	Ethnicity % caucasian	Included participants on medication
Baer and Garland (2005)	13–18	SAD	–	11	Group CBT	Clinic	Passive	SPAI	Yes	18	58.3	–	Yes
Ebrahimine-jad et al. (2016)	12–14	SAD	–	25	GMBCT	Community	Passive	SPIN	No	12	100	0%	No
Ginsburg and Drake (2002)	14–17	Mixed[a]	–	9	Group CBT	Community	Passive	SCARED	No	7.5	83.3	0%	–
Hayward et al. (2000)	14–17	SAD	ADIS-C/P	33	Group CBT	Community	Passive	SPAI	No	24	100	–	No
Herbert et al. (2009)	12–17	SAD	ADIS-C	68	Group CBT	Community	Active	SPAI-C	No	24[c], 12[d]	56.0	47%	Yes
Ingul et al. (2014)	13–16	SAD	–	57	Group CBT Individual CBT, Mixed[b]	Community	Active	SPAI-C	No	10	56.1	–	–
Masia-Warner et al. (2005)	13–17	SAD	ADIS-C/P	35	Mixed	Community	Passive	SPAI-C	Yes	15.7	74.3	82.9%	No
Masia-Warner et al. (2007)	14–16	SAD	ADIS-C/P	32	Mixed	Community	Passive	SPAI-C	Yes	15.7	83.3	–	No
Masia-Warner et al. (2016)	14–17	SAD	ADIS-C/P	77	Group CBT	Community	Active	SPAI-C	Yes	18.5	68	72%	Yes
Olivares et al (2002)	15–17	SAD	-	59	Group CBT, individual CBT	Community	Passive	SAS-A	No	24[e], 18[f], 29	77.9	–	–
Pincus et al. (2010)	14–17	Panic disor-der	-	26	Individual CBT	Clinic	Passive	MASC	Yes	9.2	19	100%	Yes
Spence et al. (2011)	12–18	Mixed	ADIS-C/P	115	Individual CBT, cCBT	Community	Passive	SCAS-C	Yes	10	59.1	–	–

Table 1 (continued)

Author, year	Age range (years)	Primary anxiety disorder	Diagnostic outcome measure	Sample size	Treatment	Sample recruited from	Type of control group	Outcome measure used for analysis	Parental Involvement	Treatment hours	% Female	Ethnicity % caucasian	Included participants on medication
Stjerneklar et al. (2019)	13–17	Mixed	–	67	cCBT	Community	Passive	SCAS-C	Yes	4	79	–	Yes
Swain et al. (2015)	12–17	Mixed	–	49	Group CBT, ACT	Clinic	Passive	MASC	No	15	63.3	67.3%	Yes
Waite et al (2019)	13–18	Mixed	ADIS-C/P	60	cCBT with therapist support	Clinic	Passive	SCAS-C	Yes	10	64.5	93.3%	Yes
Wuthrich et al. (2012)	14–17	Mixed	ADIS-C/P	43	cCBT	Community	Passive	SCAS-C	Yes	–[g]	62.8	77.3%	Yes

ADIS-C/P anxiety disorders interview schedule child and parent version, *ADIS-C* anxiety disorders interview schedule child version, *SAD* social anxiety disorder, *SPAI/SPAI-C* social phobia and anxiety inventory (child version), *SAS-A* social anxiety scale for adolescents, *SCAS-C* spence children's anxiety scale, *MASC* multidimensional anxiety scale for children, *CGAS* children's global assessment scale, *SPIN* social phobia inventory, *SCARED* screen for child anxiety-related disorders, *GMBCT* group mindfulness-based cognitive therapy, *ACT* acceptance and commitment therapy, *CBT* cognitive behavioural therapy, *cCBT* computer-based CBT

[a]Mixed anxiety disorders

[b]Mix of individual and group sessions delivered

[c]Group

[d]Individual

[e]CBGT-A

[f]Social effectiveness therapy for adolescents (SET-A)

[g]Not reported

index treatment still met diagnostic criteria and participants who dropped out of the control group were assumed to no longer meet diagnostic criteria. However, it was not possible to calculate missing data in this way for studies reporting symptom severity outcomes where ITT was not reported (data were unavailable in half the studies $k=8$). We were therefore unable to conduct separate analyses of ITT and treatment completer data for symptom severity outcomes.

Planned moderator analyses (meta-regression) were completed only where there were more than ten studies in the meta-analysis (Higgins & Green, 2011). As there were only nine studies in the meta-analysis of diagnostic remission data, meta-regression was only carried out for symptom severity outcomes.

The 'robumeta' package used in meta-regression for dependent effect sizes applied the Satterthwaite (Satterthwaite, 1946) approximation to adjust for small samples (k). However, the assumptions of this approximation are not met when the degrees of freedom are < 4, therefore results run with degrees of freedom < 4 are unreliable (Fisher & Tipton, 2015; Tipton, 2015). Where results were identified as unreliable for this reason, they are identified in Table 2. In line with other similar meta-analyses (James et al., 2015; Warwick, 2017), all studies, regardless of their risk of bias status, were included in the analyses. Publication bias was assessed using funnel plots with the Egger statistical test of asymmetry for continuous and dichotomous data (Egger et al., 1997). However, in line with Cochrane guidance (Higgins & Green, 2011) that funnel plots should only be run if there are more than 10 studies in the analysis, this was only done for the analysis of symptom severity outcomes. To examine the impact of individual studies and publication bias on results, sensitivity analysis was conducted using the Vevea and Woods weight-function model (Vevea & Woods, 2005) and the 'weightr' package in R. The impact of statistical heterogeneity was measured using the I^2 statistic (Higgins et al., 2003).

Less than a third of studies reported any data for the intervention and control groups at follow-up ($k=5$), with four studies reporting symptom severity data (Hayward et al., 2000; Herbert et al., 2009; Masia Warner et al., 2016; Olivares et al., 2002), and three studies reporting diagnostic data (Herbert et al., 2009; Masia Warner et al., 2016; Spence et al., 2011) at follow-up. Where follow-up data were available, a range of time points were reported (e.g. 6 or 12 months post-treatment), which led to a very small number

Table 2 Moderator analysis data for symptom severity outcomes

Moderating variable	Subgroup analysis			Moderator test	
	ES (*d*)	95% CI	*df*	Test statistic	*p* value
Intervention type (CBT vs. non-CBT)	0.075	−0.171, 0.321	13.6	$QM_1=2.121$	0.145
Treatment delivery				$F_{4.73}=3.73$	0.100
Group	0.482	0.113, 0.852	5.81		
Individual[a]	−0.575	−1.258, 0.109	4.94		
Mixed[a]	0.557	−0.455, 1.569	3.30[b]		
cCBT	−0.130	−0.624, 0.365	6.79		
Age				$t_{5.21}=0.340$	0.747
Treatment hours				$t_{5.43}=1.300$	0.246
Treatment type (specific vs. generic)	0.18	−0.304, 0.669	12.28	$QM_1=1.243$	0.265
Control group (active vs. passive)	0.356	−0.112, 0.823	3.20[b]	$QM_1=2.121$	0.145
Sample (community vs. clinic)	−0.015	−0.648, 0.619	4.37	$QM_1=0.035$	0.851
Primary AD type (mixed vs. specific)	−0.19	−0.688, 0.314	10.27	$QM_1=1.234$	0.267
Ethnicity (% Caucasian)				$t_{2.79}=-0.0444$	0.968
Gender (% female)				$t_{3.83}=0.146$	0.892
Parental involvement (involved vs. not)	0.027	−0.506, 0.559	11.70	$QM_1=0.582$	0.445
Study quality				$F_{3.25}=2.63$	0.209
Poor[a]	0.713	0.343, 1.083	7.39		
Fair[a]	−0.520	−1,008, −0.032	9.75		
Good	−0.393	−1.354, 0.567	1.89[b]		

CBT cognitive behavioural therapy, *cCBT* computer delivered CBT, *CI* confidence interval, *d* Cohen's *d*, *df* degrees of freedom, *ES* effect size

[a]Within each moderator having more than 2 subgroups, identical superscript a indicates significant ($p<0.05$) pairwise comparisons between subgroups

[b]Where subgroup variables were run with $df<4$, they did not meet statistical assumptions for small sample adjustments and are therefore unreliable

of studies in each follow-up time point subgroup. Because precision of estimates can be adversely affected by small numbers of studies within analyses (Borenstein et al., 2011), we were unable to conduct meaningful analyses of follow-up data (Higgins & Green, 2011). Additionally, just seven out of 16 studies reported participants' socio-economic status, and due to measurement and reporting differences relating to income, we were unable to analyse this variable. Therefore, the final moderating variables examined were CBT vs non-CBT intervention, mode of treatment delivery (individual, group, mixed group and individual, cCBT), age, number of treatment hours, disorder-specific versus generic anxiety treatment, active versus passive control group, clinic versus community sample, type of primary anxiety disorder, ethnicity (white or other ethnicity), gender (percentage female), parental involvement (involvement vs no involvement) and socio-economic status and study quality (risk of bias; poor, fair or good).

Results

Database searches yielded a total of 5283 records. After removing duplicates and screening, a final total of 17 studies were assessed as eligible for inclusion. One study (O'Brien et al., 2007) could not be included in the meta-analysis because insufficient data (including the number of participants and means and standard deviations for intervention and control conditions post-treatment) were reported in the paper and we were unable to obtain the necessary data from the authors. Therefore, 16 studies were included in the analysis of continuous symptom severity outcomes (Baer & Garland, 2005; Ebrahiminejad et al., 2016; Ginsburg & Drake, 2002; Hayward et al., 2000; Herbert et al., 2009; Ingul, 2014; Masia-Warner et al., 2007; Masia-Warner et al., 2005; Masia Warner et al., 2016; Olivares et al., 2002; Pincus et al., 2010; Spence et al., 2011; Stjerneklar et al., 2019; Swain, 2015; Waite et al., 2019; Wuthrich et al., 2012), with a total sample of 766 adolescents. Nine studies were included in the meta-analysis of dichotomous remission data (Hayward et al., 2000; Herbert et al., 2009; Masia Warner et al., 2016; Masia-Warner et al., 2005, 2007; Spence et al., 2011; Stjerneklar et al., 2019; Waite et al., 2019; Wuthrich et al., 2012) with a total sample of 563 adolescents. Eight studies could not be included as they did not report remission data for the primary anxiety disorder (Baer & Garland, 2005; Ebrahiminejad et al., 2016; Ginsburg & Drake, 2002; Ingul, 2014; O'Brien et al., 2007; Olivares et al., 2002; Pincus et al., 2010; Swain, 2015).

Further information about the characteristics of included studies is provided in Table 1. Over half the studies ($k=9$) had samples consisting of adolescents with a primary diagnosis of SAD. Three quarters ($k=12$) recruited participants from the community (e.g. schools or advertisements), the remaining four were clinic samples. Fifteen studies looked at CBT (including one study of mindfulness-based cognitive therapy), with only one non-CBT study of acceptance and commitment therapy (ACT). Nine delivered CBT in a group, four delivered individual sessions, two combined group and individual sessions, while four studies examined cCBT. The number of treatment hours delivered ranged from 4 to 29 h. Half the studies ($k=8$) used and reported ITT analysis for diagnostic outcomes (Ingul, 2014; Masia-Warner et al., 2007; Pincus et al., 2010; Spence et al., 2011; Stjerneklar et al., 2019; Swain, 2015; Waite et al., 2019; Wuthrich et al., 2012).

How Effective are Psychological Therapies in Reducing Anxiety Disorder Symptoms?

Adolescents who had received psychological treatment reported a significantly greater reduction in symptom severity than controls, with a moderate effect size (SMD = 0.454, 95% CI 0.22–0.69), although there was moderate heterogeneity between studies ($I^2=53.56\%$) (Fig. 2). Visual inspection of the funnel plot revealed evidence of an asymmetrical distribution of studies (Fig. 3), and Egger test results were significant ($z=2.76$, $p=0.051$), consistent with publication bias. Sensitivity analysis using the Vevea and Woods' weighted function model (Vevea & Woods, 2005) revealed that estimates for continuous outcomes (SMD = 0.37–0.51) proved robust and therefore it is unlikely that publication bias influenced results. High heterogeneity and poor study quality are potential sources of bias and as such may account for bias identified within funnel plot asymmetry in this analysis (Higgins & Green, 2011).

How Effective are Psychological Therapies in Achieving Remission from the Primary Anxiety Disorder?

At post-treatment, remission from the primary anxiety disorder was significantly more likely among those in the psychological treatment group (ITT), compared to controls (RR = 7.94, 95% CI 3.19–12.7) equating to 36% ($n=116$) of those in the treatment group (all CBT) versus 9% ($n=22$) of controls being in remission post-treatment, although there was high heterogeneity ($I^2=91.7\%$) (Fig. 4). A similar pattern was found for treatment completers (RR = 7.21, 95% CI 3.83–10.58), equating to 37% ($n=94$) of those in the CBT group versus 9% ($n=15$) of controls in remission post-treatment, again, with high heterogeneity ($I^2=92.3\%$) (Fig. 5). We used Vevea and Woods' weight-function model (Vevea & Woods, 2005) to analyse sensitivity. The estimates for ITT outcomes (RR = 6.21–8.10) and completer outcomes

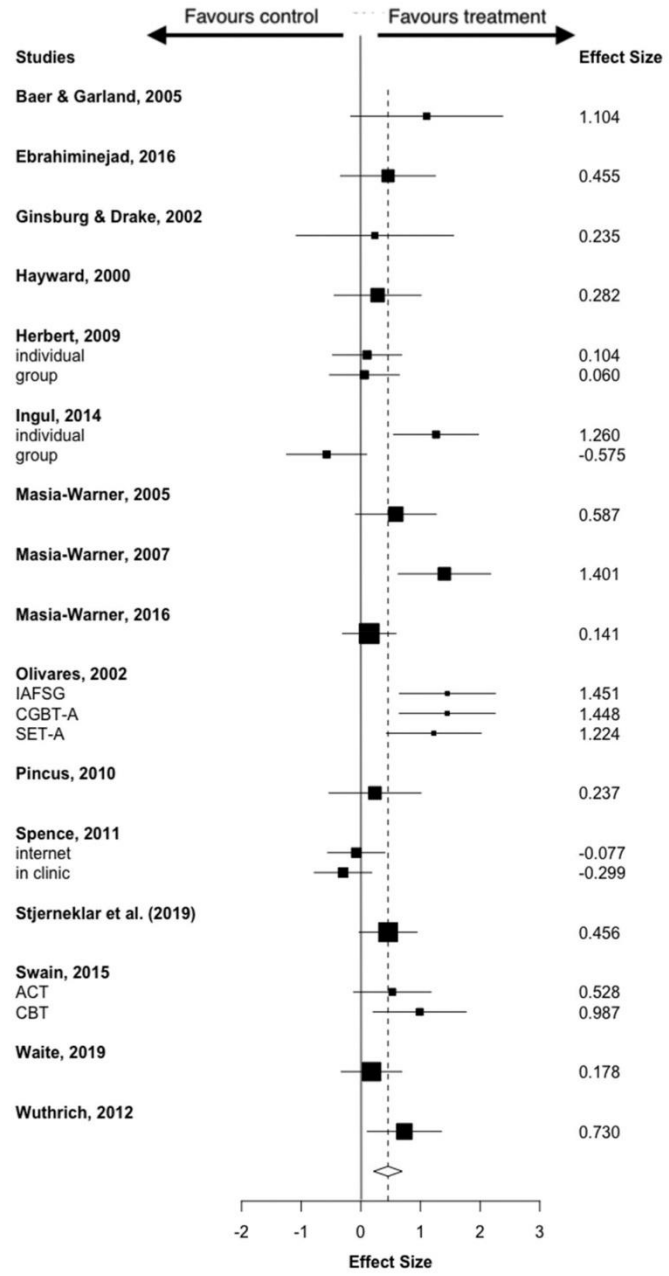

Fig. 2 Forest plot of continuous outcomes

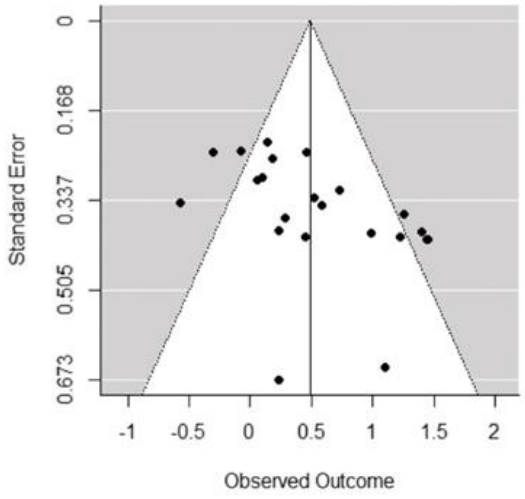

Fig. 3 Funnel plot of continuous outcomes

(RR = 5.93–7.93) proved robust, meaning that publication bias was an unlikely influence on results.

Is the Effectiveness of Psychological Therapies for Treating Anxiety Disorders Affected by Moderating Factors?

Meta-regression was only carried out for symptom severity outcomes as there were fewer than 10 studies ($k = 9$) in the meta-analysis of diagnostic remission data.

A summary of the moderator analyses (meta-regression) findings can be found in Table 2. Meta-regression analyses found that none of the treatment/demographic moderators analysed were significantly associated with symptom severity outcomes: CBT versus non-CBT, mode of treatment delivery, age, treatment hours, disorder-specific versus generic anxiety treatment, active versus passive control group, clinic versus community sample, type of primary anxiety disorder, ethnicity, gender or parental involvement. Although treatment delivery was not a significant moderator, subgroup analyses revealed that mixed delivery was associated with significantly larger effects than individual delivery. However, this result may be unreliable, because assumptions of small sample size adjustments were not met for the 'mixed' subgroup (Tipton, 2015).

Study Quality

Results of the risk of bias (study quality) assessment are presented in Fig. 6. Of the 16 included studies, only two (13%) were rated as 'good' quality overall, five (31%) were rated as 'fair' and nine (56%) rated as 'poor'. Meta-regression analysis found study quality was not a significant moderator of symptom severity outcomes. Subgroup analyses revealed that 'poor' study quality was associated with larger effect sizes than 'fair' quality studies. We were unable to reliably analyse 'good' study quality as we could not meet the assumptions of small sample size adjustments (Tipton, 2015).

Developmental Considerations

Although 13 of the 17 studies identified in the review reported using a developmentally adapted treatment, only six studies (37.5%) reported what aspects of the treatment were developed or adapted to be developmentally sensitive to adolescents (Ginsburg & Drake, 2002; Ingul et al., 2014; Masia-Warner et al., 2005; Pincus et al., 2010; Spence et al., 2011; Swain et al., 2015). Where modifications were described, this involved making language 'age-appropriate' (e.g. cognitive restructuring changed to 'being a detective' or 'reality checking'), giving adolescent-specific examples (e.g. dating, at a party, or related to exams) or conducting exposure/social skills training within activities typical for adolescents (e.g. in a shopping centre or playing billiards). In three studies it was unclear whether a treatment designed for adolescents was used (Baer & Garland, 2005; Ebrahiminejad et al., 2016; Herbert et al., 2009).

Adverse Event Reporting

Only two of the 16 studies (12.5%) reported adverse events that caused young people to drop out of the trial. In one study (Baer & Garland, 2005), a first episode of psychosis occurred during treatment, and in the second study (Waite et al., 2019), two participants in the waitlist condition had elevated risk of suicidality during the waitlist period.

Discussion

Examining adolescents in their own right is important, as adolescence is a unique stage of development and factors associated with this developmental period may influence the effectiveness of treatment for anxiety disorders. We identified sixteen RCTs that examined the effectiveness of psychological treatments for anxiety disorders specifically in the adolescent age range. For adolescents who had completed a psychological treatment, compared to controls, there was a moderate and significant effect on symptom severity post-treatment. Just over half the studies examined remission from the primary anxiety disorder and both those randomised to, and those who completed, a psychological treatment were significantly more likely than controls to be in remission from their primary anxiety disorder post-treatment, with

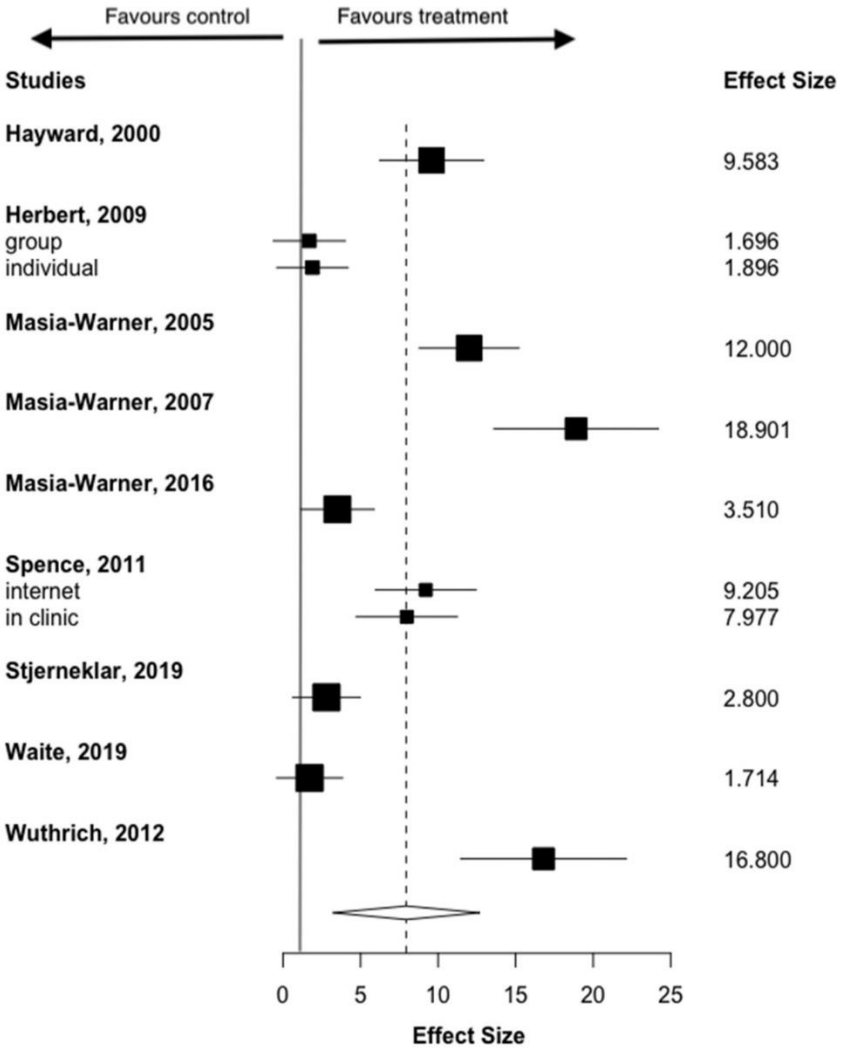

Fig. 4 Forest plot of dichotomous outcomes: intention to treat (ITT)

large effects. Despite this apparent positive finding, in the treatment group, only 36% of adolescents no longer met diagnostic criteria for their primary anxiety disorder at the end of treatment. We were unable to identify any treatment/demographic moderators that were significantly associated with outcomes.

There are a number of reasons to be cautious, however, when drawing conclusions from the available studies. Of concern, over half the studies were rated as 'poor' quality. Although study quality was not a significant moderator of symptom severity outcomes, our subgroup analyses revealed poor study quality was associated with larger treatment effects than those of fair quality, indicating that biases may have led to overestimated treatment effects. Forest plots showed high heterogeneity between studies and we were unable to statistically identify the source of this. Furthermore, there are limits to the extent that findings can be generalised given that three quarters of the studies recruited participants from the community (e.g. through schools) and half focussed specifically on social anxiety disorder. Conclusions cannot be drawn about the relative efficacy of different treatment types, as CBT (delivered in a variety of formats) was the treatment approach in all but one study.

Nevertheless, the reason why only a third of adolescents are free of their primary anxiety disorder at the end of treatment warrants urgent and extensive evaluation. This may reflect severe anxiety symptoms/disorders, high levels of social anxiety disorder/symptoms, comorbid depression, and potentially chronic and entrenched problems (Essau et al., 2000; Kendall & Peterman, 2015; Pine et al., 1998; Waite,

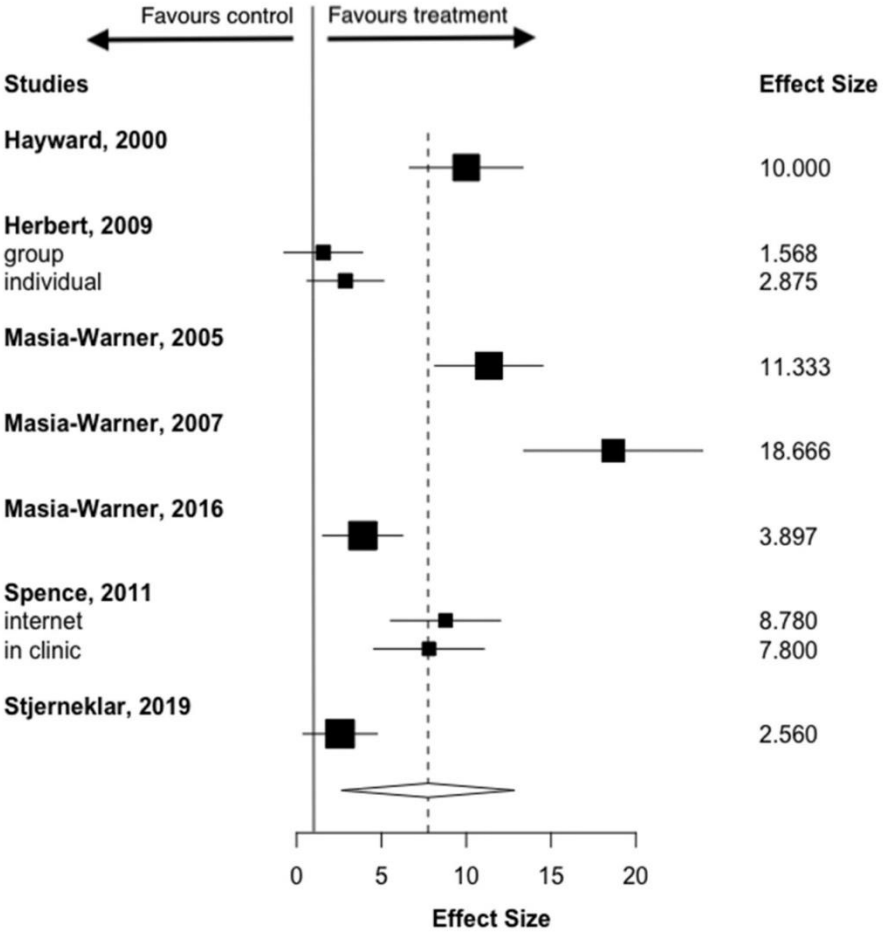

Fig. 5 Forest plot of dichotomous outcomes: treatment completers

2014; Woodward & Fergusson, 2001), that do not respond sufficiently to current treatments. There is some evidence that adolescents have difficulty retaining new non-fearful information during this developmental stage (Waters et al., 2017). This could potentially account for adolescents' poor responses to predominantly exposure-based anxiety treatments in the ways that they are currently delivered. Clearly, treatment optimisation must be underpinned by a clear developmental understanding of the mechanisms that maintain anxiety disorders in adolescents. However, the role of the wider context that adolescents are living in, including acute social demands and academic pressures (Blakemore, 2008, 2018), are also likely to be important. It was notable that less than half the studies reported what aspects of the treatment were designed to be developmentally sensitive to adolescents. Where adaptations were made, this consisted of making language 'age-appropriate', giving adolescent-specific examples, or conducting exposure/social skills training within activities typical for adolescents. It would be helpful for future studies to explicitly report how interventions have been developed or adapted to consider specific developmental needs.

Notably, none of the treatment and demographic variables previously shown to moderate the effectiveness of treatment when examined among children *and* adolescents, i.e. group delivery format (Zhou et al., 2019); greater number of treatment hours, disorder-specific treatment, type of control (Reynolds et al., 2012); and ethnicity (Weisz et al., 2017) moderated treatment effects specifically in adolescents. Given that adolescents often have severe symptoms, it was of interest that the number of treatment hours did not significantly moderate outcomes. However, studies that differed in treatment length differed on other key characteristics, making it difficult to draw meaningful conclusions. For example, all five studies where the treatment was ≥18 h were with adolescents with social anxiety disorder, which is typically associated with poorer outcomes (e.g. Hudson et al., 2015). Although disorder type was not a significant moderator, we were unable to examine associations with specific anxiety disorders, as all but one study focussed on

Assessment domain	Random sequence generation	Allocation concealment	Blinding of outcome assessment	Incomplete outcome data	Selective outcome reporting	Other sources of bias	Overall Quality
Author, year							
Baer and Garland (2005)	Low	Low	High	Low	Unclear	Low	Poor
Ebrahiminejad et al. (2016)	Unclear	Unclear	High	Unclear	Low	Low	Poor
Ginsburg and Drake (2002)	Low	Unclear	Low	Unclear	Unclear	Low	Poor
Hayward et al. (2000)	Unclear	Unclear	Low	Unclear	Unclear	Low	Poor
Herbert et al. (2009)	Low	Low	Low	Low	Unclear	Low	Fair
Ingul et al. (2014)	Low	Low	Unclear	Low	Unclear	Low	Fair
Masia-Warner et al. (2016)	Unclear	Low	Low	Low	Low	Low	Fair
Masia-Warner et al. (2005)	Unclear	Unclear	Low	Low	Low	Low	Poor
Masia-Warner et al. (2007)	Unclear	Unclear	Low	Low	Low	Unclear	Poor
O'Brien et al. (2007)	Low	Low	Unclear	Unclear	Low	Low	Poor
Olivares et al. (2002)	High	Unclear	Low	Unclear	Low	Unclear	Poor
Pincus et al. (2010)	Unclear	Unclear	Unclear	Low	Unclear	Low	Poor
Spence et al. (2011)	Low	Low	Unclear	Low	Unclear	Low	Fair
Stjerneklar et al. (2019)	Low	Low	Low	Low	Low	Low	Good
Swain et al. (2015)	Unclear	Unclear	Low	Low	Unclear	Low	Poor
Waite et al. (2019)	Low	Low	Low	Low	Low	Low	Good
Wuthrich et al. (2012)	Low	Low	Low	Unclear	Unclear	Low	Fair

Note. Low risk of bias, risk was unclear and high risk of bias

Fig. 6 Cochrane Risk of bias assessment

social anxiety disorder or mixed anxiety disorders including social anxiety disorder. Mode of delivery was also not found to significantly moderate outcomes. Notably, two studies in this meta-analysis compared group and individual CBT directly, and found no significant differences in outcomes between delivery formats (Herbert et al., 2009; Ingul, 2014). However, both studies involved the treatment of adolescents with social anxiety disorder from the community (e.g. through schools) identified through screening and so it is possible that the young people in these studies were less

severe than those referred to clinical services and potentially more responsive to working in a group format. Clearly, there is a great deal more work to be done to understand what works for whom, to then develop more effective treatments.

Unfortunately, we were unable to draw conclusions about potential adverse effects of treatment as only two studies reported adverse events. Clinical trials of psychological interventions have been identified as insufficiently reporting harm arising from treatment, as unlike with drug trials, this is not mandatory (Duggan et al., 2014). In a review of National Institute for Health Research (NIHR) funded trials, none of the psychological intervention studies reported adverse events in their final reports, and where adverse events were mentioned (e.g. within trial protocols), reporting guidelines for drug trials were used, which may not be suitable for psychological treatments (Duggan et al., 2014). To date, the focus of research examining psychological interventions has been on the benefits of therapy, but in future must also include the potential harm it might cause (e.g. worsening of symptoms, self-harm, suicide).

The strengths of this review include its specific focus on studies of the adolescent age range, examination of developmental adaptations used in treatments for adolescents, and examination of both diagnostic and symptom severity outcomes and potential moderators of symptom severity. For diagnostic outcomes, we were able to analyse ITT and completer data separately, allowing us to conclude that treatment effects were consistent across ITT and completer analyses for diagnostic outcomes. Nevertheless, our definition of the adolescent age range is a limitation that needs consideration. While we defined the adolescent age range as 11–18 years for the reasons outlined earlier, adolescence is an arbitrary definition and can be defined in multiple ways depending on the theoretical framework adopted (e.g. biological or psychosocial) (Curtis, 2015), anywhere between 9 and 26 years (American Psychological Association, 2002), with this upper end of the age span reflecting the neural development that continues beyond the age of 18 (Paus et al., 2008; Pfefferbaum et al., 1994). Older adolescents may have more in common with young adults than younger adolescents in terms of neurological development (Waters et al., 2017), and in the future, it will be important to consider the effectiveness of treatment for older adolescents and young adults, and at what stage adult-focussed treatment approaches become appropriate.

Results also need to be considered in light of several limitations of the included studies. The overall quality of studies in this review was poor. There were high levels of heterogeneity across study characteristics, outcome measures and reported outcomes (e.g. diagnostic remission status) and follow-up time points (where included). As pre-specified in our protocol, we only included studies that reported specifically on outcomes for adolescents aged 11–18 years, in order to examine the effectiveness of treatment and potential moderators of outcome during this unique stage of development. This also allowed us to examine to what extent interventions were developed or adapted to be developmentally sensitive to adolescents. Nevertheless, as a result of this approach, we are unable to draw direct conclusions about how the findings differ to those of children or adults, and therefore to what extent they are specific to adolescents. By selecting studies that only included adolescents, a large number of studies involving children and adolescents across broad age range were not included. Had we obtained data from these studies for participants within the 11–18-year age range, this is likely to have substantially increased the number of studies in the review and potentially made for a sample more representative of the wider literature, e.g. from a clinically referred population. Given the issues we have raised in this paper, where possible, we would encourage study authors to report outcomes separately for adolescent participants and provide open access to research data. Although we examined publication bias and found it unlikely to have had an impact on results, inclusion of only published works is a limitation, and we suggest future reviews include non-published works to address this. We analysed remission from primary anxiety diagnosis because this is the most commonly reported primary outcome measure in studies, however, it is likely the number of adolescents in remission from *all* anxiety diagnoses would be lower than the results of this meta-analysis show (Wuthrich et al., 2012) and Creswell et al. (2021) recommend that *all* anxiety disorders are assessed post-treatment and at follow-up in research trials. Very few studies were with clinically referred populations or active control groups. Furthermore, while 12 studies recruited participants from real world settings (e.g. schools), it remains unclear how generalisable the results of the studies are to adolescents with more severe clinical presentations of anxiety, who are seeking treatment in day or inpatient clinic settings. The majority of studies used passive or waitlist controls, potentially leading to an inflation of treatment effects, and there were insufficient studies to be able to conduct moderator analyses for diagnostic outcomes. We recommend that future studies fully report demographic factors (including socio-economic status and ethnicity) and participants' clinical characteristics using consistent measures between studies to report baseline and treatment outcomes. In particular, we encourage the consistent use of assessment tools, outcome measures and reporting standards as set out by a recent international consensus statement on reporting treatment trials of child and adolescent anxiety disorders (Creswell et al., 2021). It is imperative that RCTs meet high methodological standards, and we recommend the use of active control groups, reporting of adverse events and

reporting outcomes at follow-up to allow more rigorous examination of the effects of psychological interventions and potential moderating factors.

Conclusion

Although there is evidence of efficacy of psychological therapies (predominantly CBT) targeting anxiety disorders in adolescents compared to (largely waitlist) controls, they have only a moderate effect on symptom severity and only just over a third of adolescents are in diagnostic remission after receiving treatment. Within the studies, we were unable to identify any moderators that influenced treatment outcome. There is a clear need to develop more effective treatments, that reflect adolescents' specific developmental needs and that are evaluated through high-quality RCTs incorporating active controls and follow-up assessments to address the high prevalence, and substantial negative impact of adolescent anxiety disorders.

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Declarations

Conflict of interest HB, PW, PL, JK and CC have no competing or potential conflict of interest to declare.

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4 The Effectiveness of Psychological Therapies for Anxiety Disorders in Adolescents: Panic Disorder Findings

In paper two we considered the effectiveness of psychological therapy for anxiety disorders in adolescents more broadly and identified 17 studies in our systematic review. In this brief chapter, we will examine findings from all the studies that met inclusion criteria for the review[4] and included adolescents with a panic disorder diagnosis (primary or secondary) in their samples (k = 7). The aims of this chapter are to: 1) identify the number of disorder specific and transdiagnostic studies that included participants with either primary or secondary panic disorder, 2) present information related to the proportion of adolescents with primary or secondary panic disorder within studies, 3) present information related to treatment outcomes for these participants, and 4) present information related adolescents' and parents' experiences of treatment.

4.1 Disorder specific treatments

4.1.1 Primary panic disorder

One study out of the 17 studies (5.8%) identified in the review examined disorder specific treatment for adolescents with primary panic disorder, in a randomised controlled trial (RCT) (Pincus et al., 2010). Twenty-six adolescents (mean age 15.75 years) with a primary diagnosis of panic disorder with or without agoraphobia, were randomised to either 11 treatment sessions of the manualised treatment protocol 'Mastery of Anxiety and Panic for Adolescents: Riding the Wave' (MAP-A/PCT-A), or to a self-monitoring control group. Controls monitored their mood and panic attacks daily and saw a therapist fortnightly to

[4] This includes one study identified in the review that was excluded from the meta-analysis due to insufficient data being reported for analysis (O'Brien et al., 2007).

discuss self-monitoring. Parents were given handouts that explained panic disorder and instructions on how to encourage and support their child. Parents were encouraged to discuss questions about treatment with the therapist. Parents also participated in the last ten minutes of four treatment sessions. Adolescents who received PCT-A had significantly reduced panic severity (Clinician Severity Rating; CSR) post-treatment than controls, with large treatment effects (d = 1.09). These treatment gains were maintained at six-month follow-up. Adolescents in the PCT-A group also had reduced general anxiety, anxiety sensitivity and depressive symptoms post-treatment compared with controls. Adolescents' and parents' satisfaction with the treatment were evaluated using the perceptions of treatment questionnaire (PTQ), which included a free response section for qualitative responses. Adolescents' feedback identified that breathing retraining and psychoeducation were the most helpful components of treatment. The treatment was felt to be acceptable to adolescents and they reported reductions in panic and that they had learnt to 'face their fears' (Pincus et al., 2010). Parents reported feeling more able to support their adolescent with panic attacks. However, some participants suggested that a briefer treatment would be beneficial and more manageable.

4.1.2 Secondary panic disorder

Over half of the studies identified in the review (k = 9) focused specifically on adolescents with a primary diagnosis of social anxiety disorder (Baer & Garland, 2005; Ebrahiminejad et al., 2016; Hayward et al., 2000; Herbert et al., 2009; Ingul, 2014; Masia-Warner et al., 2007; Masia-Warner et al., 2005; Masia Warner et al., 2016; Olivares et al., 2002), and therefore did not include any participants with primary panic. However, of these nine studies, only one (11%) (Hayward et al., 2000) excluded adolescents with a secondary

diagnosis of panic disorder. Three out of nine studies (33%) reported having adolescents with a secondary diagnosis of panic disorder in their samples (Baer & Garland, 2005; Masia Warner et al., 2016; Olivares et al., 2002). However, treatment outcomes specifically for participants with secondary panic disorder were not reported in any studies (see Table 1 for full details).

Table 1. Inclusion and reporting of secondary panic disorder in primary social anxiety disorder studies

Author	Year	Sample size (n)	Secondary diagnosis of panic excluded	Sample included secondary panic n (% of sample)	Report secondary panic disorder outcomes
Baer & Garland	2005	11	Included	1 (9)	No
Ebrahiminejad et al	2016	25	Included	Not reported	No
Hayward et al	2000	33	Excluded	No	n/a
Herbert et al	2009	73	Included	Not reported	Not reported
Ingul et al	2012	128	Included	No	n/a
Masia-Warner et al	2005	35	Included	No	n/a
Masia-Warner et al	2007	36	Included	No	n/a
Masia-Warner et al	2016	136	Included	2 (1.5)	Not reported
Olivares et al	2002	59	Included	6 (10)	Not reported

4.2 Transdiagnostic anxiety disorder treatments

4.2.1 Primary panic disorder

Seven out of the 17 studies in the review (41%) included mixed primary anxiety disorder diagnoses within their samples and delivered transdiagnostic anxiety disorder treatments. Overall, six of these seven studies (85%) included participants with primary panic disorder (Ginsburg & Drake, 2002; O'Brien et al., 2007; Stjerneklar et al., 2019; Swain et al., 2015; Waite et al., 2019; Wuthrich et al., 2012) and one study (15%) (Spence et al., 2011) excluded those with primary panic disorder. One study, (O'Brien et al., 2007) did not exclude participants with panic disorder; however, they did not report the diagnoses of those who participated, therefore we do not know their sample contained participants with panic disorder. However, we identified that even when not excluded from participating, adolescents with primary panic disorder were present in only three out of seven studies (43%), each of which evaluated computerised, or internet delivered CBT (cCBT) (Stjerneklar et al., 2019; Waite et al., 2019; Wuthrich et al., 2012). The findings of these three studies are discussed in detail below.

Wuthrich et al. (2012) carried out an RCT of 'Cool Teens' 12-week cCBT program. The program included parental involvement (parents were given handouts and asked to support the adolescent with goal setting, graded exposure and psychoeducation and received three telephone calls from the therapist during treatment). Wuthrich et al. (2012) reported that 10.5% of their total sample (n = 43) had primary panic disorder. However, although they found overall that 40% of the intervention group were in remission from their primary disorder post-treatment, outcomes specifically for panic disorder patients were not reported. Adolescents completed two questionnaires to assess acceptability and satisfaction with the

treatment and these included a free response feedback section (The Preferences and Attitudes Questionnaire and Barriers to Treatment Participation Scale). Adolescents reported that the program was useful and acceptable, they liked psychoeducation and listening to calming music as part of the program. Time was reported to be the most significant barrier to treatment. However, we do not know if this feedback came from adolescents with a diagnosis of panic disorder and parental feedback on the treatment was not reported.

Similarly, in an RCT, Waite et al. (2019) evaluated BRAVE for Teenagers-ONLINE (Spence et al., 2006). Sixty adolescents (13-18 years of age) received ten weekly sessions and two booster sessions of cCBT. Parents of half the sample also received cCBT sessions to compare outcomes for adolescents with and without parental involvement. Waite et al. (2019) reported the number of adolescents with primary panic disorder distributed within their sample: 13.3% (n = 4) of the intervention group and 13.3% (n = 4) of the control group had panic disorder (either with or without agoraphobia). Overall, 40% of the intervention group were free of their primary diagnosis after receiving cCBT, however outcomes specifically for the adolescents with panic disorder were not reported. Adolescents' and parents' satisfaction with treatment were measured using two questions scored on a five-point Likert scale. Almost half the adolescents in the study (n = 27), and 28 of the 43 parents (65%) who competed this measure reported being either very or extremely satisfied with treatment. However, we do not know if this feedback came from adolescents with a diagnosis of panic disorder or their parents, and no qualitative feedback was reported.

Only one study (Stjerneklar et al., 2019) reported treatment outcomes for participants with primary panic disorder. In an RCT, Stjerneklar et al. (2019) examined the 'ChilledOut

Online' treatment program (based on 'Cool Kids') (Lyneham et al., 2014). Adolescents received eight online treatment modules. Parents were provided with information on treatment (the 'ChilledOut Parent Companion') and asked to encourage and support their child through the treatment. Of the 70 adolescents in the sample, five had a primary diagnosis of panic disorder (7% of the sample). While overall, 40% were in remission from their primary diagnosis post-treatment, compared with 16% of those in the WLC, 67% of participants with panic disorder (two out of three) were free of their primary disorder post treatment, while none of those with panic and agoraphobia were in remission post-treatment. Although this indicates treatment outcomes may be poorer for those with agoraphobia, the number of participants is too small to generalise these findings and there may have been other clinical factors that accounted for these differences in outcomes (e.g., baseline severity of disorders, or how entrenched the disorders were pre-treatment). When Stjerneklar et al. (2019) examined differences in outcomes between different primary diagnoses, there was no statistically significant difference in outcomes between disorders (Fishers Exact Test Value = 11.05, $p = .062$). Although limited by the small sample of adolescents with panic ($n = 3$), it is interesting that 67% were free of panic disorder after receiving a transdiagnostic anxiety disorder treatment, and warrants further examination in RCTs with larger samples of adolescents with panic disorder. Adolescents and parents completed post-treatment satisfaction questionnaire (The Experience of Service Questionnaire) which included an open-ended section for qualitative responses. Adolescents were broadly positive about treatment, however one adolescent reported wanting more time, and one adolescent wanted face-to-face therapy rather than cCBT. However, the primary diagnosis of these participants was not reported and so we do not know if this feedback came from adolescents with panic disorder or parents of those with panic.

4.2.2 Secondary panic disorder

Of the seven studies that included mixed primary diagnoses in their samples described above, two did not report whether they included secondary panic disorder or not (Ginsburg & Drake, 2002; Swain et al., 2015). Of the remaining five studies that reported inclusion of adolescents with a secondary diagnosis of panic disorder (O'Brien et al., 2007; Spence et al., 2011; Stjerneklar et al., 2019; Waite et al., 2019; Wuthrich et al., 2012), only one study reported the number of participants with comorbid conditions by diagnosis (Waite et al., 2019). Waite et al. (2019) reported there were no adolescents with secondary panic in their sample. Although of the remaining five studies, three reported that a high proportion of adolescents had secondary anxiety disorder diagnoses (e.g., Stjerneklar et al. (2019); 73% of participants (n = 51), Spence et al. (2011); 84%, (Wuthrich et al., 2012); 77.3% of the intervention group and 94.7% of controls), they did not report the type of secondary anxiety disorder diagnosis. Therefore, we do not know what proportion of participants may have had secondary panic disorder in these study samples.

4.3 Conclusion

Overall, these findings highlight the low representation of adolescents with panic disorder in RCTs of psychological treatments for anxiety disorders. Where participants with primary panic disorder were included in studies, they made up between just 3% and 13% of total samples. Although 14 of the 17 studies identified in the review (82%), included adolescents with a secondary panic disorder diagnosis, only three studies (18%) included and reported the number of participants with secondary panic disorder in their samples, and these participants made up between 1.5% and 10% of study samples. Treatment outcomes for secondary panic disorder were not reported in any studies. Therefore, specific outcomes for

primary panic disorder, only reported in one paper (Stjerneklar et al., 2019), cannot be generalised due to the small numbers of panic patients included. Furthermore, nothing is known about outcomes for adolescents with secondary panic disorder. There is a need for larger numbers of adolescents with panic disorder to be included in samples, as well as outcomes to be reported by diagnosis in studies were mixed diagnostic samples are used, so that disorder specific outcomes can be clearly understood. This would allow a better understanding of the effectiveness of transdiagnostic treatments on panic disorder symptoms and remission status among adolescents with panic disorder. There is also a need for clear reporting of comorbid diagnoses of participants in treatment trials and examination of the impact of treatments targeting specific anxiety disorders (i.e., social anxiety disorder) as well as transdiagnostic treatments, on secondary anxiety diagnoses, including panic disorder.

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5 Paper 3: Adolescents' Lived Experience of Panic Disorder: An Interpretative Phenomenological Analysis

Abstract

Panic disorder is a debilitating anxiety disorder that has a serious impact on adolescents' social and academic functioning and general wellbeing. Panic disorder is experienced by around 1 to 3% of the adolescent population. The aim of this study was to examine adolescents' experience of having panic disorder.

Semi-structured interviews were conducted with eight adolescents with a primary diagnosis of panic disorder. Interpretative Phenomenological Analysis (IPA) was used to gain an understanding of adolescents' lived experience of panic disorder. A six-step process of analysis was followed; reading and re-reading transcripts, initial noting, developing emergent themes, looking at connections across emergent themes and then across cases, developing superordinate and subordinate themes.

Two superordinate themes were identified: 1) Drowning in sensations and 2) An unacceptable self. The findings show that adolescents experience panic disorder as an extremely overwhelming, unpleasant, and debilitating feeling of drowning in sensations. Adolescents' experiences largely fit with the cognitive model of panic, with catastrophic thoughts and misinterpretation of bodily sensations leading to increasing anxiety, and avoidance behaviours, creating a vicious cycle of panic. Attempts to avoid or prevent the attacks appear to inadvertently make them worse and ultimately adolescents felt unable to prevent panic attacks, leaving them feeling defeated. Social worries, feeling broadly misunderstood, and unhelpful responses from others, contributed to feelings of being different or abnormal and were connected with a negative self-concept.

These findings offer new insight into these adolescents lived experience of panic disorder, highlighting the intensely negative physical and psychological experience as well as

the fact that social factors are particularly salient and that panic disorder negatively affected self-concept. Given the debilitating impact of panic disorder for adolescents, the need for access to timely, evidence-based treatment is needed, as well as the need for increased awareness and understanding of panic disorder in schools.

Introduction

Panic disorder is a debilitating anxiety disorder, characterised by repeated, unexpected panic attacks, involving physical symptoms, such as a racing heart, dizziness and chest pain, along with a fear of recurring attacks and changes in behaviour to avoid further attacks (American Psychiatric Association, 2013). Less than 0.5% of pre-adolescent children (aged under twelve years) experience panic disorder (American Psychiatric Association, 2013; Cartwright-Hatton et al., 2006). However, panic disorder is experienced by around 1 to 3% of adolescents (Essau et al., 2000; Merikangas, 2010; Vizard et al., 2018), with peak onset between 15 and 19 years of age (Von Korff et al., 1985). Panic disorder commonly co-occurs with other anxiety disorders, particularly agoraphobia (Wittchen et al., 1998) and is more prevalent among girls (1.7%) than boys (0.5%) (Vizard et al., 2018). It typically has a negative impact across different areas of adolescents' lives, including social interactions and academic functioning (Kearney et al., 1997). Recent evidence suggests that clinicians appear to commonly have difficulty identifying panic disorder in adolescents (Baker & Waite, 2020). While there are cognitive behavioural treatments that have been demonstrated to be effective in the treatment of panic disorder in adolescents (Pincus et al., 2010), a significant minority continue to experience panic disorder post-treatment. Therefore, it is crucial that we develop a greater understanding of adolescents' experience of panic disorder to improve its identification and treatment.

The existing literature gives some indication of the diagnostic symptoms experienced by children and adolescents with panic disorder. The most common symptoms experienced by more than two thirds of children and adolescents (aged 8-17 years) with panic disorder appear to be dizziness, shortness of breath (Achiam-Montal et al., 2013), palpitations and shaking (Diler et al., 2004; Last & Strauss, 1989). Around half of young people also report

experiencing cognitive symptoms including fears of dying (Achiam-Montal et al., 2013; Last & Strauss, 1989; Masi et al., 2000), depersonalisation/derealisation, and fears of going crazy or losing control (Achiam-Montal et al., 2013; Last & Strauss, 1989; Masi et al., 2000). This is consistent with evidence of an association between panic disorder and anxiety sensitivity (Elkins et al., 2014; Kearney et al., 1997) i.e., a tendency to believe that the experience of anxiety causes illness, embarrassment, or further anxiety. Kearney et al. (1997) found that children and adolescents aged 8-17 years had higher levels of anxiety sensitivity than those with other anxiety disorders and Elkins et al. (2014) found a significant association between anxiety sensitivity and panic disorder symptom severity in adolescents aged 11-17 years. However, it is notable that many of the studies examining the phenomenology of panic disorder in young people were published more than 20 years ago. In addition, caution is warranted in relying on findings from studies that include children as well as adolescents, especially given the very low rates of panic disorder among pre-adolescent children (American Psychiatric Association, 2013; Cartwright-Hatton et al., 2006). Given that panic disorder is largely seen in adolescents rather than children, further research is required specifically with adolescents, and to move beyond symptoms to better understand the broader lived experience of panic disorder in adolescents.

In contrast to adolescents, panic disorder in adults is well understood, with a well-validated model that allows us to understand the development and maintenance of panic disorder (Clark et al., 1994; Clark, 1986, 1999). Clark's 1986 cognitive model of panic (Clark, 1986) proposes that normal physiological anxiety responses are misinterpreted in a catastrophic way (e.g., an increased heart rate may be misinterpreted as a heart attack), and that the individual perceives immediate danger, causing further apprehension and bodily sensations that culminate in a panic attack. Raffa et al. (2004) found that 90% of adults with

panic disorder had between 1 and 4 feared consequences during a panic attack, with the most common fears being embarrassment, death, fainting, going crazy, losing control and inability to cope/loss of independence (Raffa et al., 2004). Safety behaviours are protective behaviours aimed at avoiding or preventing perceived threats and are present across anxiety disorders (Telch & Lancaster, 2012). Avoidance strategies and safety behaviours are commonly used, for example, avoiding situations or activities that are perceived to elicit panic attacks (American Psychiatric Association, 2013), and contribute to the maintenance of panic cognitions (Salkovskis et al., 1996). However, it is not known if adolescents' experience of panic disorder is similar to adults, in terms of how they make sense of the sensations and what they do to try to cope during panic attacks.

It is possible that adolescents' experience of panic disorder differs to that of adults due to developmental differences, as well as differences in their environment. Adolescence is characterised by physical, behavioural, social and cognitive changes (Blakemore, 2008; Kilford et al., 2016), with the adolescent brain undergoing structural and functional changes (Kilford et al., 2016). Neurological development of the 'social brain' (Adolphs, 2009) is of particular importance during adolescence and is informed by perceptions of how others view us (e.g., other people think I'm weird) (Sebastian et al., 2008). Coupled with these changes, social interactions become more complex and more important than among younger children (Moneta et al., 2001). Furthermore, adolescents experience increased self-awareness (Elkind, 1967; Schwartz et al., 2008) and a continuing development of self-concept, which is particularly influenced by peers (Sebastian et al., 2008). Social interactions also have an increased impact on adolescent's psychological wellbeing compared with children and adults (Rubia et al., 2006), with negative social interactions and peer rejection leading to worsened mood, increased distress and anxiety (Platt et al., 2013). These factors are likely to be salient

for adolescents with panic disorder, and negative experiences and interactions are likely to be particularly impactful, due to a combination of these developmental sensitivities. In addition, adolescents are likely to be in full-time education and living at home with parents, and so it may be particularly important to understand the role played by others (i.e., school staff, peers, and family members) in adolescents' experiences of having panic disorder.

Qualitative research methods are particularly useful for exploratory research questions in the field of mental health, where little is already known about the phenomenon (Harper & Thompson, 2011). To our knowledge, there are no published qualitative accounts of adolescents' experience of having panic disorder (or indeed anxiety disorders more broadly). There is one qualitative interview study of 14–18-year-olds who had experienced panic attacks within the last year (but had not been diagnostically assessed for panic disorder) (Hewitt et al., 2021). Semi-structured interviews of ten adolescents (mean age 16.7 years) were analysed using Interpretative Phenomenological Analysis (IPA). Six themes were identified that included panic attacks feeling intense, overwhelming, out of control and like a battle within themselves. Mental images enhanced the intensity of panic. As a consequence, adolescents felt isolated, disconnected from others, and the attacks had a negative impact on identity (Hewitt et al., 2021). Hewitt et al. (2021) concluded that further research with clinical samples of adolescents with a diagnosis of panic disorder would be important in addressing the limitation of potential diagnostic heterogeneity in their sample and enabling further understanding of this phenomenon.

The current study is the first to explore the lived experience of adolescents with a primary diagnosis of panic disorder. We focused on adolescents aged 11-18 years, as panic

disorder is prevalent within this age range, and this age group share similar environments (e.g., likely to be living at home with family members and in full time compulsory education). Specifically, the research aims to gain an in-depth understanding of adolescents' lived experience of panic disorder.

Methods

This was a qualitative, one-to-one, semi-structured interview design. Ethical approval for the study was obtained from the University of Reading Ethics Committee (REF: UREC 19/46) and through the NHS Research Ethics Committee (REF: 19/SC/0287).

Methodology

Interpretative Phenomenological Analysis (IPA) (Smith et al., 2009) is an idiographic approach grounded in understanding individual experiences (Larkin et al., 2006) and has utility in its clinical application and within wider theoretical contexts (Howitt & Cramer, 2010). IPA was used to understand adolescents' subjective experience of the phenomenon of panic disorder. The lead researcher (HB) approached the analysis from a phenomenological philosophical perspective.

Participants

As is typical for IPA, we aimed for a homogenous sample. Participants were included in the study if they were aged 11-18 years, had a DSM-5 diagnosis of panic disorder (American Psychiatric Association, 2013), experienced at least one panic attack in the preceding month and did not have an autistic spectrum disorder, learning disabilities, suicidal intent, or recurrent or potentially life-limiting self-harm. Eight participants were interviewed for the study, and all had panic disorder as their primary anxiety disorder diagnosis. Their demographic and clinical characteristics are shown in Table 1. In terms of demographic

backgrounds, they represent a reasonably homogenous sample as is desirable in IPA. In terms of gender (with only one participant identifying as male and the remainder as female), and ethnicity (with only one participant from a background other than White British).

Recruitment

Participants were recruited using purposive homogenous sampling. All participants had been recruited to a NIHR-funded feasibility study of the treatment of panic disorder in adolescents, being conducted within the same NHS-commissioned Anxiety and Depression in Young People (AnDY) clinic at The University of Reading. Participants were referred for treatment by primary and secondary care services, or recruited through local advertising (e.g., in schools, GP surgeries and on social media). Once referred for treatment, an assessment was conducted to determine whether they met diagnostic criteria for panic disorder (i.e., recurrent, unexpected panic attacks with four or more symptoms and persistent worries about future attacks or related changes in behaviour) (American Psychiatric Association, 2013) and were eligible for the trial. Interviews took place between October 2019 and October 2020. The first five interviews took place before the Covid-19 pandemic and UK lockdown which began on 16th March 2020. Three interviews took place during the pandemic.

If participants were eligible and agreed to take part in the trial, they were then approached face to face and asked if they would like to participate in a qualitative interview about their experience of having panic disorder. Written informed consent was given by the parent and the young person (or assent for young people under 16 years of age). Participants were the first eight sequentially to agree to participate. One participant in the trial declined to be interviewed but did not provide a reason. The sample size was typical of IPA as analysis is based on detailed, in-depth examination of a small number of cases (Smith et al., 2009).

Table 1. Participants' demographic and clinical information

Participant	Age	Gender	Ethnicity	Panic disorder CSR	PDSS-C	Agoraphobia CSR	SAD CSR	GAD CSR	SepAD CSR
Mia	17	Female	White British	4	4	-	-	-	-
Andrew	13	Male	White British	7	8	7	4	-	-
Emma	14	Female	White British	6	24	6	6	5	5
Olivia	13	Female	White British	5	7	5	-	-	-
Eva	13	Female	White British	5	10	5	-	5	-
Alexandra	16	Female	White British	6	9	-	-	-	-
Azita	16	Female	Other	7	24	7	4	-	-
Lilly	17	Female	White British	6	10	-	5	-	-

Note. SAD = Social Anxiety Disorder, GAD = Generalised Anxiety Disorder, SepAD = Separation Anxiety Disorder, CSR = Clinician Severity Rating (scores range from 4 (clinical cut-off) moderate to 8 (very severely disabling/disturbing), PDSS = Panic Disorder Severity Scale (PDSS includes seven items; each rated on a 0-4 scale (maximum score = 28), with a higher score indicating greater severity).

Procedure

Data was collected using one to one, semi-structured interviews conducted by lead researcher HB, a female postgraduate researcher in psychology who had training and experience in qualitative research. The study was carried out as part of the lead researcher's PhD. The interviewer had not met participants prior to them agreeing to take part in the interview and was not involved in the wider feasibility study. Interviews took place prior to the participants beginning treatment for panic disorder. They were conducted with only the researcher and the participant present, either at the clinic (n = 4), in the young person's home (n = 3) or via video-conferencing software (n = 1) (due to restrictions due to the Covid-19 pandemic). Participants were reimbursed for the time taken to participate. At the start of each interview the researcher (HB) explained that the purpose was to gain an understanding of young peoples' experiences of having panic disorder. Interviews were guided by broad, open questions based on an interview schedule (see supplementary materials Figure S1) that was developed in line with IPA methodology and recommendations for developing an interview schedule (Smith et al., 2009). The interview schedule included questions covering the participant's experience of having a panic attack, perceived causes, and how panic had affected their life. Each participant determined the flow of the interview, including the topics and the depth to which they were discussed. Prompts were used to encourage participants to explore topics that seemed be of importance to the individual. Interviews were audio-recorded and ranged from 18-63 minutes long (mean = 40 minutes). After each interview, audio recordings were re-listened to as they were transcribed verbatim by HB. Transcripts formed the raw data. NVivo 11 software was used to organise the data. Pseudonyms were allocated to participants to protect their identity.

Measures

The Anxiety Disorders Interview Schedule (ADIS-C/P; Albano & Silverman, 1996), and Kiddie Schedule for Affective Disorders and Schizophrenia (K-SADS; Kaufman et al., 1997) were used to determine diagnoses of panic disorder and co-morbid disorders. Panic symptom severity was assessed using the Panic Disorder Severity Scale for Children (Elkins, 2016). Further information on all measures is included in supplementary materials (Supplementary materials Figure S2).

Analysis

Analysis was completed in a six-step process in line with recommendations for using IPA (Pietkiewicz & Smith, 2014; Smith et al., 2009). Analysis was carried out with one transcript at a time, the lead researcher (HB) immersed herself in the data, attempting to 'stand in the shoes' of each subject. The following steps were completed before moving on to the next transcript. Initial exploratory notes on each individual transcript were made, commenting on descriptive, linguistic and conceptual points (Smith et al., 2009) in the transcript of each participant. Notes were made on each transcript of emerging themes as well as participants explicit meanings, focusing on thoughts and experiences expressed and on linguistic points of interest (e.g., pauses, words/phrases emphasised by the participant). The lead researcher (HB) made interpretations that went beyond explicit meanings to implied meaning, exploring emotional responses of both the participant and researcher to gain an understanding of participants' lived experience. Initial emergent themes were developed into subordinate and superordinate themes by exploring connections and patterns between cases, examining similarities and differences between accounts, while remaining closely tied to participants' accounts. The lead researcher (HB) engaged in a double hermeneutic process, as the researcher tried to make sense of the participants experience, while the participant is also

trying to make sense of their own experience. The researcher made reflective notes in a reflective log throughout the process, recording thoughts, feelings and interpretations of possible meanings and connections to theoretical perspectives. This allowed the researcher (HB) to explore her responses, bring awareness to assumptions and biases and how these may affect the interviews and analysis. Therefore, this process aided the researcher in 'bracketing off' (Smith et al., 2009) these assumptions and biases. Emergent themes, subordinate and superordinate themes were discussed with AH, a health psychologist and PW, a clinical psychologist, who are both researchers with qualitative expertise. Researcher biases and assumptions were considered and included being a parent of two adolescents (HB, PW), previous experience working in adult (HB, PW) or child and adolescent mental health services (PW), conducting research into young people's mental health (HB, PW), having worked specifically with adults and adolescents with panic disorder from a Cognitive Behavioural Therapy perspective (PW) and working in adult physical health (AH, HB, PW). Alternative interpretations were considered and discussed. Transcripts were revisited and themes were re-analysed in an iterative process; ensuring that each participant's experience was incorporated, emergent themes were re-ordered before establishing final subordinate and superordinate themes and identifying illustrative participant quotes.

Rigour and study quality

The study was carried out in accordance with the quality guidelines for qualitative research set out by Yardley (2000), including the four principles of sensitivity to context, commitment and rigour, transparency and coherence and impact and importance. Sensitivity to context was demonstrated through paying particular attention to the interview process, taking time to put participants at ease, using informal language, being aware of the participants sensitivities and of the power imbalance between interviewer and interviewee. This sensitivity continued throughout the analysis process. Commitment and rigour were

addressed by recruiting a sample that was homogenous in terms of all being recruited to the same anxiety clinic, all assessed using the same gold standard assessment, all participants had a primary diagnosis of panic disorder and were similar in terms of age. To increase study rigour and transparency, an audit trail was kept throughout the study and analysis process documenting how themes were developed ideographically and across participants. We also followed the criteria for quality and validity specifically in IPA (Nizza et al., 2021; Smith, 2011). Quality and validity was addressed by sharing transcripts and analysis of individual cases as well as across cases with AH and PW. In line with the recommendations of Smith, (2004), respondent validation was not carried out. By adhering to the guidelines set out by (Nizza et al., 2021) we increased the overall trustworthiness of this IPA study.

Results

Analysis resulted in two superordinate themes: 1) Drowning in sensations and 2) An unacceptable self. An overview of superordinate and subordinate themes are presented in Table 2. Together, these themes identify how adolescents experience panic disorder and the most salient aspects of their lived experience.

Table 2. Superordinate and subordinate themes and prevalence within transcripts.

		Participant pseudonyms							
Superordinate theme	Subordinate theme	Mia	Andrew	Emma	Olivia	Eva	Alexandra	Azita	Lilly
Drowning in sensations	"A vicious kind of circle"	*	*	*	*	*		*	*
	In the face of death			*	*	*		*	*
	"A different mentality"	*	*	*	*		*	*	*
	Defeated by the Tsunami	*	*	*	*	*	*	*	*
An unacceptable self	Under the social spotlight	*	*	*	*	*	*	*	*
	The unhelpful helpers	*	*	*	*	*	*	*	*
	The outsider	*	*	*	*	*	*	*	*

Key: * marks where theme was present in transcript.

Drowning in sensations

This superordinate theme represents adolescents' experience of panic disorder as an intensely unpleasant physical, cognitive and emotional experience. Each of these elements were interwoven in the experience, as adolescents tried to make sense of what was going on in their bodies and minds. This superordinate theme is presented in four interrelated subordinate themes: "A vicious kind of circle", In the face of death, "A different mentality" and Defeated by the Tsunami.

"A vicious kind of circle"

The onset of panic attacks associated with panic disorder were experienced by each of the adolescents as a series of sudden overwhelming physical sensations. These sensations were present in the lead-up to, and during panic attacks, and included feeling their heart pounding, feeling they could not breathe, sweating, shaking, stomach pains, tingling in parts of the body, and dizziness. These sensations were experienced as confusing, frightening, catastrophic and totally overwhelming, as adolescents struggled to understand what was happening to them.

> My lungs tend to like tighten-up and I can't really breathe that well and in my stomach, I get like stomach pains. I feel quite uneasy and just like anxious and unsure. I just I feel all shaky, like my legs will shake, my hands will shake (Eva).

Eva's account illustrates how feelings of anxiety were accompanied by a range of sensations in the body, feeling shaky, stomach pains and a tight chest, that begin to affect Eva's breathing. Eva is "unsure" of what is happening to her or what these physical sensations mean.

> It normally starts in your fingertips and your toes go all really tingly and then like it just starts spreading up your legs and stuff and then you can't move at all cus once the

> tingling starts, after that you can't feel anything and then um like when the dizziness, you'll like stand up or something and then you just, it's like a spinning sensation, also like unsteadiness and you feel like if you don't hold onto something, you're just going to fall. You can't breathe properly and like erm, you get like quite snotty, so it kind of all just, you kind of just drown in everything. If it starts happening, then I'll think that I'm going to have a panic attack and then that will make me panic. When you're having a panic attack you just think like the worst of everything (Emma).

Emma describes the onslaught of a series of sensations that sweep through her body, beginning with tingling and leading to feeling unsteady and dizzy. Emma feels that the sensations will overwhelm her, and she needs the support of something to stay standing, needs to hold on to prevent herself falling over, as she is engulfed in the wave of sensation. The image of "drowning in everything" represents Emma's feelings of being totally immersed in physical sensations. Emma identifies how, as she experiences these sensations, she thinks of the worst-case scenario and that these thoughts lead to further feelings of panic, and that thinking about panic attacks "makes" her panic. Alongside the physical sensations, all adolescents experienced intense thoughts that were catastrophic in nature. Commonly, adolescents found that thinking about potentially catastrophic outcomes further fed their anxiety, increasing feelings of uncertainty and fear. This intensified their physical symptoms and contributed to the escalation of attacks in a cyclical way.

> When I think about it, it gets worse and worse anyway, if I think what could happen (Lilly).

In the quote above, Lilly identifies the power of her thoughts in the cycle of a panic attack, and how thinking about panic, and anticipating that it might happen, made it worse.

> I always catastrophise about it. I was worried that I'd feel nervous, then it kept on going round and round like a vicious kind of circle, and then I started to kind of get like, develop more worries for like my health, and like I was going to have a heart attack (Olivia).

Olivia demonstrates how she interprets the physical sensations as meaning that something is seriously physically wrong and how this fear goes around in a "vicious kind of circle", increasing her worries about her health even outside of having panic attacks and worrying more broadly about her health.

In the face of death

As increasing worst-case-scenario thoughts arose, leading to escalating panic attacks, for some adolescents, thoughts about what was wrong with them, and potential outcomes of the panic attack centred around fears about dying.

> Physical symptoms, like not being able to breathe or anything, they're really scary. If it's like a tight chest, I'll think like that I'm not going to be able to breathe and then die. With like a dry throat, I'm going to choke or suffocate or something like that and like my heart beating really fast I think I'll have a heart attack or something (Emma).

In Emma's description, she comes face to face with the idea of death as the escalation of physical sensations and the interpretation of the sensations signals that potentially, she could have a heart attack and could even die. Azita also experienced facing the idea of death as she voiced her thoughts and fears that she would die during a panic attack:

> At first, I struggled to breathe and then I felt like I was going to faint on the floor, it was terrifying, and I was just panicking, and I just kept like trying to hold on to my

> mum and like squeeze her. I didn't understand what was going on or why I felt that way, so I was, I was confused as well. I thought I would die (Azita).

Azita's extract, where she describes her first panic attack, demonstrates how the lack of understanding about what was happening to her increased feelings of terror, as her fears escalate from worrying about fainting, to worrying that she was going to die. An overwhelming, terrifying series of unexplained physical sensations leads Azita to fear the worst and come face to face with feeling she would die.

In the face of being overwhelmed by thoughts about dying, adolescents understandably felt frightened of the idea of dying and did not want to die.

> [In the cinema] I was kind of worrying about heart attacks as well and I was thinking well, if you do have a heart attack, then what's going to happen? You're in the dark and no one can see you, you know? I was thinking well if I have a heart attack, I'm going to have to go to hospital and I don't want to do that, like, I don't want to die (Olivia).

During her experience of having a panic attack, Olivia fears that she could have a heart attack, and worries about the potential outcomes of what could happen. Her fear is that she may not receive help, if, due to the darkness in the cinema, nobody noticed what was happening to her. Olivia also fears going to hospital. Both not receiving help, and going to hospital, where she could receive medical help, signify that she *could* die, and this is a frightening prospect, as Olivia verbalises and connects with her deepest fear, that she does not want to die.

"A different mentality"

This subordinate theme expresses how, in response to the wave of physical sensations, catastrophic thoughts and fears of dying, participants experienced feeling as though they were in a different state of mind. Adolescents experienced a change in the way they perceived things, feeling that the way their mind operated was different than when in a non-panic state. Feelings of unreality, as though in a dream state, were experienced, and this was disorienting.

> You're in a different mentality. You kind of go into this kind of response that's not logical, it's like if your logically thinking about something, then you can weigh out the pros and the cons and you can tell yourself 'well no nothing bad is going to happen, you're going to be fine', but in a panic attack you're already, you're past that and you're already at a stage where you will just kind of, your body is telling you to get out of there, like get out of that situation. It's just like a, not a logical response and it's, it's not like there's something inside me, like a monster, but I'm just, but I'm just thinking at the time like, well after I'm thinking, oh that's just your brain like giving these warnings off, but there's no, there's nothing to be warned about, it's just this like, it's just you are making things up (Olivia).

Olivia's comparison of a mind that is "logical" and "not logical" emphasises the experience of being in an altered state of mind. As Olivia describes how, in her usual mind, she would be able to try and calm herself down by evaluating a situation and reassure herself that nothing "bad is going to happen". During panic attacks, this capacity is lost, and "a different mentality" takes over. Olivia describes her brain as like an alarm system, signalling danger. Olivia is aware that there is no external danger, that the perception of danger is coming from within her. Although Olivia identifies the "illogical" nature of this experience, she is unable to change her responses, prevent feelings of fear or the escalation of panic attacks, because she is beyond the point of being able to calm herself down.

> I sometimes feel like I'm not really there, that I'm kind of dreaming (Mia).

Mia's extract illustrates how she does not feel mentally present during panic attacks, while her body is overwhelmed with physical sensations and her mind races with thoughts about what is happening to her, she feels mentally separated or disconnected from the experience, and that she is not really there, the mind is not fully present. Feeling unreal or like in a dream expresses feelings of being in a different mental state. Sometimes this altered state of mind was experienced as the perception of things around them changing.

> I feel like the walls are just getting closer and closer and stuff even though they're not. It's like in, like adventure shows or movies. It feels sort of erm, slightly unreal (Emma).

Emma's account depicts how this experience is different from everyday experience, there is a qualitative difference in how Emma's mind perceives things and thus how she experiences the world around her during her panic attacks. The metaphor of being in a movie, or an adventure show, highlights Emma's feelings of unreality. Emma's excerpt also illustrates how this experience is a frightening and suffocating one, as she feels like she is being compressed between walls that are closing in on her, and there is no escape.

Defeated by the Tsunami

This subordinate theme illustrates how, despite attempts to avoid, prevent, or bring an end to the panic attacks, adolescents felt trapped within the experience and felt they needed to escape. Despite continuing to try different strategies to stop or escape the panic attacks, once underway, they were ultimately unavoidable and, in the end, adolescents were unable to escape the experience. This left them feeling powerless, like they had been defeated by the Tsunami of physical sensations and catastrophic thoughts.

> I just felt like I was trapped. I was trapped, I couldn't breathe. I don't really know how to describe it but it's, it's not nice, because you feel like you can't get out (Lilly).

As panic symptoms escalate and she feels unable to breathe, Lilly experiences overwhelming feelings of being trapped. Not being able to “get out” means that the panic attack will spiral out of control. Getting out of the situation means a chance of bringing the panic attack to an end, however, there is no way out, as Lilly feels out of control of her body and mind. Most adolescents experienced similar feelings of being trapped and needing to escape during attacks, and this is further demonstrated by Olivia in the quote below:

> In a panic attack I think your mind goes into like kind of, you know, the sirens on an ambulance, that’s what it kind of does and it like, it goes into an emergency and its thinking well there’s a danger, and you, those kind of lights just start kind of flashing [hands make flashing gesture] and then like, and then your mind, the only thing that you’re trying to think is you have to get out of here, you have to run, you have to, you have to go somewhere else (Olivia).

The language that Olivia uses expresses the urgent need to escape and depicts this experience as the mind being in an emergency mode. Olivia describes her brain giving off warnings, like ambulance sirens, signalling an immediate danger, as the wave of panic approaches and takes over her. This response overwhelms Olivia, as the only thing that she is thinking is how she can get out, run and get away.

During panic attacks, some adolescents used techniques to try and bring them to an end, regain control of the mind and body, and prevent defeat. However, these attempts usually failed.

> I've tried this breathing technique a friend taught me. Breathe in four breaths, hold for four, breathe out for six. Sometimes it will do absolutely nothing. Sometimes it will just make it worse. The feelings I'm getting have just been intensified. I've tried to calm it down *thousands* of times, but I just can't get it to calm down. So, then it stresses me out

> even more, because I've just got to the point where I just let them just go. At the moment I'm just trying, I just try and ignore them at the moment because I, I know I can't do anything to calm down at this point, but I try sometimes, it just makes them worse... So realistically, I've just given up trying to calm them down (Alexandra).

Alexandra had tried using a breathing technique to regain control over the wave, however she felt this did not help, or had sometimes made her feel worse, intensifying the sensations, as the panic attack had taken over in spite of attempts to stop it. Alexandra experiences these attempts to end the panic attack as a futile cycle of trial and error of strategies. The best-case-scenario seems to be that they do not help at all but, sometimes, using these strategies only intensifies her experience. As Alexandra's symptoms escalate, she is unable to gain control over them, and cannot calm herself down. The repeated experience of this cycle has led to Alexandra's feelings of resignation, as she has realised that she cannot control or avoid the panic state and has "given up" trying to stop them. The panic attacks feel inevitable. All adolescents expressed similar feelings of ultimately being defeated by the overwhelming wave of physical sensations, thoughts and feelings, as panic attacks persisted.

> It's just kind of being overwhelmed with all these feelings that you can't really control or like hide in a way, like it just all kind of floods out of you and makes you feel really weak. It just makes me feel really weak like I can't, I feel like I can't walk properly, like I just feel really like, not capable of doing things (Eva).

Eva's account describes how the experience of panic disorder feels like a flood, an uncontrollable force that cannot be prevented. Eva feels she is unable to hide from it, there is no escape from the experience. This leaves Eva feeling powerless, physically drained and weak, that she has lost the battle against her panic symptoms and has been defeated by the

Tsunami. This loss of control over the body was experienced as disempowering and evoked feeling a loss of agency.

An unacceptable self

This superordinate theme illustrates how adolescents felt that they were unacceptable to themselves and to others. All participants experienced intense social worries and fears of being judged in relation to their panic attacks and worried about having attacks in front of people. These social worries were experienced by adolescents both with and without comorbid social anxiety disorder (SAD). Although people sometimes tried to help, adolescents experienced unhelpful responses that were founded in a lack of understanding of panic disorder. When they did have panic attacks in the presence of others, or confided in people about their experiences, adolescents often experienced negative responses or unhelpful reactions. Negative interactions, feeling misunderstood and being rejected because of this lack of understanding, contributed to feelings of being different from other people, and not being acceptable to others or to themselves. These feelings fed into an overarching negative self-concept, feeling they were not normal and of being an outsider. This superordinate theme is expressed in three subordinate themes: Under the social spotlight, The unhelpful helpers and The outsider.

Under the social spotlight

This subordinate theme represents participants' worries about being judged negatively by other people or being stigmatised in relation to their panic attacks. These social worries were part of the experience of panic disorder for all adolescents in this study. This included

feeling that if people knew about their panic disorder, they would not want to be friends with them, would think they were weird, or not normal and that they would be treated differently.

> I'm trying, I'm trying to hide what's going on, but I can't, because in the moment you want to scream, you can't breathe, you're freaking out, but you also don't want anyone to stare at you or to realize what's going on, because obviously they won't understand what's going on. That kind of makes it worse, because while you're trying to manage a panic attack, you're also trying to look like you're not having one, because you don't want people's judgment and even afterwards, you're embarrassed because everyone just saw you freak out (Azita).

Azita's extract emphasises how she feels that the panic is something she needs to hide from other people. The overwhelming, frightening experience of the attack, feeling she cannot breathe and wanting to scream is coupled with anxieties and embarrassment about how others may view what is happening to her and the need to contain it. "Obviously they won't understand" shows us how Azita feels alienated, that other people don't understand her experience, and that she will be judged negatively. This extract demonstrates how these social worries feed into the panic cycle, increasing symptoms, and intensifying the unpleasantness of the overall experience, as worrying about the social implications intensifies everything and "makes it worse".

> When I had them in lessons, I'd start having them and then they, sometimes they turn into a social attack, because I would be nervous about what if other people, other people notice? (Alexandra).

Alexandra highlights how, when with other people, the experience can change from the initial panic experience and become more focused on social worries. Alexandra experiences a shift from a panic attack into worrying more about the social implications of the attack, such as

other people noticing and watching her have a panic attack. This demonstrates the overlap and interplay between these factors within her experience, and the nuances that are part of adolescents' lived reality of panic disorder.

> I was around other people, so it just made it worse, and people were looking, which made it also worse. I was aware that people were watching (Lilly).

Lilly experiences feeling heightened awareness of other people watching as she has a panic attack, explaining that being around other people and being watched makes the experience worse for her.

> It just brings attention to you, and you don't want attention. I'm like kind of breathing quite heavily, that's when other people start to notice and then if someone um just looks at me, or asks if I'm ok, then it'll get faster, cus I know that people are starting to realise, and then I'll start getting a few more [symptoms] (Emma).

Emma further illustrates how having a panic attack while around other people, intensifies her panic attack, increasing her symptoms. Emma feels acutely aware of the scrutiny of the people around her during her panic attacks and does not want other people to notice what is happening to her. If people do notice and start to look at her, the attack gets "faster", demonstrating the experience of the increasing intensity of panic attacks due to being observed.

The unhelpful helpers

This subordinate theme illustrates how adolescents felt that, overall, other people who they felt would and should, be there to help, often lacked understanding about their panic disorder. This lack of understanding led to responses that were unhelpful, and often made the

experience of panic disorder worse for them. This included unhelpful responses from teachers and friends.

> I feel like they [teachers] didn't understand what was happening (Andrew).

Andrew highlights feelings that school staff did not understand what was happening to him during panic attacks. Several participants had experienced this lack of understanding in school, where teachers had responded in unhelpful ways.

> Sometimes people try and help, but it doesn't help and then I get mad at them cus they're telling me to do this thing, and I'm like, that doesn't work, I've already tried. I know they're trying to help me, but it doesn't help. They [school staff] were saying 'breathe in now' and then like if I didn't then they kept telling me that I'm not listening to them. It doesn't help. They kept standing over me and stuff and like threatening to, they were like 'if you don't come now, we'll do this' and stuff and they kept asking me questions and I couldn't respond, so they, they started calling me rude (Emma).

Emma expresses how, even though sometimes other people offered help her during panic attacks, their intervention was unhelpful, and made things worse. Emma felt that she was misunderstood as, while she was unable to respond to the teachers requests due to her symptoms, their interpretation of her was that she was being rude. As they crowded around her, she felt threatened by them, although she knew they were trying to help. Emma felt frustration at having "already tried" strategies to calm down, and repeated instructions from teachers to "breathe in" while she felt she could not breathe which, in this scenario, only contributed to feeling totally overwhelmed and misunderstood.

> I had a teacher who didn't really understand. I was starting to feel like a big panic in class, like it was coming up, I knew it was coming, I had to leave like it would just get worse and worse, so I put my hand up, I said, 'can I leave for a second' like trying to breathe, and she was like 'for what?' I was like 'I just really need to step outside' and

> she said ‘no’ and I was like, ‘please, I really need to step outside’, she said ‘no’. So, I just sat there, and it got so bad that lesson, and from there I had such a fear of that class and that one teacher, that I just I couldn't go back (Azita).

Azita expresses how she wanted to calm herself down and, had she been allowed to leave, she felt she may have been able to regain control and calm down. However, the lack of understanding from the teacher and her response, meant Azita had to remain in the class and experience the panic attack in the classroom, in front of her peers. This scenario demonstrates the power dynamic that Azita felt in this scenario. While in the school environment, Azita did not have the autonomy to just leave the room when she felt she needed to but needed permission from the teacher. This unhelpful response from the teacher was damaging, as Azita’s worries about being prevented from leaving the classroom in subsequent panic attacks contributed to a cycle of worry and avoidance. This culminated in Azita never returning to that particular teacher’s classes and therefore having an impact on her education.

Some adolescents had hoped that their friends would be supportive and helpful, however they also experienced unhelpful reactions from peers or friends.

> Sometimes they can be a little bit [pause], they can make fun of it a little bit and [pause], you know they kind of laugh a little bit about it but when really, it’s actually serious. I just want, I’d rather if they didn’t make jokes about it, because it’s quite like, upsetting. When I told them about that I was doing this research, and I said they gave me some money, they were like oh ‘I want to have panic attacks too, oh no! on no! I’m panicking! I’m panicking!’ and you know, kind of doing that, and I was like ‘well no, that’s not what a panic attack is like, that’s not what it is’. But they just don’t really understand what it’s like. I was thinking at the time, I was just like, oh they joke

> around, it's just kind of what teenagers do. But after, I was thinking well that just kind of proves they don't understand (Olivia).

Although Olivia has confided in her friends about her panic disorder and about participating in a research interview about it, her friends are not understanding of her panic disorder and make a joke of it, implying perhaps that receiving some money would make it worth experiencing panic attacks. This leaves Olivia, understandably feeling that they do not understand the severity of what she experiences, and this is very upsetting. She feels that her friends, who could, and perhaps should be there to be helpful and supportive, are dismissing the serious nature of what she is going through, and she wants them to stop making jokes about it and take it seriously.

The outsider

This subordinate theme represents how adolescents felt that panic disorder was a part of themselves that they did not like and did not want, a part that was unacceptable to themselves and to other people. This often left them feeling like the outsider. This feeling was emphasised by experiences where they felt stigmatised or rejected and negative interactions with others contributed to feeling that they were not ok, did not fit in and were different to other people. Overall, this contributed to a negative self-concept.

> I'm pretty sure it was because I, because of my mental problems that I had at the time, because as soon as I told them, they started just saying, just not hanging around me. I think they just don't, maybe they didn't know how to deal with me, or they just thought of me differently or they just, I don't know. I'm not them, I don't know how they [pause], I try not to dwell on it too much. But it does upset me sometimes that they just ditched me. Part of me just doesn't feel like I fit in (Alexandra).

In Alexandra's extract she explains that she feels she has lost friendships because of her mental health difficulties. This has led to Alexandra feeling left out, rejected, and abandoned, and that other people's perceptions of her changed due to her difficulties. The fact that others do not know how to "deal" with her, identifies feeling that other people do not understand what she is going through, or how to respond to her. This contributes to Alexandra feeling that this is a part of herself which other people cannot accept and that she does not fit in. Within the context of adolescents' lived experience of feeling left out by friends due to their panic disorder, it is understandable that they felt the need to hide their experience from other people.

> I tend to just leave it out, cus I feel like that's just a different part of me that I don't really want. I feel like they're just seeing this person that's not really like human, just got problems. I feel like I don't really fit in, I can't be normal, but it also feels a bit weird, because I'm not like all of my friends, I'm not like everyone in my class, yeah, a bit of an outsider (Eva).

Eva's account illustrates feelings of shame as she "leaves out" talking to other people about her panic disorder. Eva wants to hide this part of herself that she finds unacceptable and does not want. Eva feels that other people see her as "not really human", and this encapsulates the feeling of being alien and different to other people. The idea that people only see her as someone who has got "problems" illustrates her feelings that people do not really see who she really is beyond her panic disorder. The impact of this on her self-concept is that she feels she is not normal and does not fit in with her friends and peers, contributing to feeling isolated and alone with her experiences. These feelings of negative self-concept were shared with almost all of the participants.

Being unable to carry out day to day activities due to panic attacks, contributed further to a sense being different and fed into participants negative self-concept.

> Why am I not normal? Why can't I be like everyone else? It kind of feels a bit lonely, cus you're like, well kind of it's, it's quite like being left out, because you just kind of want to be like everyone else and just kind of be able to sit through these kind of things but like you can't, because like you're not like everyone else (Olivia).

Olivia illustrates here how she deeply wants to be like other people and feel that she fits in. There is a sense of not understanding why she is not like other people, and this saddens and frustrates Olivia. For Olivia, having panic disorder means that she is not like others, and does not fit in, she is an outsider. She is unable to participate in the things that her friends can, because of her panic disorder. She feels left out and lonely, and that fundamentally she is "not normal".

Discussion

This study explored eight adolescents' (aged 13 to 17 years) lived experience of panic disorder and is the first qualitative study examining adolescents who have been diagnosed with panic disorder. Two superordinate themes were identified, capturing adolescents' experience of panic disorder. The first superordinate theme; Drowning in sensations, was presented in four subordinate themes: "A vicious kind of circle", In the face of death, "A different mentality", and Defeated by the Tsunami. The second superordinate theme; An unacceptable self, was presented in three subordinate themes: Under the social spotlight, The unhelpful helpers and The outsider.

Although our findings identified that adolescents experienced cognitive factors and symptoms that fit with current understanding of adults and adolescents with panic disorder, we also identified aspects of the panic experience that were of particular importance for adolescents. In line with previous literature on panic cognitions and common symptoms among adolescents (Achiam-Montal et al., 2013; Diler et al., 2004), the first superordinate theme, Drowning in sensations, represented the experience of panic disorder as typically being characterised by overwhelming physical symptoms, catastrophic thoughts, fears of death and misinterpretation of bodily sensations. The experience of drowning in sensations, incorporated feeling a loss of control of the body and the mind, and being defeated by panic attacks. This theme corresponds with the findings identified in Hewitt et al.'s (2021) study of adolescents (aged 15 to 18 years) who had experienced panic attacks, who identified that feeling out of control during panic attacks was a dominant theme. Consistent with the cognitive model of panic in adults (Clark, 1986; Clark & Ehlers, 1993; Ohst & Tuschen-Caffier, 2018; Teachman et al., 2010; Woud et al., 2014), and associations between anxiety

sensitivity and panic disorder in children and adolescents (Elkins et al., 2014; Leen-Feldner, 2005), these cognitions appeared to increase the intense sensations, creating a vicious cycle. Also consistent with the cognitive model of panic, adolescents appeared to engage in a range of avoidance behaviours (Salkovskis, 1988, 1991), intended to prevent their feared catastrophes from occurring, while inadvertently maintaining the cycle.

Within the first superordinate theme, fears about dying were an important subordinate theme and were also consistent with the cognitive model of panic (Clark, 1986; Clark & Ehlers, 1993) with catastrophic thoughts about dying arising in response to physical sensations. Fear of death is regarded as a core human experience (Becker, 1997; Yalom et al., 1975; Yalom, 2008), and is among the most common fears among adults with panic disorder (Raffa et al., 2004). By adolescence, young people have an appreciation of the inevitability and irreversibility of death (Slaughter & Griffiths, 2007) and fears of death are highly prevalent among adolescents (Berman et al., 2006). Indeed, in studies of children and adolescents' fears, the fear of death is one of the most commonly reported (Ollendick et al., 1985). Death anxiety has been proposed to be one factor underlying the development and maintenance of a range of psychological conditions (Berman et al., 2006; Iverach et al., 2014) and patients with panic disorder have been found to have high levels of death anxiety in comparison with other psychological conditions such as depression (Schütte et al., 2016). Terror management theory, an approach based in existential, psychodynamic, and evolutionary perspectives (Greenberg & Arndt, 2011), suggests a strong self-concept is one factor that can reduce fears of death (Greenberg et al., 1992). However, we observed that experiencing panic disorder negatively affected adolescents' self-concept. Therefore, it may be, that these adolescents lack some of the psychological buffers to these fears. Psychological treatment focusing on improving self-concept and reducing death anxiety, may be helpful in

treating panic disorder in adolescents. The utility of cognitive behavioural approaches to treating death anxieties have been previously documented (Furer & Walker, 2008). We suggest that there is a need for future studies to examine the relationship between fear of death and self-concept in adolescents with panic disorder. There is also a need to examine the inclusion of CBT strategies to address these fears and whether this would be effective in further reducing panic disorder among adolescents.

In the second superordinate theme, An unacceptable self, our findings highlighted important factors in adolescents' experiences of panic disorder that appeared to reflect this being a unique developmental period. Unlike adults, adolescents very often lacked the autonomy to leave situations freely during panic attacks. This lack of autonomy seemed most prominent for adolescents in school, for example being made to remain in classrooms. In many situations, this meant negative interactions with teachers, and often (inadvertent) unhelpful behaviours from teachers and peers, which contributed to feeling broadly misunderstood. These findings correspond with those of Hewitt et al (2021), who found adolescents had encountered a lack of understanding about their panic attacks, negative interactions with teachers and peers, and that adolescents felt embarrassment and shame about experiencing panic attacks (Hewitt et al., 2021).

Also identified in the second superordinate theme, and of particular importance for adolescents, was the experience of being 'Under the social spotlight' and having heightened social anxieties around having panic attacks. Social worries contributed to the panic cycle, making the experience worse for adolescents. These anxieties extended beyond fears of shame and embarrassment, to worries about being rejected by peers, being socially excluded

or treated differently. This culminated in a sense of being unacceptable to themselves and to others. Furthermore, worrying about having panic attacks in social spaces where they would be observed by other people, caused panic attack symptoms to escalate. This contributed to increased avoidance of those situations and intensified the panic attack cycle for adolescents. Although consistent with studies of adults with panic disorder who also experience heightened social anxieties (Raffa et al., 2004), the connection between social anxieties and the escallation of panic attacks in panic disorder, to our knowledge, has not previously been reported in the literature. This aspect of the panic experience may be more salient for adolescents. The importance and impact of social relationships particularly for adolescents has been well documented (Elkind, 1967; Sebastian et al., 2008; Sebastian et al., 2011) and our findings emphasise the importance of understanding the interplay between social cognition, negative social interactions, and the panic cycle, specifically for adolescents who are in a sensitive phase of development.

In the second superordinate theme, we also identified that adolescents' experience of panic disorder contributed to feeling like an outsider and having a negative self-concept. Adolescents felt they were different or "not normal" compared with peers. These feelings were compounded by a lack of understanding and negative social interactions with other people in connection with their panic attacks. Negative self-concept, self-hate and self-blame during adolescence are associated with anxiety and depression (Ybrandt, 2008). Therefore, experiencing panic disorder in itself, may add to a negative self-concept that leads to additional worries, forming another kind of vicious cycle in the future for these adolescents. Our findings in relation to self-concept also correspond with those of Hewitt et al. (2021) who found that adolescents' identity was negatively affected by experincing panic attacks (Hewitt et al., 2021). Adolescence is a critical time for the development of a socially

integrated self-concept, that is informed by perceptions of how others view us (e.g., other people think I'm weird) (Sebastian et al., 2008). Therefore, these negative social experiences may be particularly impactful in terms of self-concept, for adolescents with panic disorder. The adolescents in this study often experienced panic attacks in public places. Greater changes to self-concept have been found to occur when behaviours are under public scrutiny, compared with when they are in private and not observed (Baumeister & Jones, 1978; Tice, 1992). This highlights that experiencing panic attacks in public settings, such as in school, may contribute to increased negative self-evaluation, than if they were experienced without being observed. Feeling misunderstood by others also increased feelings of social isolation, however, ironically also led to avoidance of social situations, having further impact on normative social functioning.

Our findings have several clear implications. The overwhelmingly unpleasant experience of panic disorder highlights the importance of adolescents with panic disorder accessing effective, timely treatments. Our findings broadly support a cognitive conceptualisation of the disorder and fit with the current evidence base for the treatment of panic disorder in young people, which involves cognitive behaviour therapy aimed at panic disorder (Elkins, 2016; Pincus et al., 2010). Given the prominence of avoidance and safety behaviours exhibited among the adolescents in this study, addressing these factors in treatment through exposure is likely to be vital (Whiteside et al., 2020). It is also likely to be important that therapists liaise with school staff during treatment to ensure that teachers have guidance about how best to respond when the young person experiences panic attacks at school. The adolescents in this study reported associated social worries and negative self-evaluations; although successfully treating panic disorder may have a positive impact in these areas, further investigation of this will be important.

More broadly, our findings highlight how adolescents felt that other people didn't understand their experience, and this contributed to negative self-concept and social worries around their panic attacks. These findings highlight a need for increased awareness and understanding among young people and school staff, so that adolescents experiencing panic attacks within the school environment are met with greater understanding from peers and can access appropriate help and support from staff. Mental health education has been demonstrated to reduce stigma and increase knowledge among school staff (Roberts-Holmes et al., 2018) and students (Milin et al., 2016; Naylor et al., 2009). Therefore, providing psychoeducation, that includes information about dealing with anxiety and panic attacks through teacher training and the school curriculum (e.g., through personal social health and economic education lessons) is potentially a feasible and effective way to increase awareness and understanding among staff and students.

Strengths and limitations

This research needs to be considered in light of several strengths and limitations. The strengths of this study were that quality guidelines for qualitative research (Yardley, 2000) were followed. Furthermore, quality guidelines specifically for IPA (Nizza et al., 2021; Smith, 2011; Smith, 2011) were followed throughout the study. By adhering to the quality criteria set out by Nizza et al. 2021, we ensured trustworthiness by conducting the study in line with the theoretical principles of IPA, incorporating a sufficient sample with dense evidence by way of excerpts from participants transcripts, ensuring a high level of transparency within the analytic process, and offering a coherent, plausible and interesting narrative (Nizza et al., 2021). The sample was homogenous in terms of all participants having

been recruited through the same anxiety clinic, all having received the same gold standard assessment to establish a primary diagnosis of panic disorder and any comorbid diagnoses. Participants were also relatively homogenous in terms of age.

However, it is important to view the results of this study in light of several limitations. The lead researcher (HB) engaged in a double hermeneutic process, as the researcher tried to make sense of the participants experience, whilst the participant is also trying to make sense of their own experience. It is important to acknowledge that this double hermeneutic may have influenced results. Participants were themselves trying to make sense of the experience and may also offer other interpretations in another setting or with a different researcher. The use of interpretative phenomenological analysis means interpretations of the interviews were made by the researcher. Therefore, there may also be other interpretations of the data from a different researcher perspective (Smith et al., 2009). However, an idiographic, analytical, and reflexive practice was adopted throughout the process, to ensure results are representative of the experiences of the adolescents in this study. All adolescents in the study were newly diagnosed with panic disorder as part of their participation in a wider clinical trial, and therefore this may mean their experience was influenced by this. Adolescents with greater knowledge of their own condition, may experience panic disorder differently. Only one male participated (the rest of the participants identified as female); although this is representative of the general population, with a higher prevalence of panic disorder among girls compared to boys (Vizard et al., 2018), it would be useful to explore the experience of adolescent boys with panic disorder, particularly in light of the high level of social worries, and the importance of this in our findings. Social worries are known to be higher among girls than boys (Vizard et al., 2018) and therefore the experience of boys may be different to that of girls, and understanding gender differences could have important implications for treatment.

Within this study we defined adolescence as 11-18 years of age. However, it must be noted that adolescence can be defined using differing theoretical frameworks (e.g., biological, social) (Curtis, 2015), anywhere between nine and 26 years of age (American Psychological Association, 2002). As adolescents reach their late teens and early twenties, significant life changes are likely to occur, such as leaving full-time education, entering full time work, going into higher education and leaving the home environment, and therefore aspects of the experience of having panic disorder may differ from the adolescents in this study.

Conclusion

The first superordinate theme, Drowning in sensations, represents how adolescents experienced panic disorder as a debilitating cycle of intense, physical sensations, catastrophic thoughts, feeling unreal and fears of death, that ultimately overwhelmed them. The second superordinate theme, An unacceptable self, identified elements of the panic experience that are particularly important for adolescents and represented how social worries, unhelpful responses from other people, and feeling broadly misunderstood, contributed to adolescents feeling that they did not fit in, and viewed the self as unacceptable. As adolescents are developing a socially integrated self-concept, and are in a sensitive phase of development, this may have particular significance for adolescents' ongoing development. Overall, the experiences of the adolescents in this study broadly fit with the cognitive model of panic disorder, driven by catastrophic misinterpretation of bodily sensations. Findings that fears of dying were prominent among adolescents also fits with previous evidence that fears of dying are one of the most commonly reported symptoms in panic disorder. Given the significant distress experienced by adolescents with panic disorder, accessing timely and effective psychological treatment is critical. There is also a clear need for increased awareness in

schools among staff and young people, to ensure that adolescents experiencing panic attacks in the school environment are well supported.

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5.1 Supplementary materials

Figure S1. Interview schedule

1. **Tell me about what it's like to have a panic attack.**
   Prompts: situation, physical experience/ symptoms, feelings, thoughts, how was it managed, ability to talk about it. First attack, subsequent attacks.
2. **What do you think causes your panic attacks?**
   Prompts: awareness of causes, change in cause over time, trigger situations.
3. **How has panic affected your life?**
   Prompts: relationships, family, social, school, change in behaviour/routines, future dreams and aspirations, limitations.
4. **What have you found that helps you? What makes it worse?**
   Prompts: coping strategies, support, in the moment/ bigger picture, getting help/treatment/diagnosis.
5. **What would you like to say to others about panic?**
   Prompts: friends, family, teachers, health professionals, government/public, anything else you'd like to say.

Figure S2. Measures

Anxiety Disorders Interview Schedule – child and parent version (ADIS-C/P)

Adolescents' diagnoses were determined using the ADIS-C/P (Silverman & Albano., 1996). This is a structured interview, with good psychometric properties (Silverman, Saavedra & Pina., 2001), designed to assess for current DSM-IV anxiety disorders and common comorbid disorders. If the adolescent met symptom criteria for a diagnosis, on the basis of his/her report or that of his/her parent, the assessor assigned a Clinician Severity Rating (CSR), ranging from 0 (absent or none), 4 (moderate) to 8 (very severely disturbing/disabling). To meet diagnostic criteria, the adolescent must have a CSR of 4 or more. The diagnosis with the highest CSR was classed as the primary diagnosis.

Kiddie Schedule for Affective Disorders and Schizophrenia – child and parent version (KSADS-C/P)

KSADS-C/P (Kaufman et al., 1997) is a structured diagnostic interview for DSM-IV affective disorders and schizophrenia was used to determine adolescents' mood disorder diagnoses and has well established psychometric properties (Kaufman et al., 1997). The relevant depression and mania supplements were used. Interviews were conducted with adolescents and parents separately, and diagnoses were based on information from both interviews. Diagnosis is assessed on the presence of absence of disorders and does not include a measure of severity.

The Panic Disorder Severity Scale for Children and Adolescents (PDSS)

The Panic Disorder Severity Scale for Children and Adolescents (Elkins, Pincus & Comer., 2016) was administered to assess change in the frequency and severity of adolescents' panic disorder symptoms and anticipatory anxiety and associated agoraphobia, avoidance, fear, work and social impairments. There are seven items; each rated on a 0-4 scale, with a higher

score indicated greater severity with the highest total score being 28. When used in adults a cut off score of 5 or less is used to determine remission from panic disorder (Furukawa et al., 2009), however there is no cut off established for adolescents. It has been shown to have good psychometric properties with an adolescent population Elkins et al., 2016).

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6 General Discussion

The overall aim of this thesis was to gain a better understanding of the identification, treatment, and experience of adolescents with panic disorder. Gaps in the literature meant we did not know if adolescents with panic disorder were being identified within child and adolescent mental health services (CAMHS), or what treatment was being offered to adolescents within these services. Although widely evaluated among mixed samples of children and adolescents, the effectiveness of psychological treatments specifically for adolescents with anxiety disorders, including panic disorder, was unclear. Furthermore, little was known about adolescents' lived experience of panic disorder more broadly, going beyond diagnostic symptoms and examining features or experiences that may be specific to adolescents. Answering these questions is important, as understanding whether panic disorder is identified, how it is currently treated, how effective treatments for anxiety are, and what adolescents' lived experiences are, is critical in moving towards improving outcomes for adolescents with panic disorder, both in the short- and longer-term.

Specifically, the papers in this thesis aimed to examine: 1) the identification of panic disorder among adolescents within UK specialist CAMHS and determine what treatments may be offered within CAMHS services to adolescents identified as having panic disorder, 2) to carry out an in depth-examination of RCTs of psychological treatments that have focused on adolescent only samples, to gain an understanding of treatment outcomes specifically for adolescents with anxiety disorders, including panic disorder, and 3) to gain a qualitative understanding of adolescents' experience of having a primary diagnosis of panic disorder to

add to existing knowledge of clinical features and lived experience of the disorder that are currently unknown.

This general discussion will give an overview of the findings from each of the three papers individually and then consider the findings together in relation to future research, and clinical implications.

6.1 Overview of findings

Paper 1: The identification and treatment of panic disorder in adolescents: the views of CAMHS clinicians

This paper surveyed 427 National Health Service (NHS) Child and Adolescent Mental Health Service (CAMHS) clinicians in England and filled a gap in the literature and our understanding by investigating the identification and treatment of panic disorder among adolescents within CAMHS. In summary, the key findings of paper 1 show that less than half the clinicians surveyed identified panic disorder or panic symptoms as the primary problem from a vignette. When identified, adolescents with panic disorder were unlikely to be offered an evidence-based treatment protocol evaluated for use either with young people with panic disorder, or a range of anxiety disorders including panic disorder, or in adults with panic disorder. Almost half the sample had received no training in CBT, and around a fifth had received no training in delivering psychological treatments. Professional background was associated with identification, with clinical psychologists and psychiatrists being the most likely to identify panic disorder. The majority of clinicians reported seeing and treating adolescents with panic disorder within their CAMHS service.

Paper 2: The Effectiveness of Psychological Therapies for Anxiety Disorders in Adolescents: A meta-analysis

The findings in paper 1 suggest that adolescents in CAMHS are likely to be offered some form of CBT treatment, however there was a gap in the literature regarding treatment outcomes for adolescents with anxiety disorders, including panic disorder, specifically among adolescents. This gap was due to previous reviews and meta-analyses including broad age ranges (including children and adolescents) and there had been little focus specifically on adolescent treatment outcomes. There is some evidence that adolescents with anxiety disorders have poorer treatment outcomes than younger children (36.1% of adolescents (12-17 years) versus 51.7% of children (7-11 years) in remission post-treatment) (Ginsburg et al., 2011). Paper 1 also highlighted that only a minority of adolescents with panic disorder are likely to receive treatment developed for and evaluated among young people with panic disorder but are more likely to receive a transdiagnostic treatment. Adolescents with panic disorder may also be included in mixed diagnostic study samples. Additionally, paper 1 identified that 11.1% of CAMHS clinicians use non-CBT treatment approaches (e.g., brief solution focused therapy, family therapy, psychotherapy, art therapy, a narrative approach or psychoeducation), however outcomes for these forms of therapy specifically among adolescents with anxiety disorders were also unknown. On this basis, paper 2 examined the effectiveness of psychological treatments, both CBT and non-CBT approaches, as well as treatment moderators, specifically for adolescents with anxiety disorders, using meta-analyses. This was the first meta-analysis to focus specifically on the adolescent age range.

The review identified 17 studies, 16 of which were included in the meta-analysis. Adolescents receiving psychological treatment were significantly more likely to experience

reduced symptom severity (SMD = .454, 95 % CI = 0.22-0.69) and remission from the primary anxiety disorder post-treatment than controls (RR = 7.94, 95% CI = 3.19-12.7) (36% treatment vs. 9% controls in remission). None of the moderators analysed were statistically significant. Overall, results showed that studies were of poor methodological quality, used inconsistent outcome and reporting measures and there was high heterogeneity between studies. There were a high proportion of studies examining social anxiety disorder (k = 9) and the majority (k = 12) were community-based samples with participants recruited in schools. Therefore, there are limitations to how far these results can be generalised to anxiety disorders other than SAD or to clinical populations.

In summary, psychological therapies (predominantly CBT) targeting anxiety disorders in adolescents are more effective than wait list controls. However, with two thirds of adolescents not being in remission from their primary anxiety disorder post-treatment, there is a clear need to develop more effective treatments for adolescents, evaluated through high quality RCTs, incorporating active controls and follow-up data. In chapter 4 we examined the inclusion of adolescents with panic disorder among the 17 studies identified in the review and looked at panic disorder specific outcomes. The number of adolescents with either primary or secondary panic disorder included in treatment trials was low. Outcomes for primary panic disorder were only reported in one panic disorder specific study, and one study that included mixed anxiety diagnoses. Nothing was reported about outcomes for secondary panic disorder.

Paper 3: Adolescents' lived experience of panic disorder: An interpretative phenomenological analysis

Paper 1 identified that 51.4% of surveyed clinicians were not able to identify panic disorder in adolescents from a clinical vignette. Identification of panic disorder is critical as diagnosis determines the treatment offered to adolescents. Problems with identification may be improved by developing a greater understanding of adolescents' lived experiences of panic disorder, providing information that is deeper and more nuanced than quantitative methods such as questionnaires, and allowing for reports of symptoms, features and experiences that go beyond diagnostic criteria. Although a number of studies had examined panic symptoms experienced by adolescents with panic disorder (Achiam-Montal et al., 2013; Diler et al., 2004; Last & Strauss, 1989; Masi et al., 2000), there had been no previous studies going beyond symptoms, providing a more experiential account of adolescents' lived experience of panic disorder. While one study has examined adolescents' experiences of having panic attacks (Hewitt et al., 2021) to our knowledge there had been no previous qualitative studies examining the experience of adolescents with a diagnosis of panic disorder. Paper 3 was a qualitative interview study of adolescents with panic disorder that used interpretative phenomenological analysis (IPA) to gain an understanding of adolescents' lived experience of panic disorder.

The key findings of paper 3, were presented in two superordinate themes: Drowning in sensation and, An unacceptable self. These themes represented how adolescents experienced panic disorder as an intense, overwhelming physical and psychological experience. Adolescents' experiences included cognitive symptoms of panic disorder that largely fit with the cognitive model of panic (Clark, 1986) in terms of experiencing misinterpretation of bodily sensations, catastrophic thoughts, worrying about future attacks, and avoidance behaviours. Feeling overwhelmed by symptoms and losing control of the body and of the mind, and fears of dying were important subordinate themes. Adolescents engaged

in a range of behaviours to avoid feared situations such as safety behaviours and avoidance behaviours. Trying to stay in control contributed to the cycle of panic as well as the impact on adolescents' lives. Importantly, social worries were particularly salient for adolescents and contributed to the panic cycle. Adolescents felt there was a general lack of understanding among peers and school staff about panic attacks. Notably, the impact on self-concept was an important factor among adolescents, with experiencing panic disorder leaving adolescents feeling a sense of self that was unacceptable. Additionally, social factors that increase the cycle of panic, may be a feature particularly salient among adolescents with panic disorder.

6.2 Strengths and limitations of the research

Papers 1 to 3 include a discussion of the strengths and limitations of each study. In this section the strengths and limitations of the thesis as a whole will be discussed.

The strengths of the thesis are that all three studies focused specifically on the adolescent age range, allowing unanswered questions specific to this age range to be addressed. Indeed, much of research examining anxiety disorders, including panic disorder, has used broad age ranges, including children and adolescents. As adolescents face particular sensitivities that younger children do not, this focus was necessary. In addition, we completed the research using a mixed methods approach, combining quantitative methods (papers 1: cross sectional survey and paper 2: meta-analysis) and qualitative research (paper 3: IPA) allowing us to gain broader, deeper insights and understanding of the issues surrounding panic disorder than would be gained using a singular methodological approach. All three studies included in this thesis used rigorous methodological procedures. For example, in paper 1 the survey was developed in conjunction with two clinicians specialising in

adolescent anxiety disorders. We surveyed a broad range of clinicians from different professional backgrounds, from wide geographical locations. Responses were coded by the author and a second coder. In paper 2, a systematic review of the literature was carried out following Cochrane Collaboration recommendations (Higgins & Green, 2011). Risk of bias assessments, also in line with Cochrane collaboration recommendations were carried out by the author and a second researcher independently. The participants in paper 3 were identified using a 'gold standard' diagnostic interview schedule (ADIS-C/P and K-SADS-PL). We followed the criteria for quality in qualitative research (Yardley, 2000) and criteria for quality and validity specifically in IPA research (Nizza et al., 2021; Smith, 2011; Smith, 2011). An audit trail was kept throughout the study and analysis process to increase study rigour and transparency.

Additionally, we ensured rigour in our mixed methods approach. To allow us to have confidence in the strength of mixed methods research findings, it is essential that rigour be established. Although there are established criteria for ensuring that quantitative and qualitative research is rigorous, there is less clarity when establishing rigour in mixed methods research (Brown et al., 2015) and there is not currently one accepted consensus on the best way to establish rigour (Onwuegbuzie & Johnson, 2006). However, there are some guidelines available in the current literature on quality in mixed methods research that we adhered to in this thesis. Tashakkori et al. (2020) state that data quality in mixed methods research is determined by the validity and 'trustworthiness' of the individual qualitative and quantitative data. They suggest that if the data for each is trustworthy, then the overall findings of the mixed methods research will also be of high overall quality. According to Tashakkori et al. (2020), the concept of trustworthiness in qualitative research relates to the data being credible, dependable and defensible. Brown et al. (2015) highlight that researchers

should be transparent in their descriptions of the research process (i.e., providing thorough details of data collection, analysis, interpretation, and integration for all methods) so that readers can judge the quality of mixed methods. Furthermore, O'cathain et al. (2008) suggest that mixed methods research can be improved by describing and justifying the design, being transparent about the qualitative component, and integrating the data and findings from the individual components. In this thesis we ensured that we provided transparent descriptions of the research process and methods used in each of the three papers. We established rigour in each study based on recommendations for each of the methodologies used in each of the three studies. We justified the need for each of our chosen methodologies for each study, based on the research questions and explained why using a quantitative or a qualitative approach was necessary to address the research questions. Creswell & Clark. (2017) also emphasise the importance of purposefully mixing and integrating qualitative and quantitative research methods. This integration can take place any stage in the research process. In this thesis, we addressed this by planning a series of studies that addressed our research questions from different perspectives and then integrated our mixed methods findings in this discussion chapter. The strength of this, is that we have been able to establish a picture that reflects some of the most important unanswered questions about panic disorder, specifically among adolescents.

However, it is important to consider the findings of the papers in light of their limitations. For the purposes of the three papers included in this thesis, adolescence was defined as 11-18 years of age. This was on the basis that 11-18 is the most commonly used age range to define adolescence (Curtis, 2015), 11 is the average age of the onset of puberty (American Psychological American Psychological Association, 2002) and 18 is the legal age of responsibility (i.e., when young people begin to take on adult roles). Importantly,

adolescents within this age range share similar social and academic influences (i.e., being in full-time education and living within a family environment). While adolescence may be understood as a distinct developmental period (Steinberg, 2014), exactly where the boundaries of this period are, is arbitrary and varies substantially depending on the theoretical framework adopted (e.g., biological, psychosocial) (Curtis, 2015). Indeed, adolescence can be defined anywhere between nine and 26 years of age (APA, 2002). Therefore, the findings may have differed if our age range had been broader, for example extending the age range would include those with differing neural and social development and therefore would have important implications for the identification, treatment and lived experience of panic disorder. For example, older adolescents may have more in common with young adults than younger adolescents in terms of neurological development (Waters et al., 2017), and this may influence the particular experiences that we encountered among 11–18-year-olds. Older adolescents between 18 and 24 years of age also face new challenges such as entering full-time work, moving away from home to university, or becoming financially independent, and these factors, all of which present significant life stressors, may also have an impact on their experience of panic disorder and of treatment, therefore our findings cannot be generalised to this broader age range of adolescence.

While the qualitative research methods used in paper 3 have their strengths in exploratory research (Harper & Thompson, 2011), the researchers own biases, and the double hermeneutic must be considered in the analytic process and the interpretations made, recognising that different researchers may have alternative interpretations of the data. It is also important to note that adolescents with panic disorder may find talking about panic attacks and panic disorder a trigger for panic attacks. Given the avoidance behaviours exhibited by these young people, it is likely that this may have influenced their responses in

interviews. Furthermore, the majority of participants (six out of eight) adolescents were interviewed in a clinic setting or over a video call, neither of which are naturalistic settings, potentially influencing responses.

Finally, the participants of studies included in paper 2 and participants in paper 3 reflected fairly homogenous ethnicity of participants with most being from White British ethnic backgrounds. Paper 2 identified that many studies did not report ethnicity and where ethnicity was reported, samples were commonly ethnically homogenous, predominantly from White ethnic backgrounds. Paper 3 included only one participant from an ethnic minority background. This reflects a wider issue within psychological research where people from diverse ethnicities are not well represented. This is important, as people from different ethnic groups have been identified as having greater mental health problems (Harris et al., 2005), and are less likely to seek or receive treatment (Chiu et al., 2018). Furthermore, children and adolescents from ethnic minority groups who do receive mental health treatment, have poorer outcomes than their counterparts from White ethnic backgrounds (Weisz et al., 2017). It is essential therefore, that psychological research includes diverse samples in terms of ethnicity, and that the reasons for low engagement of participants from diverse ethnic backgrounds are investigated and addressed, enabling research findings that reflect the diversity within the general population, increase generalisability and reduce health inequalities.

6.3 Implications for future research

6.3.1 Improving the identification of panic disorder

The findings of paper 1 highlighted that the identification of panic disorder among adolescents needs improvement to ensure that those in need can access treatments that are

evidence based and effective. Paper 3 gave an in-depth account of adolescents' lived experience of panic disorder and highlighted that, adolescents experience social anxieties in relation to their panic disorder that contributes to the panic cycle and to avoidance behaviours. Although fear of embarrassment is a clinical feature of panic disorder (American Psychiatric Association, 2013), the extent of adolescents' social worries may create an overlap in diagnostic criteria, increasing difficulties in identifying panic as the primary problem. We suggest that the first step in improving identification, is through the development of an identification tool that could be used by clinicians, that incorporates features that may be particularly salient for adolescents, such as social anxieties. This is important as although social worries are not part of the diagnostic criteria for panic, identifying where social worries are contributing to a cycle of panic would be advantageous in distinguishing whether an adolescent meets diagnostic criteria for panic disorder, social anxiety disorder or for both. Many adolescents with panic disorder are likely to seek help in health services other than CAMHS, including GPs, and non-NHS mental health services. It will be important to ensure that panic disorder identification tools are also accessible to professionals working within these other services. Of particular importance is the need to give GPs the tools to identify panic disorder symptoms, as they are likely to be a first line point of contact for adolescents experiencing difficulties, and as previously discussed, GPs have difficulty in identifying anxiety disorders (O'Brien & Creswell, 2019).

6.3.2 Improving treatments for panic disorder in adolescents

Our findings had several clear implications for improving treatments for adolescents with panic disorder, including the continued development of cognitive behavioural treatments. This includes disorder specific cognitive therapy and transdiagnostic treatments,

as well as highlighting components of treatment that are of particular importance to adolescents and the parents supporting them through treatment. In paper 3 the debilitating nature of panic disorder and the impact of this on adolescents, were evident, highlighting that it is crucial that adolescents with panic disorder are able to access effective and timely treatment. Paper 3 suggests that adolescents experience cognitions and symptoms that largely fit with the cognitive model of panic (Clark, 1986). However, although there is a treatment based on this model that is effective among adults, in both full and brief treatment formats (Clark, 1994, 1999), this brief treatment has yet to be adapted for and fully evaluated among adolescents. Given the economic and time pressure on CAMHS services, brief treatments are needed to increase accessibility. Although the feasibility trial examining the effectiveness of a brief format of cognitive therapy for adolescents with panic disorder is being carried out, there remains a need for a full RCT of this brief treatment to examine its effectiveness among adolescents with panic disorder, before being implemented in routine clinical services.

To our knowledge, to date there has been no examination of the effectiveness of transdiagnostic treatment for panic disorder in adolescents. Paper 3 highlighted that adolescents experience of panic disorder largely fits with the cognitive model of panic disorder (Clark, 1986), suggesting that CBT based on this model is likely to be a beneficial treatment. There is some evidence (although based on child and adolescent samples and among mixed anxiety disorder), that disorder specific CBT leads to greater effect sizes than transdiagnostic CBT (Reynolds et al., 2012). However, in paper 1 we identified that adolescents with panic disorder are unlikely to receive treatment developed for and evaluated with young people with panic disorder, and that transdiagnostic treatment is more likely to be offered. Therefore, full RCTs comparing treatment outcomes for adolescents using panic disorder specific protocols compared with transdiagnostic treatments are needed. This would

increase our understanding of treatment outcomes for panic disorder with different treatment protocols.

6.3.3 Ensuring treatments are developmentally sensitive to adolescents

In future, it will be important to ensure that psychological treatments are developmentally sensitive to adolescents needs, particularly around heightened social anxieties. Although fears of embarrassment are a clinical feature of panic disorder (American Psychiatric Association, 2013), our findings in paper 3 highlighted the impact of adolescents' social worries and how these worries escalated the panic cycle and contributed to avoidance behaviours, which are a key maintenance factor in panic disorder (Salkovskis, 1991; Salkovskis et al., 1996). Adolescents with and without social anxiety disorder (SAD) experienced these heightened social worries, reflecting the fact that adolescents are more sensitive to the perceptions of others (Platt et al., 2013; Sebastian et al., 2011) and place more importance on social relationships than younger children or adults (Blakemore, 2008, 2018; Kilford et al., 2016). Although transdiagnostic treatments for anxiety have the flexibility to focus on any aspect of anxiety that is present, including social cognitions, and cognitive therapy (CT) for panic would focus on any anxiety symptoms associated with panic disorder, further examination of working on social cognitions associated with panic disorder is warranted. In future, RCTs that compare treatment that includes work targeting social anxieties, with existing panic disorder protocols are needed, to evaluate whether targeting social concerns would improve social anxieties and treatment outcomes for adolescents.

It is also important to ensure that treatments are adapted effectively to meet the needs of adolescents. Waite and Creswell (2014) highlighted differences in the clinical

characteristics of adolescents with anxiety disorders, for example heightened social anxiety compared with children, and emphasise that adapting treatments designed for children simply by making them 'adolescent friendly' is not sufficient to address these developmental sensitivities. However, in paper 2 we identified that although 13 out of 17 studies reported that they were designed specifically for adolescents, only six reported what modifications or adaptations were made, while in three studies it was unclear whether a developmentally adapted treatment was used. Where adaptations were described, they included making language 'age appropriate', using examples that adolescents would identify with or completing exposure tasks within the context of activities that adolescents would typically engage in. However, ensuring treatments are sensitive to adolescents, needs to go beyond changing the language and context of treatment components. Kendall and Peterman (2015) suggest that CBT needs to be individualised to adolescents using different treatment formats (e.g., brief treatments or cCBT) and that this may help improve treatment outcomes for adolescents with anxiety disorders. We suggest that in future, more consideration is given to developing treatments that accommodate the particular sensitivities of adolescents and that treatment adaptations specifically for adolescents are fully documented in treatment trials.

In paper 3 we identified how the experience of panic disorder among adolescents contributed to a negative self-concept. Negative self-concept has been associated with poor social functioning, anxiety and depression among adolescents (Ybrandt, 2008). Given that adolescence is a critical period for the development of self-concept (Sebastian et al., 2008), it is possible that negative self-concept developed during adolescence may persist into adulthood, however we do not know if these problems do persist, or what impact they may have in adult life. Understanding how to improve self-concept among adolescents with panic disorder would help limit these potentially ongoing problems, thereby improving longer term

life outcomes and going beyond panic disorder remission, improving broader treatment outcomes for adolescents. Although there is some qualitative evidence that adolescents' sense of self improves after receiving CBT (Donnellan et al., 2012), this study was a small qualitative study of three female adolescents and was not specific to adolescents with panic disorder. In future it would be beneficial if RCTs of psychological treatment would broaden their outcome measures to include evaluation of the impact on self-concept. This would allow us to identify whether adaptations need to be made to existing treatments to target this factor, or whether existing treatments are already effective in addressing this.

6.3.4 Developing a better understanding of treatment mechanisms in panic disorder specific and transdiagnostic treatments specifically for adolescents

There is also a need for future research to gain a clearer understanding of what treatment components are associated with anxiety symptom improvement, both in panic disorder specific treatment and transdiagnostic treatments. Although CBT includes a number of different components (e.g., cognitive restructuring, problem solving, emotion identification, relaxation techniques, exposure and reinforcement), there is variability in the components included in treatment protocols and also the order in which different components are delivered and there is uncertainty as to which components are necessary or the most effective (Whiteside et al., 2020). Furthermore, some components of CBT have been found to be associated with poorer treatment outcomes (Whiteside et al., 2020). In a meta-analysis of 75 RCTs of CBT for anxiety disorders among children and adolescents (5.8-15.8 years of age, mean: 11.27 years), Whiteside et al. (2020) identified that the use of relaxation strategies in treatment protocols was associated with smaller treatment effects. However, exposure, particularly in-session exposure (completed within sessions with a therapist) was associated

with larger treatment effects, highlighting the importance of exposure in treatment. Importantly, cognitive therapy for panic disorder includes interoceptive exposure tasks, which directly challenge beliefs about bodily sensations, therefore tackling one of the key developmental and maintaining factors in the panic cycle. Importantly, this form of treatment does not include relaxation or breathing techniques. Paper 3 identified the prominence of avoidance and safety behaviours exhibited among adolescents, and the impact of these factors on the panic cycle. Although many transdiagnostic treatment protocols include exposure components (Whiteside et al., 2020), and may also include interoceptive exposure work, therefore targeting avoidance and safety behaviours, transdiagnostic treatments differ in that they commonly include relaxation and breathing techniques. Given the evidence that these techniques are associated with smaller treatment effects (Whiteside et al., 2020), and breathing techniques may be used as a safety behaviour, it will be important to gain an understanding of the differences in outcomes between these approaches for adolescents with panic disorder. Dismantling studies are considered to be the gold standard method for clarifying the contribution of different treatment components. In future, it is essential that dismantling studies are carried out to gain a full understanding of which components are most effective in the treatment of adolescents with panic disorder.

6.3.5 Developing a better understanding of moderating factors for adolescents with panic disorder

Although in paper 2 we analysed a range of moderating factors that may influence treatment outcomes for adolescents with anxiety disorders, including panic disorder, our meta-regression analysis did not reveal any significant moderators and questions remain about what factors may impact treatment outcomes specifically for adolescents with anxiety

disorders and panic disorder. However, due to the statistical limitations of meta-regression analysis (Borenstein et al., 2011), the lack of significant findings in our meta-regression should not be interpreted as meaning that these factors do not moderate outcomes. Meta-regression is an observational technique that is limited by heterogeneity between study variables (Higgins & Green, 2011). Furthermore, failure to identify significant moderators may be due to either effects existing but being small, or that the analysis was underpowered to detect true effects (Borenstein et al., 2011). Therefore, further examination of moderating variables is needed, as we still lack an understanding of which factors may affect outcomes for adolescents with anxiety disorders. This is vitally important, as the results of paper 2 identified that only 36% of adolescents were in remission from their primary anxiety disorder after receiving psychological treatment (predominantly CBT), highlighting the need for future research to examine moderating factors in more detail and gain an understanding of why treatment is not effective in those cases.

One of the issues encountered in our meta-analysis was the inconsistent use of diagnostic and outcome measures as well as poor study quality. Future studies that examine treatment outcomes for anxiety disorders specifically among adolescents need to use standardised measures and ensure rigorous study quality is achieved. Ideally, we need more studies that examine specific disorders in their own right, in clinical samples, and using comparable treatment formats, thereby reducing general heterogeneity between studies and enabling us to establish what factors moderate outcomes for adolescents with differing anxiety diagnoses. This is particularly important given the high prevalence of adolescents with SAD (Kessler et al., 2012) and poorer treatment outcomes for those with SAD (Hudson et al., 2015).

6.3.6 Understanding the impact of comorbid conditions on treatment and the effectiveness of treatment on comorbid conditions

Although comorbidity is known to be high among adolescents with anxiety disorders (Costello et al., 2011; Vizard et al., 2018) and panic disorder (Birmaher & Ollendick, 2004), we were unable within the scope of this PhD to examine the impact of comorbidity. Paper 2 highlighted that the majority of studies only reported remission from primary anxiety diagnoses and few reported comorbidity rates, or the impact of treatments on comorbid conditions.

There is some evidence that both transdiagnostic and disorder specific CBT treatments reduce comorbid conditions (Mahdi et al., 2019; Rapee et al., 2013). However, so far, studies have only examined broad age ranges (including children and adolescents) and have not had participants with panic disorder within their samples. Manualised transdiagnostic CBT treatment for anxiety disorders among children and adolescents ('Cool Kids'), has been found to decrease comorbid mood disorders (Rapee et al., 2013). However, young people with non-anxiety comorbidity were less likely to enter remission from their primary anxiety diagnosis than those with no comorbidity (56.6% in remission) or comorbid anxiety (43.7% in remission), with 44% of those with externalizing conditions and 27.2% of those with mood disorders in remission post treatment (Rapee et al., 2013). However, the type of anxiety disorder was not controlled for. As treatment outcomes for social anxiety disorder among children and adolescents are less favourable than for other anxiety disorders (Hudson et al., 2015), understanding the impact of comorbidity in relation to each specific anxiety disorder is important. Similarly, Mahdi et al. (2019) found disorder specific CBT treatments focused on treating children and adolescents' primary anxiety disorder, reduced symptoms of comorbid disorders to sub-clinical levels. However, these findings are based on a broad age range (6-18 years of age and 0-18 years of age respectively) and therefore do not

provide information about comorbidity specifically among adolescents. Furthermore, the study included no participants with a primary diagnosis of panic disorder. Pincus et al. (2010) provide some of the only evidence relating to the impact of disorder specific treatment on comorbid conditions among adolescents with a primary diagnosis of panic disorder. They found that in addition to reductions in panic, adolescents who received PCT-A also had reduced general anxiety, anxiety sensitivity and depressive symptoms post-treatment compared with controls. However, this was based on a small sample and therefore it is difficult to generalise these findings. Consequently, there remain a number of important questions about the impact of comorbid conditions on treatment outcomes specifically for adolescents with panic disorder; do comorbidities impede treatment outcomes? Do disorder specific treatments for panic also have an impact on symptoms of comorbid conditions?

6.3.7 Understanding the effectiveness of non-CBT treatment approaches for panic disorder

Paper 2 highlighted the dominance of studies examining CBT. In future, as well as examining specific CBT treatment components, it will also be important to explore outcomes for a more diverse range of treatments, as these findings demonstrate that CBT does not work for everyone. Indeed, Layard and Clark (2014) emphasise that CBT is not a panacea. Additionally, paper 1 also identified that a significant proportion of the CAMHS clinical workforce (almost a quarter: 23.4%) were not trained in CBT and were not working within a diagnostic framework. These clinicians approach child and adolescent mental health using different frameworks, such as systemic family therapy or psychotherapy. However, there is a distinct lack of RCTs examining other forms of psychological treatment among adolescents. Indeed, in paper 2, only one RCT of a non-CBT treatment for adolescents was identified

(Swain et al., 2015: Acceptance and Commitment Therapy). We do not know the effectiveness of these other approaches in treating adolescents with anxiety disorders including panic disorder. Therefore, we suggest that there is a need for more high quality RCTs of non-CBT treatments used in CAMHS and within other routine services, to gain a clear understanding of their efficacy in reducing anxiety disorders including panic disorder.

The evidence base for effectiveness of CBT for anxiety disorders in young people is primarily based on studies comparing CBT to wait list controls (WLC) (James et al., 2020; Whiteside et al., 2020). Indeed, in paper 2, 13 of the 16 papers included in the meta-analysis used passive or WLCs. In a recent meta-analysis of CBT for anxiety disorders for children and adolescents with anxiety disorders, 57 out of 87 studies compared CBT to a WLC, and just seven compared CBT to an alternative treatment (James et al., 2020). James et al. (2020) found that CBT was no more effective than treatment as usual and was not more effective when compared to a specified active treatment (James et al., 2020). There is also some evidence that when compared to active treatments, effect sizes for CBT are smaller than when compared to WLCs (Reynolds et al., 2012). It would be advantageous therefore, to compare CBT to alternative forms of therapy as active treatment control conditions, thereby strengthening RCTs of CBT and also providing more evidence regarding the efficacy of non-CBT treatments. It would also be advantageous to compare outcomes for adolescents who have not responded to CBT, with those who are offered an alternative treatment approach. It will be important that future studies are carried out using high methodological standards and clearly define alternative treatments or where an ‘attention control’ is used that the specific nature of this is reported, to allow detailed comparisons of different control groups compared with the intervention being examined.

6.3.8 Longitudinal and prospective research

Long-term life outcomes are reported to be poor for adolescents with panic disorder (Ramsawh et al., 2011) and the findings from paper 3 further highlight the severe impact on adolescents' social and academic functioning. We also identified potential long-term implications, for example, the detrimental impact on current education may have a longer-term impact on higher or further education and/or employment. Little is currently known about the trajectory of panic disorder that begins during adolescence. Although retrospective reports from adults suggest that panic disorder began during childhood or adolescence and continued into adulthood (Moreau, 1992; Von Korff et al., 1985), to our knowledge, there have been no prospective studies specifically of panic disorder examining the course of the disorder if left untreated, or indeed the long-term prognosis of adolescents who do receive treatment. Understanding the trajectory of panic disorder and the continuing impact is important as, in addition to the impact on individuals, panic disorder presents a large economic burden, with high medical and treatment costs, as well as costs associated with lost time at work, resulting in an economic cost to society that is higher than that of other mental health disorders (Batelaan et al., 2007). However, examining these questions in RCTs is difficult, as withholding treatment is ethically unacceptable. However, prospective cohort studies offer an approach to exploring these questions that is more reliable evidence than case studies or retrospective accounts, as they eliminate issues with recall bias associated with retrospective accounts of adults (Hammoudeh et al., 2018).

Understanding the longer-term picture after treatment is vitally important. There is some evidence that adolescents who receive cognitive behavioural treatment for panic disorder do maintain treatment gains at six-months post-treatment (Chase et al., 2012;

Ollendick, 1995; Pincus et al., 2010). However, nothing is known about adolescent outcomes beyond this six-month timeframe. Although longer term follow-up data has been gathered for adults, with 85% of adults who received treatment for panic disorder maintaining treatment gains at 15-month follow-up (Clark, 1994), future research into adolescent treatments needs to include longer-term follow-up evaluations to improve our understanding of the trajectory of those who do receive treatment. Adolescents taking part in the PANDA feasibility trial will be evaluated at one-year post-treatment follow-up which will in future contribute to gaining some understanding of longer-term outcomes.

As many adolescents will not receive treatment for panic disorder and given the economic and personal impact of the disorder, understanding whether panic disorder that develops during adolescence persists into adulthood if left untreated, is vital. Therefore, prospective cohort research studies are needed to evaluate the trajectory of illness among adolescents who do not receive treatment for panic disorder. There is some evidence from prospective studies of children and adolescents with anxiety disorders who did not receive treatment were in remission from their original anxiety disorder at five-year follow-up (Cantwell & Baker, 1989). However, a significant number of children and adolescents developed new anxiety disorders (29%) and behavioural disorders (26%) during this period (Cantwell & Baker, 1989), providing some evidence that youth with untreated anxiety disorders may be at increased risk for developing other disorders. In a prospective study of clinically referred children and adolescents (aged 5-18 years) with anxiety disorders who did not receive treatment, 82% were in remission from their primary anxiety disorder at four-year follow-up (Last et al., 1996). However, 35.7% (n = 30) of children and adolescents with anxiety disorders still met criteria for a psychiatric disorder at four-year follow-up. Of these, more than half (53.3%) retained their initial primary anxiety disorder, while 43.3% (n = 13)

had developed a new anxiety or depressive disorder. Of this sample, ten participants had a diagnosis of either primary or secondary panic disorder, and 70% of these (n = 7) were in remission from their panic disorder at four-year follow-up. However, 30% (n = 3) developed additional anxiety disorders (n = 1), behavioural disorder (n = 1) and depressive disorders (n = 1) (Last et al., 1996). Therefore, it would be advantageous for future research to investigate not only outcomes for adolescents who do not receive treatment for panic disorder, but also whether there is an increased risk of developing other psychiatric disorders.

There are also implications for future longitudinal research around self-identity and social anxiety among adolescents with panic disorder. In paper 3 we identified the negative impact of panic disorder on adolescents' self-concept and highlighted the potential ongoing issues of poor self-concept as adolescents become adults. Furthermore, social anxieties embedded within the experience of panic disorder were particularly salient for adolescents. However, fears of embarrassment are also a common symptom among adults with panic disorder (American Psychiatric Association, 2013). It may be that social anxieties are part of the experience of panic disorder irrespective of age. However, adolescence is a developmentally sensitive period particularly with regard to social interaction (Blakemore, 2008, 2018; Kilford et al., 2016; Rubia et al., 2006). It may be that social worries that develop during adolescence in relation to panic disorder persist into adulthood. Therefore, future research needs to continue to explore whether social anxieties associated with panic disorder among adolescents is persistent over a longer period, or whether social worries and negative self-identity are improved through receiving cognitive behavioural treatment for panic disorder in adolescence. In future, RCTs of panic disorder treatments need to include outcome measures that assess changes in self-concept and social anxieties in relation to panic disorder.

6.4 Implementation of research findings into clinical practice; Clinical implications

There is a need for the findings of psychological research to be implemented in mental health services. It is well established that there is a significant time lag in dissemination and implementation of research findings into clinical practice, with some suggesting it takes as long as 17 years for research to be implemented and only a small proportion of research ever being disseminated (Morris et al., 2011). Implementation of effective treatments in community care specifically for youth with psychiatric disorders is a serious challenge (Williams & Beidas, 2019). However, the implementation of research findings is critical in the delivery of the most up to date, evidence-based treatments. The results of the papers in this thesis have clear clinical implications for the training of clinicians and for the delivery of psychological treatment for adolescents with panic disorder, and these will be discussed below.

6.4.1 Implications for Clinicians' training

Our findings have clear clinical implications for training clinicians. In paper 3 we identified that the symptoms and cognitions experienced by adolescents largely fit with the cognitive model of panic and therefore, CBT treatment based on this model is likely to be beneficial in treating panic disorder among adolescents. However, in addition to the issues discussed above in relation to the need for further development of adolescent specific CT for panic disorder, in paper 1 we identified significant skills shortages and training needs among CAMHS clinicians. Importantly, in addition to a lack of training specifically relating to anxiety disorders and panic disorder, there is an urgent need for clinicians to receive training in psychological treatment approaches and/or CBT. However, there is a systemic lack of financial resources available for CAMHS specific training (Edwards et al., 2008). Clinicians

face time barriers to completing training, therefore improving outcomes for adolescents requires an increase in resources. Therefore, we suggest that development of training programs that can be easily disseminated to clinicians (e.g., using online resources), and are economically feasible are vital in improving outcomes for adolescents with panic disorder. Training that improves the identification of panic disorder in adolescents is of paramount importance. Further work needs to be done to understand clinicians' experiences of receiving training to establish how this could be improved and make the introduction of new training initiatives for the clinical workforce more feasible.

6.4.2 Implications for schools: Increasing awareness and understanding of panic disorder

Our findings highlight clear implications for schools, with a need for increased awareness and understanding among young people and among school staff, so that adolescents experiencing panic attacks within the school environment are met with more understanding from peers and can access appropriate help and support from staff. Psychoeducation for young people about anxiety disorders including panic disorder is crucial. Mental health education has been demonstrated to reduce stigma and increase knowledge among adolescents in school (Milin et al., 2016; Naylor et al., 2009). Providing psychoeducation, that includes information about anxiety and panic attacks through existing personal, social, health and economic (PSHE) education sessions is potentially a feasible and effective way to increase awareness and understanding and reduce stigma among school pupils.

We also emphasise the vital need for school staff to receive adequate training in mental health among adolescents. As education professionals come into contact with

adolescents on a daily basis, increasing awareness among teachers and school staff would likely help in improving responses to adolescents experiencing panic attacks and have a significant beneficial impact on adolescents' experiences and reduce damaging interactions. However, secondary school teachers report a lack of time and training that contributes to feeling ill-prepared and uncertain of their knowledge of mental health or how best to help students (Shelemy et al., 2019). There has been increasing focus on the need for mental health care provision and education within schools (Department for Education and Department of Health and Social Care, 2018). However, while some teachers acknowledge seeing a significant rise in students with mental health difficulties and feeling that the mental health of students was now part of a teachers' everyday job (Roberts-Holmes et al., 2018), some teachers feel mental health problems are not their responsibility and need to be referred to health professionals (Shelemy et al., 2019). Youth Mental Health First Aid (MFHA) training for school staff has been found to increase awareness, understanding, and provide skills to help staff provide support, while recognising when students need professional support and need signposting (Roberts-Holmes et al., 2018). In an evaluation of the impact of receiving a one-day MHFA training, teachers reported feeling they gained the skills to be 'proactive' 'positive' and 'confident' with students' mental health issues and had a better understanding of students' behaviour. However, in some schools, it was pastoral staff rather than teachers who attended the training (Roberts-Holmes et al., 2018). Our findings suggest it is vital that all staff working with adolescents are trained in mental health awareness and given the skills to approach young people in an effective and supportive way.

6.5 Overall Conclusion

Panic disorder is a debilitating anxiety disorder that affects between 1-3% of adolescents and has a severe impact on social and academic functioning, with short and long-term implications for adolescents' lives. Paper 1 identified that many adolescents with panic disorder may not be identified by clinicians within CAMHS services and there is a vital need for training that improves the identification of panic disorder. Training is needed in delivering CBT to young people with anxiety disorders. Paper 2 identified that treatment for anxiety disorders, including panic disorder are only effective in 36% of adolescents who receive psychological treatment and there is a vital need to improve treatment effectiveness. Paper 3 provided an in-depth exploration of adolescents' lived experience of panic disorder, highlighting that panic disorder is experienced as an extremely frightening, unpleasant, and overwhelming experience and has a negative impact on adolescents' lives, including their social and academic functioning, and negatively affected self-concept. Taken together, the papers included in this thesis identified a number of implications for future research, including the need to improve CBT treatments and treatment outcomes, gain an understanding of treatment mechanisms as well as which factors moderate treatment outcomes for adolescents, and explore non-CBT treatment approaches. There is also a need for more longitudinal and prospective research into panic disorder among young people. A number of clinical implications were also identified, primarily a vital need for training among CAMHS clinicians to improve the identification of panic disorder. Lastly, implications for schools were identified with a need for school staff, teachers and young people to receive training that raises awareness of panic attacks and panic disorder to reduce stigma and negative experiences in the school environment.

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7 Appendices

7.1 Appendix 1: Ethics committee approval letters

Appendix 1.1: University of Reading, School of Psychology Ethics Committee (SREC) approval email.

Appendix 1.2: Health Research Authority (HRA) letter of approval.

Appendix 1.3: University of Reading Ethics Committee (UREC) approval letter.

Appendix 1.4: Health Research Authority (HRA) approval letter

Appendix 1.5: Health Research Authority (HRA) approval letter - amendment

Appendix 1.6: Health Research Authority (HRA) approval letter - amendment

Appendix 1:7: Health Research Authority (HRA) approval letter - amendment

FW: New application 2018-011-PW

PE

PCLS Ethics <pclsethics@reading.ac.uk>
To Holly Baker
Cc Polly Waite

29/01/2018

You replied to this message on 29/01/2018 13:26.
We removed extra line breaks from this message.

Hi Holly
Please see approval for your study to proceed below from Peter Many thanks Liz

Liz White

Executive Support Administrator to Professors Cathy Creswell and Jonathan Hill Ethics Administrator School of Psychology and Clinical Language Sciences, Earley Gate, Reading. RG6 6AL | Telephone: | www.reading.ac.uk

(For SatNav, please use post code RG6 7BE for Earley Gate)

Follow us on Twitter Like us on Facebook

-----Original Message-----
From: Peter Cooper [
Sent: 29 January 2018 10:04
To: PCLS Ethics
Subject: RE: New application 2018-011-PW

Dear Liz

I have reviewed this submission and am happy for this study to proceed.

Best wishes

Peter

From: PCLS Ethics [

NHS
Health Research Authority

Dr Polly Waite
Room 222
School of Psychology and Clinical Language Sciences
University of Reading (Whiteknights)
RG6 6AL

Email:

19 March 2018

Dear Dr Waite

Letter of HRA Approval

Study title:	**Psychological treatment of anxiety in adolescence: the views of CAMHS clinicians**
IRAS project ID:	**239014**
Protocol number:	**N/A**
REC reference:	**18/HRA/1564**
Sponsor	**University of Reading**

I am pleased to confirm that **HRA Approval** has been given for the above referenced study, on the basis described in the application form, protocol, supporting documentation and any clarifications received. You should not expect to receive anything further from the HRA.

How should I continue to work with participating NHS organisations in England?
You should now provide a copy of this letter to all participating NHS organisations in England, as well as any documentation that has been updated as a result of the assessment.

The HRA has determined that participating NHS organisations in England **will not** be required to formally confirm capacity and capability before you may commence research activity at site. As such, you may commence the research at each organisation immediately following sponsor provision to the site of the local information pack, so long as:

- You have contacted participating NHS organisations (see below for details)
- The NHS organisation has not provided a reason as to why they cannot participate
- The NHS organisation has not requested additional time to confirm.

You may start the research prior to the above deadline if the site positively confirms that the research may proceed.

If not already done so, you should now provide the local information pack for your study to your participating NHS organisations. A current list of R&D contacts is accessible at the NHS RD Forum website and these contacts MUST be used for this purpose. After entering your IRAS ID you will be able to access a password protected document (password: **Spring24**). The password is updated on a monthly basis so please obtain the relevant contact information as soon as possible; please do not hesitate to contact me should you encounter any issues.

IRAS project ID	239014

Commencing research activities at any NHS organisation before providing them with the full local information pack and allowing them the agreed duration to opt-out, or to request additional time (unless you have received from their R&D department notification that you may commence), is a breach of the terms of HRA Approval. Further information is provided in the "*summary of HRA assessment*" section towards the end of this document.

It is important that you involve both the research management function (e.g. R&D office) supporting each organisation and the local research team (where there is one) in setting up your study. Contact details of the research management function for each organisation can be accessed here.

How should I work with participating NHS/HSC organisations in Northern Ireland, Scotland and Wales?
HRA Approval does not apply to NHS/HSC organisations within the devolved administrations of Northern Ireland, Scotland and Wales.

If you indicated in your IRAS form that you do have participating organisations in one or more devolved administration, the HRA has sent the final document set and the study wide governance report (including this letter) to the coordinating centre of each participating nation. You should work with the relevant national coordinating functions to ensure any nation specific checks are complete, and with each site so that they are able to give management permission for the study to begin.

Please see IRAS Help for information on working with Northern Ireland, Scotland and Wales.

How should I work with participating non-NHS organisations?
HRA Approval does not apply to non-NHS organisations. You should work with your non-NHS organisations to obtain local agreement in accordance with their procedures.

What are my notification responsibilities during the study?
The attached document *"After HRA Approval – guidance for sponsors and investigators"* gives detailed guidance on reporting expectations for studies with HRA Approval, including:

- Registration of Research
- Notifying amendments
- Notifying the end of the study

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

I am a participating NHS organisation in England. What should I do once I receive this letter?
You should work with the applicant and sponsor to complete any outstanding arrangements so you are able to confirm capacity and capability in line with the information provided in this letter.

The sponsor contact for this application is as follows:

Name: Dr Mike Proven
Tel:
Email:

Who should I contact for further information?

IRAS project ID	239014

Please do not hesitate to contact me for assistance with this application. My contact details are below.

Your IRAS project ID is **239014**. Please quote this on all correspondence.

Yours sincerely

Sharon Northey
Senior Assessor

Email:

Copy to: *Dr Mike Proven, Sponsor contact*
Stephen Zingwe, Berkshire Healthcare Foundation Trust – R&D contact

IRAS project ID	239014

List of Documents

The final document set assessed and approved by HRA Approval is listed below.

Document	*Version*	*Date*
Evidence of Sponsor insurance or indemnity (non NHS Sponsors only) [PollyWaite_InsuranceConfirmation_Feb18]	V1	23 February 2018
HRA Schedule of Events [HRA Schedule of Events]	2	14 March 2018
HRA Statement of Activities [HRA Statement of Activities]	1	09 March 2018
IRAS Application Form [IRAS_Form_23022018]		23 February 2018
Letter from funder [NIHR confirmation letter]	1.0	07 September 2016
Letter from sponsor [PollyWaite_SponsorConfirmation_Feb18_V1]	V1	23 February 2018
Letters of invitation to participant [APPENDIX 1 CAMHS survey information letter_email V1 24-1-18]	V1	24 January 2018
Non-validated questionnaire [APPENDIX 4 CAMHS BOS survey V1 24-01-18]	V1	24 January 2018
Participant consent form [CAMHS survey consent form]	1	24 January 2018
Participant information sheet (PIS) [CAMHS survey information leaflet]	2	14 March 2018
Research protocol or project proposal [CAMHS survey - protocol V1_24.01.18]	V.1	24 January 2018
Summary CV for student [Holly Baker short CV V1 01Mar18]	V1	01 March 2018
Summary CV for supervisor (student research) [KR Short CV for iras May 2017 V1]	V1	01 May 2017

IRAS project ID	239014

Summary of HRA assessment

The following information provides assurance to you, the sponsor and the NHS in England that the study, as assessed for HRA Approval, is compliant with relevant standards. It also provides information and clarification, where appropriate, to participating NHS organisations in England to assist in assessing, arranging and confirming capacity and capability.

HRA assessment criteria

Section	HRA Assessment Criteria	Compliant with Standards	Comments
1.1	IRAS application completed correctly	Yes	The NHS sites to be involved will be CAMH services that will be identified through the 15 Local Clinical Research Networks (LCRN) in England comprising of: 1.North East and North Cumbria 2.North West Coast 3.Yorkshire and Humber 4.Greater Manchester 5.East Midlands 6.West Midlands 7.West of England 8.Thames Valley and South Midlands 9.Eastern 10.Kent, Surrey and Sussex 11.Wessex 12.South West Peninsula 13.North Thames 14.South London 15.North West London
2.1	Participant information/consent documents and consent process	Yes	Updated participant information sheet and consent forms have been received bringing them in line with HRA standards.

IRAS project ID	239014

Section	HRA Assessment Criteria	Compliant with Standards	Comments
3.1	Protocol assessment	Yes	No comments
4.1	Allocation of responsibilities and rights are agreed and documented	Yes	As the research only involves a member of NHS staff completing a survey the statement of activities has been provided for information purposes only. Although formal confirmation of capacity and capability is not expected of all or some organisations participating in this study, and such organisations would therefore be assumed to have confirmed their capacity and capability should they not respond to the contrary, we would ask that these organisations pro-actively engage with the sponsor in order to confirm at as early a date as possible. Confirmation in such cases should be by email to the CI and Sponsor confirming participation based on the relevant Statement of Activities and information within this letter.
4.2	Insurance/indemnity arrangements assessed	Yes	Where applicable, independent contractors (e.g. General Practitioners) should ensure that the professional indemnity provided by their medical defence organisation covers the activities expected of them for this research study
4.3	Financial arrangements assessed	Yes	As the research only involves a member of NHS staff completing a survey the statement of activities has been provided for information purposes only.
5.1	Compliance with the Data Protection Act and data security issues assessed	Yes	No comments

IRAS project ID	239014

Section	HRA Assessment Criteria	Compliant with Standards	Comments
5.2	CTIMPS – Arrangements for compliance with the Clinical Trials Regulations assessed	Not Applicable	No comments
5.3	Compliance with any applicable laws or regulations	Yes	No comments
6.1	NHS Research Ethics Committee favourable opinion received for applicable studies	Not Applicable	NHS staff study
6.2	CTIMPS – Clinical Trials Authorisation (CTA) letter received	Not Applicable	No comments
6.3	Devices – MHRA notice of no objection received	Not Applicable	No comments
6.4	Other regulatory approvals and authorisations received	Not Applicable	No comments

Participating NHS Organisations in England

This provides detail on the types of participating NHS organisations in the study and a statement as to whether the activities at all organisations are the same or different.
Study documents will not be shared with participating NHS organisations in England because this is an NHS staff survey study. No specific arrangements are expected to be put in place at each organisation to deliver the study. If chief investigators, sponsors or principal investigators are asked to complete site level forms for participating NHS organisations in England which are not provided in IRAS or on the HRA website, the chief investigator, sponsor or principal investigator should notify the HRA immediately at ! The HRA will work with these organisations to achieve a consistent approach to information provision.

Principal Investigator Suitability

This confirms whether the sponsor's position on whether a PI, LC or neither should be in place is correct for each type of participating NHS organisation in England, and the minimum expectations for education, training and experience that PIs should meet (where applicable).
Neither a local Principal Investigator nor Local Collaborator is expected to be in place at the NHS site. GCP training is not a generic training expectation, in line with the HRA/MHRA statement on training

IRAS project ID	239014

expectations.

HR Good Practice Resource Pack Expectations

This confirms the HR Good Practice Resource Pack expectations for the study and the pre-engagement checks that should and should not be undertaken.
No HR arrangements are required (e.g. letters of access) as members of the external research team will not be coming on site to administer the staff survey.

Other Information to Aid Study Set-up

This details any other information that may be helpful to sponsors and participating NHS organisations in England in study set-up.
The applicant has indicated that they intend to apply for inclusion on the NIHR CRN Portfolio.

University of Reading

Coordinator for Quality Assurance in Research
Dr Mike Proven, BSc(Hons), PhD

Academic and Governance Services
Whiteknights House
Whiteknights, PO Box 217
Reading RG6 6AH
phone
email

Dr Polly Waite,
School of Psychology and Clinical Language Sciences,
University of Reading,
RG6 6AL

13 September 2019

Dear Polly,

UREC 19/46: Feasibility study examining the efficacy of Brief Cognitive Therapy for the Treatment of Panic Disorder in Adolescents.
Favourable opinion

Thank you for your application (email, dated 8th August 2019 and including attachments refers) for review of the above project which was considered by a UREC Sub-committee on Wednesday 4 September 2019. I can confirm that the Chair is pleased to confirm a favourable ethical opinion on the basis of the information that was reviewed by the sub-committee.

Please also find attached Safety Note 59: Incident Reporting in Human Interventional Studies at the University of Reading, to be followed should there be an incident arising from the conduct of this research.

The University Board for Research and Innovation has also asked that recipients of favourable ethical opinions from UREC be reminded of the provisions of the University Code of Good Practice in Research. A copy is attached and further information may be obtained here: https://www.reading.ac.uk/internal/academic-and-governance-services/quality-assurance-in-research/reas-RSqar.aspx
Yours sincerely

Dr M J Proven
Coordinator for Quality Assurance in Research (UREC Secretary)

cc: Ms Liz White (SREC Administrator);

Dr Polly Waite
School of Psychology & Clinical Language Sciences
University of Reading, Whiteknights
Reading
RG6 6AL

Email: l

24 September 2019

Dear Dr Waite

HRA and Health and Care Research Wales (HCRW) Approval Letter

Study title:	**Feasibility study examining the efficacy of Brief Cognitive Therapy for the Treatment of Panic Disorder in Adolescents**
IRAS project ID:	**265340**
REC reference:	**19/SC/0287**
Sponsor	**University of Reading**

I am pleased to confirm that **HRA and Health and Care Research Wales (HCRW) Approval** has been given for the above referenced study, on the basis described in the application form, protocol, supporting documentation and any clarifications received. You should not expect to receive anything further relating to this application.

Please now work with participating NHS organisations to confirm capacity and capability, in line with the instructions provided in the "Information to support study set up" section towards the end of this letter.

How should I work with participating NHS/HSC organisations in Northern Ireland and Scotland?
HRA and HCRW Approval does not apply to NHS/HSC organisations within Northern Ireland and Scotland.

If you indicated in your IRAS form that you do have participating organisations in either of these devolved administrations, the final document set and the study wide governance report (including this letter) have been sent to the coordinating centre of each participating nation. The relevant national coordinating function/s will contact you as appropriate.

Please see IRAS Help for information on working with NHS/HSC organisations in Northern Ireland and Scotland.

How should I work with participating non-NHS organisations?
HRA and HCRW Approval does not apply to non-NHS organisations. You should work with your non-NHS organisations to obtain local agreement in accordance with their procedures.

What are my notification responsibilities during the study?

The standard conditions document "*After Ethical Review – guidance for sponsors and investigators*", issued with your REC favourable opinion, gives detailed guidance on reporting expectations for studies, including:

- Registration of research
- Notifying amendments
- Notifying the end of the study

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

Who should I contact for further information?
Please do not hesitate to contact me for assistance with this application. My contact details are below.

Your IRAS project ID is **265340**. Please quote this on all correspondence.

Yours sincerely,

Maeve Ip Groot Bluemink
Approvals Specialist

Email:

Copy to: *Dr Mike Proven*

List of Documents

The final document set assessed and approved by HRA and HCRW Approval is listed below.

Document	*Version*	*Date*
Copies of advertisement materials for research participants [Advert - feasibility study]	1	22 April 2019
Copies of advertisement materials for research participants [Advert - cognitive processes study]	1	22 April 2019
Covering letter on headed paper [Cover letter]	1	22 April 2019
Covering letter on headed paper [Cover letter]	2	10 July 2019
Evidence of Sponsor insurance or indemnity (non NHS Sponsors only) [Sponsor insurance]	1	08 May 2019
Financial Arrangements [NIHR Contract Letter]		16 January 2017
HRA Schedule of Events [PIC]	1	21 June 2019
HRA Statement of Activities [PIC]	1	21 June 2019
Interview schedules or topic guides for participants [Topic guides]	1	22 April 2019
IRAS Application Form [IRAS_Form_21052019]		21 May 2019
Letter from funder [Document confirming funding amount]	1	19 September 2017
Letter from sponsor [Sponsor letter]	1	08 May 2019
Participant consent form [Assent form feasibility - young person aged 11-15]	2	08 July 2019
Participant consent form [Consent form feasibility - young person aged 16-17]	2	08 July 2019
Participant consent form [Consent form feasibility - parent/carer]	2	08 July 2019
Participant consent form [Assent form cognitive processes - young person aged 11-15]	2	08 July 2019
Participant consent form [Consent form cognitive processes - young person aged 16-17]	2	08 July 2019
Participant consent form [Consent form cognitive processes - parent/carer]	2	08 July 2019
Participant information sheet (PIS) [PIS feasibility study - young person]	2	08 July 2019
Participant information sheet (PIS) [PIS feasibility study - parent/carer]	2	08 July 2019
Participant information sheet (PIS) [PIS cognitive processes study - young person group 2]	2	08 July 2019
Participant information sheet (PIS) [PIS cognitive processes study - parent/carer group 2]	2	08 July 2019
Participant information sheet (PIS) [PIS cognitive processes study - young person group 3]	2	08 July 2019
Participant information sheet (PIS) [PIS cognitive processes study - parent/carer group 3]	2	08 July 2019
Referee's report or other scientific critique report [NIHR fellowship reviews]	1	20 May 2019
Research protocol or project proposal [Research protocol]	2	08 July 2019
Summary CV for Chief Investigator (CI) [Chief Investigator CV]	1	22 April 2019
Summary CV for student [Student CV]	1	01 May 2019
Summary, synopsis or diagram (flowchart) of protocol in non technical language [Protocol flowchart]	1	22 April 2019
Validated questionnaire [Questionnaires - young person]	1	22 April 2019
Validated questionnaire [Questionnaires - parent/carer]	1	22 April 2019

IRAS project ID	265340

Information to support study set up

The below provides all parties with information to support the arranging and confirming of capacity and capability with participating NHS organisations in England and Wales. This is intended to be an accurate reflection of the study at the time of issue of this letter.

Types of participating NHS organisation	Expectations related to confirmation of capacity and capability	Agreement to be used	Funding arrangements	Oversight expectations	HR Good Practice Resource Pack expectations
Participant Identification Centre (PIC): Undertaking Participant Identification Centre (PIC) activities only.	PIC activities should not commence until a PIC Agreement is in place. HRA and HCRW recommend use of the standard Participating NHS Organisation to PIC agreement available here.	A statement of activities has been submitted and the sponsor is not requesting and does not expect any other site agreement to be used. HRA and HCRW recommend use of the standard Participating NHS Organisation to PIC agreement, available here.	External funding has been secured from National Institute for Health Research There will be no financial provisions to the sites.	A Principal Investigator (PI)/Local Collaborator (LC) is not expected for this type of study.	Use of identifiable patient records held by an NHS organisation to identify potential participants without their prior consent should be undertaken by a member of the direct care team for the patient, so it would not normally be acceptable for this to be done by staff not employed by that organisation.

Other information to aid study set-up and delivery

This details any other information that may be helpful to sponsors and participating NHS organisations in England and Wales in study set-up.
The applicant has indicated that they do not intend to apply for inclusion on the NIHR CRN Portfolio. Some participants may also be recruited outside the NHS and some activity may take place outside the NHS. HRA & HCRW Approval does not cover activity outside the NHS. Before recruiting or undertaking activity outside the NHS the research team must follow the procedures and governance arrangements of responsible organisations.

NHS
Health Research Authority

South Central - Berkshire B Research Ethics Committee
The Old Chapel
Royal Standard Place
Nottingham
NG1 6FS

Tel:
Fax:

03 March 2020

Ms Holly Baker
PhD Student
University of Reading
School of Psychology and Clinical Language Sciences
Whiteknights
Reading
RG6 6AL

Dear Ms Baker

Study title:	**Feasibility study examining the efficacy of Brief Cognitive Therapy for the Treatment of Panic Disorder in Adolescents**
REC reference:	**19/SC/0287**
Amendment number:	**1**
Amendment date:	**12 February 2020**
IRAS project ID:	**265340**

The above amendment was reviewed by the Sub-Committee in correspondence.

Ethical opinion

The members of the Committee taking part in the review gave a favourable ethical opinion of the amendment on the basis described in the notice of amendment form and supporting documentation.

Approved documents

The documents reviewed and approved at the meeting were:

Document	*Version*	*Date*
Copies of advertisement materials for research participants [Panic Cognitive Processes Advert YP non-anxious (control group 2)]	V2	12 February 2020
Copies of advertisement materials for research participants [Panic Feasibility Study Advert]	V2	12 February 2020
Notice of Substantial Amendment (non-CTIMP)	1	12 February 2020
Participant consent form [Panic Cognitive Processes Parent (Groups 2 & 3)]	V3	12 February 2020
Participant consent form [Panic Cognitive Processes YP aged 16-17	V3	12 February 2020

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(Groups 2 & 3)]		
Participant consent form [Panic Feasibility Trial Parent]	V3	12 February 2020
Participant consent form [Panic Feasibility Trial Parent]	V1	12 February 2020
Participant consent form [Panic Feasibility Trial YP aged 16-17]	V3	12 February 2020
Participant information sheet (PIS) [Panic cognitive processes information sheet parent group 2]	v3	12 February 2020
Participant information sheet (PIS) [Panic Cognitive Processes Parent non-anxious (Group 3)]	V3	12 February 2020
Participant information sheet (PIS) [Panic Cognitive Processes YP clinic not PD (Group 2)]	V3	12 February 2020
Participant information sheet (PIS) [Panic Cognitive Processes YP non-anxious (Group 3)]	V3	12 February 2020
Participant information sheet (PIS) [Panic Feasibility Study Parent]	V3	12 February 2020
Participant information sheet (PIS) [Panic Feasibility Study Referrer Interview]	V1	12 February 2020
Participant information sheet (PIS) [Panic Feasibility Study YP]	V3	12 February 2020
Research protocol or project proposal [PANDA Protocol panic feasibility trial tracked]	V3	12 February 2020

Membership of the Committee

The members of the Committee who took part in the review are listed on the attached sheet.

Working with NHS Care Organisations

Sponsors should ensure that they notify the R&D office for the relevant NHS care organisation of this amendment in line with the terms detailed in the categorisation email issued by the lead nation for the study.

Statement of compliance

The Committee is constituted in accordance with the Governance Arrangements for Research Ethics Committees and complies fully with the Standard Operating Procedures for Research Ethics Committees in the UK.

HRA Learning

We are pleased to welcome researchers and research staff to our HRA Learning Events and online learning opportunities– see details at: https://www.hra.nhs.uk/planning-and-improving-research/learning/

19/SC/0287:	**Please quote this number on all correspondence**

Yours sincerely

pp
Dr John Sheridan
Chair

E-mail:

Copy to: *Ms Holly Baker, University of Reading*

South Central - Berkshire B Research Ethics Committee

Attendance at Sub-Committee of the REC meeting on 28 February 2020

Committee Members:

Name	*Profession*	*Present*	*Notes*
Dr John Sheridan	Consultant Toxicologist and Chemist	Yes	Chaired the meeting.
Dr Thomas Edward Woodcock	Retired Consultant - Intensive Care Unit	Yes	

Also in attendance:

Name	*Position (or reason for attending)*
Miss Mia Cooper	Approvals Administrator

NHS
Health Research Authority

South Central - Berkshire B Research Ethics Committee
The Old Chapel
Royal Standard Place
Nottingham
NG1 6FS

Tel:

31 July 2020

Ms Holly Baker
PhD Student
University of Reading
School of Psychology and Clinical Language Sciences
Whiteknights
Reading
RG6 6AL

Dear Ms Baker

Study title:	**Feasibility study examining the efficacy of Brief Cognitive Therapy for the Treatment of Panic Disorder in Adolescents**
REC reference:	**19/SC/0287**
Amendment number:	**265340AM01**
Amendment date:	23/06/2020
IRAS project ID:	**265340**

The above amendment was reviewed by the Sub-Committee in correspondence.

Ethical opinion

The members of the Committee taking part in the review gave a favourable ethical opinion of the amendment on the basis described in the notice of amendment form and supporting documentation.

Approved documents

The documents reviewed and approved at the meeting were:

Document	*Version*	*Date*
Completed Amendment Tool	AM01	23 June 2020
Copies of advertisement materials for research participants [Panic Feasibility Study Advert]	3	11 June 2020
Covering letter on headed paper [Covering letter amendment 2]	1	23 June 2020
GP/consultant information sheets or letters [Panic Feasibility Study Referrer Interview Info Sheet]	2	16 June 2020

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Participant consent form [Panic Cognitive Processes Parent (Groups 2 & 3) Consent Form]	4	16 June 2020
Participant consent form [Panic Cognitive Processes YP aged 16-17 (Groups 2 & 3) Consent form]	4	16 June 2020
Participant consent form [Panic Feasibility Trial Parent Consent Form]	4	11 June 2020
Participant consent form [Panic Feasibility Trial YP aged 16-17 Consent Form]	4	11 June 2020
Participant information sheet (PIS) [Panic Cognitive Processes Parent clinic not PD (Group 2) info sheet]	4	16 June 2020
Participant information sheet (PIS) [Panic Cognitive Processes YP clinic not PD (Group 2) info sheet]	4	16 June 2020
Participant information sheet (PIS) [Panic Cognitive Processes YP non-anxious (Group 3) Info sheet]	4	16 June 2020
Participant information sheet (PIS) [Panic Feasibility Study Parent Info Sheet]	4	11 June 2020
Participant information sheet (PIS) [Panic Feasibility Study YP Info Sheet]	4	11 June 2020
Research protocol or project proposal [PANDA Protocol feasibility trial]	4	11 June 2020

Membership of the Committee

The members of the Committee who took part in the review are listed on the attached sheet.

Working with NHS Care Organisations

Sponsors should ensure that they notify the R&D office for the relevant NHS care organisation of this amendment in line with the terms detailed in the categorisation email issued by the lead nation for the study.

Amendments related to COVID-19

We will update your research summary for the above study on the research summaries section of our website. During this public health emergency, it is vital that everyone can promptly identify all relevant research related to COVID-19 that is taking place globally. If you have not already done so, please register your study on a public registry as soon as possible and provide the HRA with the registration detail, which will be posted alongside other information relating to your project.

Statement of compliance

The Committee is constituted in accordance with the Governance Arrangements for Research Ethics Committees and complies fully with the Standard Operating Procedures for Research Ethics Committees in the UK.

HRA Learning

We are pleased to welcome researchers and research staff to our HRA Learning Events and online learning opportunities– see details at: https://www.hra.nhs.uk/planning-and-improving-research/learning/

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Health Research Authority

IRAS Project ID - 265340:	Please quote this number on all correspondence

Yours sincerely

pp
Dr John Sheridan
Chair

E-mail:

Copy to: *Ms Holly Baker, University of Reading*

NHS
Health Research Authority

South Central - Berkshire B Research Ethics Committee

Attendance at Sub-Committee of the REC meeting on 24 July 2020

Committee Members:

Name	*Profession*	*Present*	*Notes*
Dr John Sheridan	Consultant Toxicologist and Chemist	Yes	
Miss Elena Villarreal	Clinical Trial Manager	Yes	Chaired the meeting
Dr Thomas Edward Woodcock	Retired Consultant - Intensive Care Unit	Yes	

Also in attendance:

Name	*Position (or reason for attending)*
Mia Cooper	Approvals Administrator

NHS
Health Research Authority

South Central - Berkshire B Research Ethics Committee
The Old Chapel
Royal Standard Place
Nottingham
NG1 6FS

Tel:

03 September 2020

Ms Holly Baker
PhD Student
University of Reading
School of Psychology and Clinical Language Sciences
Whiteknights
Reading
RG6 6AL

Dear Ms Baker

Study title:	**Feasibility study examining the efficacy of Brief Cognitive Therapy for the Treatment of Panic Disorder in Adolescents**
REC reference:	**19/SC/0287**
Amendment number:	**ProtocolV5**
Amendment date:	**20 August 2020**
IRAS project ID:	**265340**

The above amendment was reviewed by the Sub-Committee in correspondence.

Ethical opinion

The members of the Committee taking part in the review gave a favourable ethical opinion of the amendment on the basis described in the notice of amendment form and supporting documentation.

Approved documents

The documents reviewed and approved at the meeting were:

Document	*Version*	*Date*
Completed Amendment Tool [265340_ProtocolV5_20Aug2020_Locked20Aug20_165149]	1	20 August 2020
Covering letter on headed paper [Covering letter to support amendment 3 21st Aug 2020]	1	21 August 2020
Research protocol or project proposal [PANDA Protocol panic feasibility trial v5 17-08-20_tracked&highlighted]	5	17 August 2020

NHS
Health Research Authority

Membership of the Committee

The members of the Committee who took part in the review are listed on the attached sheet.

Working with NHS Care Organisations

Sponsors should ensure that they notify the R&D office for the relevant NHS care organisation of this amendment in line with the terms detailed in the categorisation email issued by the lead nation for the study.

Amendments related to COVID-19

We will update your research summary for the above study on the research summaries section of our website. During this public health emergency, it is vital that everyone can promptly identify all relevant research related to COVID-19 that is taking place globally. If you have not already done so, please register your study on a public registry as soon as possible and provide the HRA with the registration detail, which will be posted alongside other information relating to your project.

Statement of compliance

The Committee is constituted in accordance with the Governance Arrangements for Research Ethics Committees and complies fully with the Standard Operating Procedures for Research Ethics Committees in the UK.

HRA Learning

We are pleased to welcome researchers and research staff to our HRA Learning Events and online learning opportunities– see details at: https://www.hra.nhs.uk/planning-and-improving-research/learning/

IRAS Project ID - 265340:	**Please quote this number on all correspondence**

Yours sincerely

Darren Fletcher
On Behalf of

Dr John Sheridan
Chair

E-mail:

Enclosures:	*List of names and professions of members who took part in the review*
Copy to:	*Dr Polly Waite, Dr Mike Proven, University of Reading*

NHS
Health Research Authority

South Central - Berkshire B Research Ethics Committee

Attendance at Sub-Committee of the REC meeting on 04 September 2020

Committee Members:

Name	*Profession*	*Present*	*Notes*
Mrs Sue Harrison	Retired Managing Director of a Trade Association	Yes	
Miss Elena Villarreal	Clinical Trial Manager	Yes	

Also in attendance:

Name	*Position (or reason for attending)*
Ms Helen Penistone	Approvals Specialist

7.2 Appendix 2: Consent and assent forms

Appendix 2.1: panic disorder feasibility trial (PANDA) parent consent form

Appendix 2.2: panic disorder feasibility trial (PANDA) Young Person aged 11-15 assent form.

Appendix 2.3: panic disorder feasibility trial (PANDA) Young Person aged 16-17 consent form.

FUNDED BY NIHR | National Institute for Health Research

University of Reading

CONSENT FORM

FOR PARENTS/GUARDIANS OF ADOLESCENTS WITH PANIC DISORDER

Full Title: Feasibility study examining the efficacy of Brief Cognitive Therapy for the Treatment of Panic Disorder in Adolescents

Version 2.0 08/07/2019; IRAS Project ID: 265340

(1 copy to participant; 1 copy to researcher file)

Treatment of Panic Disorder in Adolescents (PANDA) Study
Principal Investigator: Dr Polly Waite

Please initial each box

1. I confirm that I have read and understood the Information Sheet dated 08/07/2019 (Version 2.0) for the above study. I have had the opportunity to consider the information, ask questions, and have had these questions 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, and without our medical care or legal rights being affected. ☐

3. I understand that relevant sections of the data collected during the study may be looked at by individuals from the University of Reading and 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 child's records. ☐

4. I understand that assessment and treatment sessions and interviews will be videotaped and/or audiotaped to ensure quality and accuracy and give my permission for this to happen. ☐

5. I agree that the researchers can use anonymous and unidentifiable direct quotes from information my child gives them in any resulting publications and research reports. ☐

6. I understand that the data collected from me and my child in this study will be preserved and made available to researchers outside the university in a form in that does not identify my child or my family. ☐

7. I agree to my child's GP being informed of their participation in the study. ☐

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

The study was reviewed and given a favourable ethical opinion for conduct by the National Research Ethics Service (NRES) South Central - Berkshire B Committee as well as the University of Reading Ethics committee.

I have spoken to: _____ (name of researcher)

Your name: _____

Your signature: _____ Date: _____

Researcher's name: _____

Researcher's signature: _____ Date: _____

Data Protection Notice

The personal information you provide will be used for the purposes specified within the information sheet and will be held securely and in confidence by the University of Reading. Data that identifies you will only be held for as long as it is required for research purposes and only where appropriate safeguards are in place to protect it. We may share data collected as part of the research study with other researchers outside of the University but this will always be in a format that does not identify you. Any data that is published as a result of the research study will not identify you as a participant. If you have any questions or concerns about data protection, you can contact the University Data Protection Officer at imps@reading.ac.uk

FUNDED BY NIHR | National Institute for Health Research

University of Reading

ASSENT FORM

FOR YOUNG PEOPLE WITH PANIC DISORDER AGED 11-15 YEARS

To be completed by the young person and their parent/guardian

Full Title: Feasibility study examining the efficacy of Brief Cognitive Therapy for the Treatment of Panic Disorder in Adolescents

Version 2.0 08/07/2019; IRAS Project ID: 265340

(1 copy to participant; 1 copy to researcher file)

Treatment of Panic Disorder in Adolescents (PANDA) Study
Principal Investigator: Dr Polly Waite

Please circle "YES" to all you agree with:

1. Have you read (or had read to you) the information about this project? **YES / NO**
2. Has somebody explained this project to you? **YES / NO**
3. Do you understand what this project is about? **YES / NO**
4. Have you asked all the questions you want? **YES / NO**
5. Have you had your questions answered in a way you understand? **YES / NO / no questions**
6. Do you understand it's OK to stop taking part at any time? **YES / NO**
7. Do you agree to sessions being videotaped and/or audiotaped? **YES / NO**
8. Do you agree to quotes being used, without your real name, for reports that the researchers might publish? **YES / NO**
9. Do you agree for your GP to be told that you are taking part? **YES / NO**
10. Are you happy to take part? **YES / NO**

If any answers are 'no' or you **don't** want to take part, **don't** sign your name!

The study was reviewed and given a favourable ethical opinion for conduct by the National Research Ethics Service (NRES) South Central - Berkshire B Committee as well as the University of Reading Ethics committee.

If you **do** want to take part, please fill in this section:

Your name _____

Signature _____ Date _____

Your parent or guardian's agreement that you can take part:

Print name _____

Signature _____ Date _____

The person who explained this project:

Print name _____

Signature _____ Date _____

Data Protection Notice

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FUNDED BY NIHR | National Institute for Health Research

University of Reading

CONSENT FORM

FOR YOUNG PEOPLE WITH PANIC DISORDER AGED 16-17 YEARS

To be completed by the young person

Full Title: Feasibility study examining the efficacy of Brief Cognitive Therapy for the Treatment of Panic Disorder in Adolescents

Version 2.0 08/07/2019; IRAS Project ID: 265340

(1 copy to participant; 1 copy to researcher file)

Treatment of Panic Disorder in Adolescents (PANDA) Study
Principal Investigator: Dr Polly Waite

Please initial each box

1. I confirm that I have read and understood the Information Sheet dated 08/07/2019 (Version 2.0) for the above study. I have had the opportunity to consider the information, ask questions, and have had these questions answered satisfactorily. ☐

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

3. I understand that relevant sections of the data collected during the study may be looked at by individuals from the University of Reading and 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. ☐

4. I understand that assessment and treatment sessions and interviews will be videotaped and/or audiotaped to ensure quality and accuracy and I give my permission for this to happen. ☐

5. I agree that the researchers can use anonymous and unidentifiable direct quotes from information I give them during the study in any resulting publications and research reports. ☐

6. I understand that the data collected from me and my parent/guardian in this study will be preserved and made available to researchers outside the university in a form that does not identify me or my family. ☐

7. I agree to my GP being informed of my participation in the study. ☐

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

The study was reviewed and given a favourable ethical opinion for conduct by the National Research Ethics Service (NRES) South Central - Berkshire B Committee as well as the University of Reading Ethics committee.

I have spoken to: _____ (name of researcher)

Your name: _____

Your signature: _____ Date: _____

Researcher's name: _____

Researcher's signature: _____ Date: _____

Data Protection Notice

The personal information you provide will be used for the purposes specified within the information sheet and will be held securely and in confidence by the University of Reading. Data that identifies you will only be held for as long as it is required for research purposes and only where appropriate safeguards are in place to protect it. We may share data collected as part of the research study with other researchers outside of the University but this will always be in a format that does not identify you. Any data that is published as a result of the research study will not identify you as a participant. If you have any questions or concerns about data protection, you can contact the University Data Protection Officer at imps@reading.ac.uk

7.3 Appendix 3: Participant information sheets

Appendix 3.1: Psychological treatment for anxiety in adolescents: the views of CAMHS clinicians: Survey information sheet

Appendix 3.2: Panic feasibility trial (PANDA) parent information sheet

Appendix 3.3: Panic feasibility trial (PANDA) adolescent information sheet

University of Reading

NHS National Institute for Health Research

IRAS ID: 239014_V2_14/03/2018

Psychological treatments for anxiety in adolescents: The views of CAMHS clinicians

We are looking for clinicians to take part in a study. This leaflet will give you information to help decide if you would like to take part.

What is the purpose of the study?

This study aims to explore the identification and treatment of anxiety disorders in adolescents within CAMHS services.

For the purposes of this study, we categorise adolescents as secondary school-aged children (11-18 years). We would like to know more about the management and treatment of adolescents with anxiety disorders in your CAMHS service.

What will happen to if I agree to take part in the study?

If you agree to take part, you will proceed to the online consent form and survey. The online survey takes approximately 15 minutes to complete. Paper copies can be requested if preferred by contacting the researchers.

No preparation is necessary as this is not a test about your knowledge. You may discuss this study with your colleagues. Electronic consent forms and survey data will be stored in a secure location, only accessed by the research team. Your name, trust in which you are employed and email address will be stored for the purpose of entering you into the prize draw and will be stored in a secure database separate from your survey responses and will be destroyed after 12 months. Your survey responses will be anonymised by allocation of a unique identification number. Consent forms will be stored for 5 years and survey data will be stored for 12 months, after which they will be securely destroyed.

Participation in this research is voluntary, and you are free to withdraw at any time. Any information you give in the survey will not be passed on to anyone else without your permission. The exception being if you report any criminal activity or malpractice, in which case we would have to report to the appropriate authority.

Who is organising and funding the research and is it ethical?

This study is part of work being conducted by a PhD researcher, Holly Baker, at the University of Reading and is funded by the National Institute for Health Research. This application has been reviewed by the University Research Ethics Committee and has been given a favourable ethical opinion for conduct.

What are the possible benefits and risks?

We intend to use the findings of this study to inform research into treatments for anxiety. There are no direct risks relating to medical treatment in this study, neither are there any intended direct medical benefits. There may be an indirect benefit to patients from the insights we gain but we cannot guarantee this.

The findings from this study will be submitted for publication in a peer reviewed journal and so this will expand published research in this field.

Will I be reimbursed for taking part?

As a reimbursement for taking part in the study you (or a nominated colleague) will be offered the opportunity to take part in a Webinar on adolescent anxiety disorders. This module may be used to contribute towards Continued Professional Development. You will have the option to be entered into a prize draw to win one of two £100 amazon vouchers.

Thank you for your time. If you have questions or want to know more please contact the study researchers at any time.

If you would like to take part in this study, please complete the online consent form and survey by clicking here.

The University of Reading
School of Psychology and Clinical Language Sciences
Whiteknights
Reading, RG6 6AL

Holly Baker
[redacted]
T: [redacted]

Dr Polly Waite
email: [redacted]
T: [redacted]

FUNDED BY NIHR | National Institute for Health Research

Treatment of Panic Disorder in Adolescents (PANDA Study)

INFORMATION FOR PARENTS/CARERS

Full Title: Feasibility study examining the efficacy of Brief Cognitive Therapy for the Treatment of Panic Disorder in Adolescents

Version 5.0 13/05/2021; IRAS Project ID: 265340

University of Reading

OVERVIEW

We are carrying out a research project to compare two talking therapies, that involve working with a therapist one-to-one, for the treatment of panic disorder in young people aged 11-18 years

We would like to invite your child to take part.
In this leaflet, there is some information that we hope will help you both decide whether your child should take part.

One of our team will go through this information with you and answer any questions you have next time you speak with us.

What you can find in this leaflet:

A BRIEF OVERVIEW

You have been given this leaflet because your child:

- Is between **11 and 18 years old**
- Has been diagnosed with **panic disorder**
- Has been offered treatment and we think **the treatments in this study will be helpful** to them

We will be using **two forms of a talking treatment called Cognitive Behaviour Therapy (CBT)** as part of this research, but they will only have one of them. The one that they have will be decided at random.

If they take part, we will ask them to:

- Fill in some questionnaires
- Attend to up to 5 treatment sessions, either face to face or by video or phone call (and 2 extra 'booster' sessions)
- Have 2 assessments (one after they finish the 5 sessions and one 3 months later)
- Complete an online questionnaire 1 year later
- After treatment we will invite some young people and parents/carers to be interviewed about their experience of the treatment and taking part in the research.

The study was reviewed and given a favourable ethical opinion for conduct by the National Research Ethics Service (NRES) South Central - Berkshire B Committee as well as the University of Reading Ethics committee.

SOME IMPORTANT POINTS

They **don't need to take part**, and deciding not to take part **won't affect their future treatment** in any way!

- Assessments and treatment sessions will be **video or audio taped** so that we can make sure they are getting high quality therapy and that the assessments are done well.
- If they decide **not** to take part, they will be allocated to a therapist who isn't taking part in the study and they will receive all of the same support that they would usually.
- They can **stop taking part** in the treatment or meetings **at any point** in the study and this **won't affect their future treatment**.
- They can also decide that they don't want us to use some or all of the information they have given us, but **they must tell us before we start to analyse the data from the study (1st January 2022).**

If you have any concerns about this research study

If you have concerns about ***any*** part of the study, please speak to Polly Waite, the Lead Researcher (details on page 11). If you are still unhappy and wish to complain formally, please contact our Head of School, School of Psychology & Clinical Language Sciences - Prof Carmel Houston-Price. She can be contacted via email: _____, or tel: _____ and will arrange to meet with you to discuss your concerns.

KEEPING YOUR INFORMATION SAFE

- Each person in the study is given a **participant number**. We will use this number to label information we collect about them.
- Any information they provide online will use a **secure website**.
- We will store the information that you and your child give us on a **secure University system**.
- None of this information will be taken out of the offices where we do the research, and it will not be stored on personal computers.
- Both the files and the drive on which we store these files are **password controlled** and only members of the research team have access to these passwords.
- The data collected about them will be preserved and made available in **a form in which they cannot be identified**, so that it can be consulted and re-used by others (called 'open access').

AFTER THE STUDY FINISHES

- Everyone's results will be grouped together, included in publications of scientific journals, and be presented to other researchers and clinicians.
- We will send a leaflet explaining the main findings to everyone who took part in the study.
- Some of the findings from the study will form part of a researcher's educational qualification.

A CLOSER LOOK AT THE STUDY

The best treatment for panic disorder is **Cognitive Behaviour Therapy, or CBT**. CBT can be delivered in different ways, but we don't know what the best way to deliver it is.

- We are conducting a trial to **compare two different versions of CBT** which are both likely to be effective.

These are called **Brief Cognitive Therapy for Panic Disorder and Graded Exposure**

- We want to give some young people **Brief Cognitive Therapy** and some **Graded Exposure**.

- Both treatments involve **the same number of sessions** and **working with a therapist one-to-one**, either in the AnDY Research Clinic or by video/telephone call. Your child will also be given **reading materials and worksheets** to complete outside sessions.

5.

ABOUT THE THERAPY

The treatments are called Cognitive Behaviour Therapy because:

- They focus on the **thoughts** (cognitions) that people have when they are anxious
- They also focus on the **ways that they behave** when they are in a situation that makes them feel anxious.

Research has shown that helping people to deal with their fearful thoughts and try out different ways of behaving in frightening situations is a great way of building confidence and helping us overcome our fears.

There are different ways that your child and their therapist could try to deal with fearful thoughts and look at changing behaviours.

The therapies in this trial use **different ways** of tackling these problems.

This is always done at your child's own pace and **they are always in control**. Both treatments work well but **we don't know which works best**.

6.

WHAT WE WILL ASK YOU TO DO

Initial assessment: your child will have an assessment about their difficulties and you will both be asked to fill in some questionnaires.

If eligible, your child will be invited to take part in the study.

Your child will be randomly assigned to one of the two treatments. You will both be asked to fill in some further questionnaires

Brief Cognitive Therapy	Graded Exposure
• 5 sessions • Reading materials & worksheets • Questionnaires at each session	• 5 sessions • Reading materials & worksheets • Questionnaires at each session

Post-treatment assessment: you will both be asked to fill in questionnaires at the end of the 5 treatment sessions. You and your child may also be interviewed about their experience of the study (either now or after booster sessions).

Brief Cognitive Therapy	Graded Exposure
• 2 booster sessions	• 2 booster sessions

Final assessment: 3 months after the post-treatment assessment, your child will have a final assessment and you will both be asked to fill in questionnaires.

1 year after: An online questionnaire

7.

- At the initial and final assessment sessions, your child (and you) will be asked a number of questions, and we will give you both some questionnaires to fill out **about their current difficulties**. Assessment sessions will last up to **2-3 hours**.
- The questionnaires will ask about your child's **panic attacks** and things that are related, such as **anxiety/low mood**. Their therapist will use them to make sure the treatment is helpful and relevant.
- We will also use the questionnaire data to help us understand whether these processes are specific to panic disorder in order to further adapt and develop our treatments (by comparing their responses to those of young people without panic disorder).
- The regular treatment sessions will happen mainly weekly and will last between **30 and 90 minutes**. Your child will be given reading materials and worksheets to read and complete outside sessions.
- They will be asked to have another **assessment** 3 months after they finish treatment (and after any booster sessions), so we can check how they are getting on.
- 12 months after treatment, your child will be asked to complete an online questionnaire.

We will be inviting **some young people and parents/carers** to take part in an **additional meeting** after the treatment.

- This will involve young people and parents/carers talking to a researcher about what they thought of the treatment and taking part in a research study.
- We will record these interviews so that we **can be accurate** and learn more about the treatments.
- When we write up our research, we will **include some quotes** from the meetings so that people know the important things that were said. **We won't use your child's or your real name**, so no-one will know the quotes were from your child or you.

8.

ADVANTAGES OF TAKING PART

We have good reason to think that both treatments will be helpful for most young people, but **we don't know which is best**. That's why we are doing this research.

- All of the questions that we will ask them will help us to do our best to make sure this treatment works well for them.
- They will work with their therapist as a team and will be in control at all times. They will **never be made to do anything** that they do not want to do.
- The treatment will be specific to your child.
- By taking part, they will help us learn about **the best ways to help others**, like them, with panic disorder.

9.

THE DISADVANTAGES OF TAKING PART

- As with all forms of talking therapies, your child may be asked to **discuss some thoughts and feelings that might make them feel upset**. However, these are similar to the questions they would be asked in treatment, even if they were not taking part in the research, and are an important part of treatment. They can always decide what they would like to discuss in therapy.

- They will have to have **more assessments and questionnaires** than usual if they take part in this study. Where this involves more time than would be normal, we will reimburse them for this.
  - Each family will get £10 to cover the extra time completing questionnaires before and after treatment and £20 for the assessment 3 months after finishing treatment (as this involves a clinical interview as well). **Your child will also receive £10 for completing the online questionnaire 12 months later.**
  - Where young people and parents/carers take part in interviews after treatment, they will be given £10 to cover the time and inconvenience for the interview.

10.

WHAT HAPPENS NOW?

We will ask your child some questions to check they are eligible to take part. They won't be able to take part if they have already had either type of CBT for panic disorder, or if they have certain other difficulties.

Then, if they want to take part:

- If they are aged 11-15 years, they need to fill out the assent form. **You will also need to sign a consent form to agree that they can take part.**
- If they are aged 16 or older, they can give consent and so they need to fill out the consent form.

We will also send a short letter to your child's GP letting them know that they are taking part.

If they don't want to take part:

- They don't have to do anything more. They will get their treatment as usual.

Deciding not to take part won't affect how they are looked after in any way!!

QUESTIONS?

If you have any questions or worries about anything to do with this research study, **please speak to the team member who is going through this leaflet with you.**

Or you can email or telephone the lead researcher

Polly Waite
Email:
Telephone:

Your child will also be getting some information about this research, so they can talk to Polly or other members of the team too.

11.

FUNDED BY NIHR | National Institute for Health Research

Treatment of Panic Disorder in Adolescents (PANDA Study)

INFORMATION FOR YOUNG PEOPLE

Full Title: Feasibility study examining the efficacy of Brief Cognitive Therapy for the Treatment of Panic Disorder in Adolescents
Version 5.0 13/05/2021; IRAS Project ID: 265340

University of Reading

OVERVIEW

We are carrying out a research project to compare two talking therapies, that involve working with a therapist one-to-one, for the treatment of panic disorder in young people aged 11-18 years

We would like to invite you to take part.
In this leaflet, there is some information that we hope will help you to decide whether you would like to take part.

One of our team will go through this information with you and answer any questions you have next time you speak with us.

What you can find in this leaflet:

A BRIEF OVERVIEW

You have been given this leaflet because you:

- Are between **11 and 18 years old**
- Have been diagnosed with **panic disorder**
- Have been offered treatment and we think **the treatments in this study will be helpful** to you

We will be using **two forms of a talking treatment called Cognitive Behaviour Therapy (CBT)** as part of this research, but you will only have one of them. The one that you have will be decided at random.

If you take part, we will ask you to:

- Fill in some questionnaires
- Attend to up to 5 treatment sessions, either face to face or by video or phone call (and 2 extra 'booster' sessions)
- Have 2 assessments (one after you finish the 5 sessions and one 3 months later)
- Complete an online questionnaire 1 year later
- After treatment we will also invite some young people (and parents/carers) to be interviewed to tell us about their experience of the treatment and taking part in the research.

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SOME IMPORTANT POINTS

You **don't need to take part**, and deciding not to take part **won't affect your future treatment** in any way!

- **Assessments and** treatment sessions will be **video or audio taped** so that we can make sure you are getting high quality therapy and that the assessments are done well.
- If you decide **not** to take part, you will be allocated to a therapist who isn't taking part in the study and you will receive all of the same support that you would usually.
- You can **stop taking part** in the treatment or meetings **at any point** in the study and this **won't affect your future treatment**.
- You can also decide that you don't want us to use some or all of the information you have given us, but **you must tell us before we start to analyse the data from the study 1st January 2022).**

If you have any concerns about this research study

If you have concerns about ***any*** part of the study, please speak to Polly Waite, the Lead Researcher (details on page 11). If you are still unhappy and wish to complain formally, please contact our Head of School, School of Psychology & Clinical Language Sciences - Prof Carmel Houston-Price. She can be contacted via email: or tel: and will arrange to meet with you to discuss your concerns.

KEEPING YOUR INFORMATION SAFE

- Each person in the study is given a **participant number**. We will use this number to label information we collect about you.
- Any information you provide online will use a **secure website**.
- We will store the information that you give us on a **secure University system**.
- None of this information will be taken out of the offices where we do the research, and it will not be stored on personal computers.
- Both the files and the drive on which we store these files are **password controlled** and only members of the research team have access to these passwords.
- The data collected about you will be preserved and made available in **a form in which you cannot be identified**, so that it can be consulted and re-used by others (called 'open access').

AFTER THE STUDY FINISHES

- Everyone's results will be grouped together, included in publications of scientific journals, and be presented to other researchers and clinicians.
- We will send a leaflet explaining the main findings to everyone who took part in the study.
- Some of the findings from the study will form part of a researcher's educational qualification.

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These are called **Brief Cognitive Therapy for Panic Disorder and Graded Exposure**

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The treatments are called Cognitive Behaviour Therapy because:

- They focus on the **thoughts** (cognitions) that people have when they are anxious
- They also focus on the **ways that they behave** when they are in a situation that makes them feel anxious.

Research has shown that helping people to deal with their fearful thoughts and try out different ways of behaving in frightening situations is a great way of building confidence and helping us overcome our fears.

There are different ways that you and your therapist could try to deal with fearful thoughts and look at changing behaviours.

The therapies in this trial use **different ways** of tackling these problems.

This is always done at your own pace and **you are always in control**. Both treatments work well but **we don't know which works best**.

6.

WHAT WE WILL ASK YOU TO DO

Initial assessment: You will have an assessment about your difficulties and you (and your parent/carer) will be asked to fill in some questionnaires.

If eligible, you will be invited to take part in the study.

You will be randomly assigned to one of the two treatments. You (and your parent/carer) will be asked to fill in some further questionnaires

Brief Cognitive Therapy	Graded Exposure
• 5 sessions • Reading materials & worksheets • Questionnaires at each session	• 5 sessions • Reading materials & worksheets • Questionnaires at each session

Post-treatment assessment: you (and your parent/carer) will be asked to fill in questionnaires at the end of the 5 treatment sessions. You may also be interviewed about your experience of the study (either now or after booster sessions).

Brief Cognitive Therapy	Graded Exposure
• 2 booster sessions	• 2 booster sessions

Final assessment: 3 months after the post-treatment assessment, you will have a final assessment and you (and your parent/carer) will be asked to fill in questionnaires.

1 year after: An online questionnaire

7.

- At the initial and final assessment sessions, you and your parent/carer (where possible) will be asked a number of questions, and we will give you both some questionnaires to fill out **about your current difficulties**. Assessment sessions will last up to **2-3 hours**.
- The questionnaires will ask about your **panic attacks** and things that are related, such as **anxiety/low mood**. Your therapist will use them to make sure the treatment is helpful and relevant to you..
- We will also use the questionnaire data to help us understand whether these processes are specific to panic disorder in order to further adapt and develop our treatments (by comparing your responses to those of young people without panic disorder).
- The regular treatment sessions will happen mainly weekly and will last between **30 and 90 minutes**. You will be given reading materials and worksheets to read and complete outside sessions.
- You will be asked to have another **assessment** 3 months after you finish treatment (and after any booster sessions), so we can check how you are getting on.
- 12 months after treatment, you will be asked to complete an online questionnaire.

We will be inviting **some of you** to take part in an **additional meeting** after the treatment.

- This will involve talking to a researcher about what you thought of the treatment and taking part in a research study.
- We will record these interviews so that we **can be accurate** and learn more about the treatments.
- When we write up our research, we will **include some quotes** from the meetings so that people know the important things that were said. **We won't use your real name**, so no-one will know the quotes were from you.

8.

ADVANTAGES OF TAKING PART

We have good reason to think that both treatments will be helpful for most young people, but **we don't know which is best**. That's why we are doing this research.

- All of the questions that we will ask you will help us to do our best to make sure this treatment works well for you.
- You will work with your therapist as a team and will be in control at all times. You will **never be made to do anything** that they do not want to do.
- The treatment will be specific to You.
- By taking part, they will help us learn about **the best ways to help others**, like you, with panic disorder.

9.

THE DISADVANTAGES OF TAKING PART

- As with all forms of talking therapies, you may be asked to **discuss some thoughts and feelings that might make you feel upset**. However, these are similar to the questions you would be asked in treatment, even if you were not taking part in the research, and are an important part of treatment. You can always decide what they would like to discuss in therapy.

- You will have to have **more assessments and questionnaires** than usual if you take part in this study. Where this involves more time than would be normal, we will reimburse you for this.
  - Each family will get £10 to cover the extra time completing questionnaires before and after treatment and £20 for the assessment 3 months after finishing treatment (as this involves a clinical interview as well). You will also receive £10 for completing the online questionnaire 12 months later.
  - If you take part in an interview after treatment, you will be given £10 to cover the time and inconvenience for the interview.

10.

WHAT HAPPENS NOW?

We will ask you some questions to check you are eligible to take part. You won't be able to take part if you have already had either type of CBT for panic disorder, or if you have certain other difficulties.

Then, if you want to take part:

- If you are aged 11-15 years, you need to fill out the assent form. **Your parent/carer will also need to sign a consent form to agree that you can take part.**
- If you are aged 16 or older, you can give consent and so you need to fill out the consent form.

We will also send a short letter to your GP letting them know that you are taking part.

If you don't want to take part:

- You don't have to do anything more. You will get your treatment as usual.

Deciding not to take part won't affect how you are looked after in any way!!

QUESTIONS?

If you have any questions or worries about anything to do with this research study, **please speak to the team member who is going through this leaflet with you.**

Or you can email or telephone the lead researcher

Polly Waite
Email:
Telephone:

Your parent/carer will also be getting some information about this research, so you can talk to them too.

11.

7.4 Appendix 4: Addendum to paper 1: Sample size calculation

In paper 1, to allow us to make generalisations from the findings of the survey results we calculated an a priori estimate for the required sample size. As we were not testing a hypothesis a precision-based sample size estimate was appropriate (Kotrlik & Higgins, 2001). To carry out this calculation we needed to estimate the target population size, set a margin of error (confidence interval), and use the corresponding Z value for our confidence level, and standard deviation.

As recommended by Kotrlik & Higgins, 2001, we chose to use an infinite population estimate as the true population size of the clinical workforce was unknown. The margin of error chosen was 5%, providing a 95% confidence interval. This is a commonly used margin of error (Taherdoost, 2017) and implies that 95 out of 100 samples will have the true population value within the margin of error. Z is the statistical value corresponding to the level of confidence (Taherdoost, 2017). A standard deviation of 0.5 was used as we did not know how much variance would be in the sample. Setting a 0.5 standard deviation provided a conservative estimate to ensure a large enough sample that would allow precision and confidence in our results (Kotrlik & Higgins, 2001).

The equation used to calculate the sample size was:

$$n = \frac{(\text{Z score})^2 \times \text{StdDev} \times (1\text{-StdDev})}{(\text{Margin of error})^2}$$

This calculation was completed using an online sample size calculator which can be found at: https://epitools.ausvet.com.au/.

Below is the calculation using our chosen 95% confidence interval, 0.5 standard deviation and 5% margin of error (95% confidence interval):

((1.96)2 x 0.5(0.5)/ (0.05)2

(3.8416 x 0.25)/ 0.0025

0.09604/ 0.0025

384.16

Required sample size = 385

References

Kotrlik, J., & Higgins, C. (2001). Organizational research: Determining appropriate sample size in survey research appropriate sample size in survey research. Information technology, learning, and performance journal, 19(1), 43. Retrieved from: https://www.opalco.com/wp-content/uploads/2014/10/Reading-Sample-Size1.pdf

Taherdoost, H. (2017). Determining sample size; how to calculate survey sample size. International Journal of Economics and Management Systems, 2. Available at SSRN: https://ssrn.com/abstract=3224205

7.5 Appendix 5: Addendum to paper 1: Additional information about recruitment

Recruitment to the study was carried out with the support of the National Institute for Health Research (NIHR) Local Clinical Research Network (LCRN). HB contacted all NHS trusts within England that offered child and adolescent mental health services. After ethical approval was granted, the Health Research Authority (HRA) provided a spreadsheet with contact details for research and development teams throughout England. This was a starting point for making contact. Each trust was approached by email in the first instance, providing the HRA approval letter and a brief overview of the nature of the study. Below is an example communication to an NHS trust:

> Dear …
>
> I am currently recruiting CAMHS clinicians to take part in the research project 'Treatment of adolescent anxiety disorders: the views of the clinicians' which has received HRA approval and is registered on the portfolio (CPMS 38000).
>
> This research is an online survey for CAMHS clinicians who are working with children and adolescents with anxiety disorders, and I am hoping you may be able to help me identify CAMHS services/ clinicians within these services in your trust or region that may be interested in taking part in the research. All local sites that take part will be allocated recruitment on the portfolio for their trust.
>
> In the first instance please could you let me know if you are able to offer support with recruitment to the study? If so, I will be happy to forward on the local information pack which includes the portfolio and full study details to facilitate this.
>
> Please let me know if you have any questions.
>
> Kind regards,
>
> Holly

The study was also registered on the NHS central portfolio management system (CPMS), and in some instances, research and development staff contacted me to find out if I was recruiting to the study and wanting to participate.

In both cases, HB built a working relationship with teams, providing any necessary information for them to be able to facilitate the research. This involved telephone meetings, and email exchanges to answer questions about study logistics. HB tracked and managed the recruitment process by keeping in touch with research and development staff throughout the process, to find out when the survey had been sent out and sending reminders to send the survey out for the second time. All of the 15 LCRN areas participated. HB then liaised with research teams to update them with the number of participants from their individual trusts for their records.

7.6 Appendix 6: Addendum to paper 2: Limitations

The date range used in paper 2 was 1990 to 2019. 1990 was chosen as a start date for searches based on the date range used in a similar meta-analysis that reported psychological treatment outcomes for adolescents (January 1990 to December 2010) (Reynolds et al., 2012). However, the decision to only include papers from 1990 onwards was a limitation of paper 2. Had we included a wider search range we may have identified a larger pool of studies, and therefore more data to include in the meta-analysis. We recommend that future studies widen the search criteria to all years in line with other previous similar meta-analyses (James et al., 2020) to ensure that all available studies are included.

References

James, A. C., Reardon, T., Soler, A., James, G., & Creswell, C. (2020). Cognitive behavioural therapy for anxiety disorders in children and adolescents. *Cochrane Database of Systematic Reviews* (11). https://doi.org/10.1002/14651858.CD013162.pub2.

Reynolds, S., Wilson, C., Austin, J., & Hooper, L. (2012). Effects of psychotherapy for anxiety in children and adolescents: a meta-analytic review. *Clinical Psychology Review*, 32(4), 251-262. https://doi.org/10.1016/j.cpr.2012.01.005.