University of Southampton

Faculty of Environmental and Life Sciences

<u>School of Psychology</u>

Exploring the Effectiveness of a School-Based Gratitude Intervention on Children's Levels of Anxiety, Sense of School Belonging and Sleep Quality

by

Danielle Louise Cripps

<u>Thesis for the degree of Doctorate of Educational Psychology</u>

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Abstract

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Chapter 1. School-based positive psychology interventions (PPIs) which focus on building resilience and promoting children's social and emotional wellbeing are becoming more evident in practice and within the research base (Shankland & Rosset, 2017). The main goal of PPIs are to cultivate positive emotions, cognitions and behaviours (Sin & Lyubomirsky, 2009). Anxiety in youth can be understood within a risk and resilience framework comprising of factors which prevent, buffer and reduce the risk of developing an anxiety condition. The broaden-and-build theory (Fredrickson, 1998; 2001) suggests that positive emotions, in contrast to negative emotions, broaden the mind set and action responses which over time leads to the building of personal resources and resilience. The resiliency theory presents that promotive factors are an important element of universal, preventative interventions which aim to promote resilience and positive functioning (Zimmerman, 2013). A systematic search of the literature base yielded 13 studies. These were analysed in terms of their methodological quality and their effectiveness to increase resilience and reduce anxiety in children and adolescents. Findings showed that universally delivered interventions are effective in reducing anxiety symptoms in children and adolescents. Targeted interventions also showed potential, although due to the small number of studies included in the review, these findings cannot be applied more widely. There was limited evidence to suggest that PPIs increase resilience in young people which is a contrasting finding to previous reviews. Implications for practice, strengths and limitations of the current evidence base, and future directions for research are explored.

Chapter 2. Gratitude has been found to be associated with various positive wellbeing outcomes for young people (Renshaw & Olinger-Steeves, 2016). It can be

described as a cognitive-affective state which arises in response to aid or a benefit (Emmons & Stern, 2013) and through the appreciation of positive aspects of life (Wood, Froh & Geraghty, 2010). The practice of gratitude has been suggested to broaden cognitive and behavioural tendencies, which over time can build positive psychological and social resources (Fredrickson, 1998, 2001). Grateful recounting may also enhance an individual's ability to appraise situations in a more positive way which in turn may lead to improvements in anxiety and sleep quality (Watkins, Uhder & Pichinevskiy, 2015; Wood, Joseph, Lloyd & Atkins, 2009). The current study explored the effectiveness of a gratitude diary intervention carried out across six primary schools in South-East England. Year 6 pupils (n = 164) were randomly allocated to either a gratitude diary writing condition in which they were asked to record three things they were thankful for or to an event diary writing condition whereby they were asked to record three neutral events from their school day. It was hypothesised that keeping a daily gratitude diary would lead to improvements in anxiety, school belonging and sleep. Self-report measures assessed gratitude proneness, anxiety and school belonging across three time points. Parents (n = 58) completed pre- and post-intervention measures to assess children's sleep quality. Results showed significant group differences for anxiety, gratitude proneness and school belonging in favour of the intervention group. No significant group differences for sleep quality were found. A school-based gratitude diary intervention could be an effective way to promote school belonging and reduce anxiety in a youth population. The findings, implications for practice and directions for future research are discussed.

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Research Thesis: Declaration of Authorship

Print name:	Danielle Louise Cripps

Title of thesis:	Exploring the Effectiveness of a School-Based Gratitude Intervention on Children's Levels of Anxiety, Sense of School Belonging and Sleep Quality

I declare that this thesis and the work presented in it are my own and has been generated by me as the result of my own original research.

I confirm that:

1. This work was done wholly or mainly while in candidature for a research degree at this University;
2. Where any part of this thesis has previously been submitted for a degree or any other qualification at this University or any other institution, this has been clearly stated;
3. Where I have consulted the published work of others, this is always clearly attributed;
4. Where I have quoted from the work of others, the source is always given. With the exception of such quotations, this thesis is entirely my own work;
5. I have acknowledged all main sources of help;
6. Where the thesis is based on work done by myself jointly with others, I have made clear exactly what was done by others and what I have contributed myself;
7. None of this work has been published before submission.

Signature:		Date:	

Acknowledgements

Definitions and Abbreviations

α	Alpha coefficient; Cronbach's Index of Internal Consistency
ANCOVA	Analysis of covariance
ANOVA	Analysis of variance
APA	American Psychological Association
CAMHS	Child Adolescent Mental Health Services
CBT	Cognitive Behavioural Therapy
CSHQ	Children's Sleep Habits Questionnaire
d	Effect size, Cohen's D
DfE	Department for Education
DOH	Department of Health
EP	Educational psychologist
F	F ratio
GQ-6	Gratitude Questionnaire
M	Mean sample
N/n	Number of cases/studies/items
ns	Not statistically significant
P/p	P value significance statistic
PPIs	Positive psychology interventions
η^2	Partial-Eta-Squared effect
R	Estimate of Pearson correlation coefficient
RCT	Randomised control trial
SD	Standard deviation
SEL	Social and emotional learning

SEN	Special educational needs
SCAS	Spence Children's Anxiety Scale
t	The sample value of the t-test statistic
T1	Time point 1 (pre-intervention)
T2	Time point 2 (post-intervention)
T3	Time point 3 (follow-up)
$\mathcal{X}^2$	Mauchley's Test of Sphericity

SEN   Special educational needs

SCAS   Spence Children's Anxiety Scale

Chapter 1: Investigating the effectiveness of school-based positive psychology interventions to prevent or reduce anxiety and to promote resilience in young people

Introduction

Anxiety disorders are the most prevalent psychopathology affecting children and adolescents (Waddell, Offord, Shepherd, Hua & McEwan, 2002; Merikangas et al., 2010). Recent figures estimate that around 40,000 young people in England have a diagnosable anxiety disorder (Public Health England, 2016), although, the actual rates of occurrence may be higher due to the number of individuals who remain undiagnosed and without access to appropriate support (Neil & Christensen, 2009). The experience of anxiety and fear is part of the normal course of childhood development (Malcarne, Hansdottir & Merz, 2010). Symptoms of an anxiety disorder are much more severe in comparison and persist beyond developmentally appropriate periods (APA, 2013; Rockhill, Kodish, DiBattisto, Macias, Varley & Ryan, 2010). The impact of anxiety disorders in youth are often debilitating and affect all aspects of life including social, emotional, family and academic functioning (Hill, Waite & Creswell, 2016; Beesdo, Knappe & Pine, 2009). Anxiety disorders remain relatively stable across the developmental trajectory and if left untreated symptoms are likely to continue into adulthood (Gregory & Eley, 2007; Copeland, Angold, Shanahan & Costello, 2014; Essau, Lewinsohn, Olaya & Seeley, 2014). Longitudinal research has found that anxiety disorders are linked to a range of poor outcomes in later life such as lower life satisfaction, substance dependence, low academic achievement, poor work adjustment and limited coping skills (Woodward & Fergusson, 2001; Essau et al., 2014).

In order to prevent and minimise the impact of anxiety disorders at a population level, there is a pertinent need to increase children's wellbeing and resilience and to provide early support for those most at risk (Mohapatra, Agarwal & Sitholey, 2014; Hill et al., 2016; Neil & Christensen, 2009; Huppert, 2014). However, it is estimated that up to 70% of young people with a mental health disorder in the UK do not receive sufficient intervention or treatment at an early enough age (Children's Society, 2008). This is partly due to the increasing pressures on specialist Child and Adolescent Mental Health Services (CAMHS) to provide treatment for the rising number of young people with mental health conditions (Public Health England, 2016; Wallace & White, 2017; Crenna-Jennings & Hutchingson, 2018). Furthermore, a lack of effective preventative and early mental health support in place for young people has also contributed to this issue (Atkinson & Owen, 2015). Over the last several years, government bodies in the UK have pledged to a strategic overhaul of youth mental health services to improve the range and access of

support available (Atkinson & Owen, 2015). As a result, recent legislation and guidance has highlighted the pivotal role that education settings can play to promote children's wellbeing and mental health alongside their academic achievement (DoH, 2015; DfE, 2017). This has led to an increased number of interventions and approaches offered by schools to promote children's emotional, social and coping skills (Waters, 2011; Huppert & Johnson, 2010; Durlak, Weissberg, Dymnick, Taylor & Schillinger, 2011; Chodkiewicz & Boyle, 2017).

In recent years, positive psychology interventions (PPIs) have become much more common-place in educational contexts (Oades, Robinson, Green & Spence; 2011; Shankland & Rosset, 2017; Dawood, 2013). Positive psychology is an umbrella term for the study of positive emotions, character traits and processes which contribute to the wellbeing and flourishing of individuals, groups and organisations (Gable & Haidt, 2005; Seligman, Steen, Park & Peterson, 2005). Positive psychology, as a field of study, arose from a previously neglected area in psychology research, rather than as a reprise of the deficit model (Dawood, 2013; Seligman, Ernst, Gillham, Revich, & Linkins, 2009). Positive psychology aims to provide a valuable and holistic understanding of how positive strengths and processes can build resilience, and can contribute more broadly to the understanding of mental health disorders (Luthar, Lyman & Crossman, 2014; Keyes, 2002).

Anxiety in Youth

Anxiety is an adaptive, autonomic arousal response to a threatening situation or object. The current Diagnostic Statistical Manual (DSM-5) differentiates between the characteristics of several types of youth anxiety disorders including separation anxiety, social anxiety, specific phobia, generalised anxiety, panic disorder, agoraphobia and selective mutism (APA, 2013). While symptoms vary across specific disorders, it is generally accepted that there is an underlying construct of anxiety that can be explored and treated within a broad-based approach (Hudson et al., 2015). Common features across anxiety disorders include excessive worries, fears, negative beliefs and the avoidance of specific situations or objects. Physiological symptoms are often also present such as increased heart rate, shallow breathing, sweating and pain in the stomach or chest (Hill et al, 2016). Anxious individuals have been found to present with cognitive biases which can exacerbate feelings of fear and anxiety. This can lead to elevated physiological symptoms and behavioural responses which are often disproportionate to the threat level of a situation or object (Alfano, Beidel & Turner, 2002; Beesdo et al., 2009; Field, Hadwin & Lester, 2011). When an individual responds to an anxiety-provoking situation by avoiding or

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escaping the trigger, relief is experienced. Over time, the cognitions and behavioural responses to the trigger or situation become habitual and the anxiety cycle is maintained (Beck, Emery & Greenberg, 2005).

Developmental pathways to anxiety. Childhood and adolescence is the core risk period for the development of anxiety disorders (Beesdo et al., 2009). The average age of onset is around 11 years of age (Kessler et al., 2005), although this can vary depending on the type of anxiety (Costello, Mustillo, Erkanli, Keeler & Angold, 2003; Costello, Egger, Copeland, Erkanli & Angold, 2011). Specific age differences in the expression of anxiety have also been identified. For example, researchers have found that separation anxiety and specific phobia tends to be associated with younger children, whereas generalised anxiety and social anxiety disorders tend to occur during late childhood and early adolescence (Westernberg, Siebelink & Treffers, 2001; Weems and Costa, 2005). Anxiety disorders have a high comorbidity with other types of anxiety, depression, behavioural and eating disorders (Costello et al., 2003; McLean, Asnaani, Litz & Hofmann, 2011), although the extent of comorbidity varies widely depending on the presenting symptoms and the developmental period in which symptoms occur (Garber & Weersing, 2011).

Gender differences in anxiety disorders have also been widely explored in the literature base. Studies examining anxiety in younger childhood years present mixed findings. Some studies point towards a higher preponderance of anxiety in females (Lewinsohn, Gotlib, Lewinsohn, Seeley & Allen, 1998), whereas other studies have found no distinctive gender differences (Cohen et al., 1993). The literature exploring anxiety prevalence in adolescence is less ambiguous with the majority of research pointing towards a higher occurrence amongst adolescent females than in adolescent males (Lewinsohn et al., 1998; Costello et al., 2003; Cohen, 1993). In later life, women are twice as likely as men to have an anxiety disorder (McLean et al., 2011). Research has proposed that gender vulnerabilities could be linked to genetic or biological factors (Lewinsohn et al., 1998). Temperamental differences, which are thought to be moderated by gender socialisation processes such as coping and emotional regulation strategies, may also play a role (McLean et al., 2011). Furthermore, females are much more likely to report difficulties with anxiety than males (Costello et al., 2011); therefore it is plausible that these differences could also be partly explained by a referral bias (Costello & Janiszewski, 1990).

Anxiety within a risk and resilience framework. From a developmental psychopathology perspective, anxiety can be understood within a risk and resilience framework comprising of risk, protective and promotive factors (Vasey & Dadds, 2001;

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Price & Zwolinski, 2010; Jenson & Fraser, 2006). Resilience can be broadly defined as "a dynamic process involving positive adaption within the context of significant adversity" (Luthar, Cicchetti & Becker, 2000, p. 1). In other words, resilience is the interaction between the individual's characteristics and adaption to features of their environment such as threats or challenges (Lerner et al., 2013). A risk factor is a biological, psychological or environmental factor which increases an individual's vulnerability to develop a mental health condition (Vasey & Dadds, 2001). Mental health disorders are likely caused and maintained by multiple risk factors and processes rather than through a singular cause (Cicchetti & Sroufe, 2000). Key risk factors for anxiety include: individual vulnerabilities such as genetic factors; emotional reactivity; temperamental factors such as inhibition or introversion and cognitive biases (Donovan & Spence, 2000; Field et al., 2011; Vasey & Dadds, 2001; McLaughlin et al., 2010). Environmental factors such as adverse life difficulties or transitions; low socio-economic status; disruptive family functioning; learning experiences; difficult parent-child relationships and insecure attachment styles have also been identified as key risk factors to the development and maintenance of anxiety in youth (Donovan & Spence, 2000; Vasey & Dadds, 2001; Green et al., 2010; Muris, Meesters, van Malick & Zwambag, 2001).

In contrast to risk factors, protective factors are environmental or psychological factors which reduce, supress or buffer the risk of developing a psychopathology (Luthar, Cicchetti & Becker, 2000). Research has indicated a range of protective factors for anxiety in youth which include effortful control, perceived control, parental warmth and social support (Muris, 2007; Murray, Creswell & Cooper, 2009; Masten, 2007). Promotive factors are associated with positive development and therefore differ from protective factors in terms of their primary function. However, these terms are often used interchangeably in the literature base (Zimmerman, Stoddard, Eisman, Caldwell & Miller, 2014). Promotive factors by definition refer to individual assets, resources, relationships or strengths which facilitate positive development and promote adaptation to adversity (Masten, Monn & Supkoff, 2011; Zimmerman, 2013).

The resiliency theory provides a strength-based framework for understanding the promotive factors which build resilience (Fergus & Zimmerman, 2005). According to the theory, there are two types of promotive factors: assets and resources. Assets are positive psychological factors residing within the individual such as self-esteem, self-efficacy and social competency. Resources are described as positive contextual factors such as supportive relationships and interventions which promote the teaching of positive skills and behaviours (Zimmerman, 2013; Zimmerman et al., 2014). Studies have highlighted

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ways in which young people can increase the factors which maintain resilience through developing behaviours such as coping, problem solving and prosocial skills (Noble & McGrath, 2008) and through increased connectedness with others (Youngblade et al., 2007). Preventative interventions that focus on promoting resilience through the development of assets, resources and relationships also counterbalance risk and adversity in young people (Masten et al., 2011; Zimmerman et al., 2014).

School-based Interventions

Interventions and support programmes are typically classified into three levels: universal, targeted and indicated (Payton et al., 2008). Interventions delivered at a universal level focus on enhancing promotive factors and are therefore viewed as preventative programmes. Often these programmes are implemented widely, usually using a whole-class or whole-school approach, whereas targeted and indicated intervention programmes focus on strengthening the protective factors known to reduce risks (Jenson & Fraser, 2006). Targeted and indicated interventions are delivered to at-risk pupils in small groups or on an individual basis (Payton et al. 2008). The difference between targeted and indicated interventions is typically based on the severity and range of symptoms, with targeted interventions being delivered to pupils with milder symptoms (Dawood, 2013).

Universal prevention interventions are widely used in school-based contexts as they are cost-effective and enable a wider number of children to access support (Barrett & Pahl, 2006). This can be particularly beneficial for children who mask their symptoms (Flett & Hewitt, 2013) or do not show disruptive behaviours and are therefore more likely to go unnoticed by teachers (Payton et al., 2008). Furthermore, universal interventions may also reduce the stigma associated with more targeted levels of intervention (Barret & Turner, 2001). A key limitation of a universally delivered intervention is that gains for those that are functioning within the normal range are small (Fisak, Richard & Mann, 2011), However, there is some evidence that these children still benefit from learning a broader range of social and emotional skills (Seligman, Ernst, Gillham, Reivich & Linkins, 2009; Durlak et al., 2011). Targeted interventions also have a range of benefits. For example, their delivery to smaller groups allows for a higher adult-student ratio meaning that the intervention can be better tailored to the needs of individuals (Etherington & Costello, 2018). A small-group delivery also has advantages in increasing interactions between like-minded individuals which may lead to a greater sense of belonging and social support amongst group members (Rapee et al., 2006). Typically, research studies have reported higher effect sizes for targeted interventions in comparison to universal interventions. This could be explained by floor effects at baseline in which those with elevated symptoms are

able to make greater improvements than those with milder symptoms (Etherington & Costello, 2018).

Cognitive Behavioural Therapy Interventions

Cognitive Behavioural Therapy (CBT) is the primary approach for treating mild to severe symptoms of anxiety in youth (Hill et al., 2016). CBT for treating anxiety involves several approaches including exposure, relaxation, cognitive restructuring, problem-focused coping and problem-solving skills (Barrett, Lock & Farrell, 2010). Traditionally, CBT was mainly delivered in clinical settings by trained mental health practitioners but programmes such as FRIENDS for Life (Barrett, Lowry-Webster & Turner, 2000) have made the application of CBT to a school-based context more accessible and feasible (Briesch, Hagermoser Sanetti & Briesch, 2010). In the literature base, school-based CBT interventions have demonstrated efficacious outcomes for young people (Higa-McMillan, Francis, Rith-Najarian & Chorpita, 2015; Stallard et al., 2014; Essau, Conradt, Sasagawa & Ollendick, 2011) with effect sizes ranging from 0.11 to 1.37 (Neil & Christensen, 2009).

Research has highlighted some limitations of a CBT approach. A review of school-based anxiety programmes found that whilst universal programmes demonstrated higher effect sizes than targeted or indicated programmes at post-intervention, these effects were not maintained over a longer term (Neil & Christensen, 2009). There is some evidence to suggest that the applicability of CBT approaches may be less effective for some young people. In a large scale study, a twelve-week CBT intervention was found to be less effective for 20 - 46% of participants who continued to experience elevated levels of anxiety at post-intervention. It was found that the intervention was less efficacious for older adolescents with more severe symptoms, for those with social phobia and for participants belonging to an ethnic minority group (Ginsberg et al., 2011). Some researchers have also raised questions concerning the use of CBT approaches with younger children or with those with cognitive, social or language difficulties due to the prerequisite skills that are required for the intervention (e.g., emotional awareness, meta-awareness, perspective-taking) (Kingery et al., 2006; Grave & Blissett, 2004; Lang, Regester, Ashbaugh & Haring, 2010). Other researchers have suggested that with appropriate adaptations, CBT approaches can be helpful for children with a range of abilities providing the content is tailored to the individual's needs (Grave & Blissett, 2004; Lickel, MacLean, Blakeley-Smith & Hepburn, 2012).

Positive Psychology Interventions

PPIs share a common goal of promoting wellbeing and resilience through "cultivating positive feelings, positive behaviours and positive cognitions" (Sin &

Lyubomirsky, 2009, p.467). Social and emotional learning (SEL) interventions differ from PPIs as they primarily aim to equip children with SEL skills in order to reduce or remove negative factors, thus subscribing to a deficit model of mental health (Waters, 2011; Sin & Lyubomirsky, 2009). PPIs are usually delivered at a universal, preventative level as a way of developing assets, resources and relationships (Dawood, 2013; Zimmerman, 2013). These interventions are based on the principle that engaging in simple, positive and intentional practices over time can cultivate improvements in wellbeing such as increased self-concept, coping and emotional regulation skills (Lyubomirsky, Sheldon & Schkade, 2005; Etherington & Costello, 2018). While the primary aim of PPIs is to promote positive functioning, research is now beginning to explore the benefits of these to reduce negative factors (Boiler et al. 2013; Brunswasser, Gillham & Kim, 2015; Davis et al., 2016; Hoffman, Sawyer, Witt & Oh, 2010).

A useful model for understanding how PPIs impact on resilience and anxiety is the broaden-and-build theory of positive emotions (Fredrickson, 1998, 2001). This theory presents that like negative emotions, positive emotions have an evolutionary function. Emotions such as fear and anxiety limit the scope of attention, thoughts and action responses as a way of maintaining survival. Positive emotions can increase behavioural flexibility through broadening the scope of attention, thoughts and action responses. This can lead to the building of cognitive, social and emotional resources over time (Noble & McGrath, 2008) such as creative problem solving, improved interpersonal relationships and better ways of coping with stressful situations (Fredrickson et al., 2000). The experience of positive emotions can also enable the body to return more quickly to baseline following increased physiological arousal, thus providing an 'undoing' effect of negative emotions on the body (Fredrickson, Mancuso, Branigan & Tugage, 2000).

The current evidence base surrounding PPIs has been associated with a range of outcomes such as improvements in wellbeing (Waters, 2011; Proctor et al., 2011), life satisfaction (Marques, Lopez, Pais & Ribeiro, 2009; Proctor et al., 2011), resilience (Zenner, Hernleben-Kurz & Walach, 2014), academic outcomes (Waters, 2011), learning behaviours (Shoshani & Slone, 2017), physical health (Emmons & McCullough, 2003; Casellas-Grau, Font & Vives, 2014) and increased connectedness with others (Emmons & McCullough, 2003). Current reviews of the evidence base have either sought to evaluate both PPIs as a whole evidence base (including multi-component interventions) or to review PPIs with the same core component (e.g., mindfulness, acceptance and commitment therapy, hope, gratitude) or intervention type (e.g., Penn Resiliency Program). Reviews have found that PPIs can be beneficial in reducing negative factors such as depression

(Boiler et al., 2013) and anxiety (Davis et al., 2016), although many of these have been conducted with adult populations in clinical settings.

The aim of the current review was to conduct a systematic literature review to explore the effectiveness of school-based PPIs aimed at promoting resilience and reducing anxiety in youth. Both anxiety and resilience are pertinent areas of research and practice for young people. Through employing a systematic search methodology, this review aimed to provide a unique contribution to the existing evidence base, which to-date, has largely focused on either exploring the efficacy of school-based PPIs more broadly or on evaluating the effectiveness of single and multi-component PPIs in reducing anxiety in adults.

Review Methodology

Data Sources and Search Strategy

Literature searches were conducted between November 2018 and February 2019 using four electronic databases: 'PsychINFO', 'MEDLINE', 'ERIC' and Web of Science Core Collection. The PICOS framework (Higgins & Green, 2011) was used as a guide to identify key terms. An initial scoping search was carried out between September and October 2018 using Google Scholar and DelphiS Discovery Platform (a database search platform provided by University of Southampton) to generate a broad range of key terms. Key terms were further refined using the thesaurus tool found within each electronic database.

The search terms used were 'child', 'youth', 'teen*', 'adolescen*', 'young person', 'pre-adolescen*', 'pupil', 'student', 'positive psychology', 'interven*', 'anxiety', 'anxious*', 'distress', 'worry', 'resilien*', 'prevent*', 'coping', 'wellbeing', 'well-being', 'well being', 'school', 'class*', 'school-based', 'school based' and 'education*'. These terms were used in combination with the Boolean operators 'AND' and 'OR'. The term 'mindfulness' was added as three studies did not appear in the initial searches. Some researchers do not regard mindfulness as a core component of PPIs due to its origins in Buddhism, however, others have chosen to include mindfulness studies in their review of PPIs (e.g., Waters, 2011; Sin & Lyubomirsky, 2009). Mindfulness interventions meet the aims of PPIs as defined in this review and have therefore been included. A search of grey literature was carried out in December 2018 and in February 2019 to identify unpublished studies using the EThOS website (British Library Board, 2019) using the key terms 'positive psychology', 'intervention' and 'school-based'. Further records were identified by searching reference lists of the studies which were eligible for inclusion in the review.

Initial searches of the databases generated a total of 845 records. Titles and abstracts were scanned with reference to the inclusion and exclusion criteria (see below), culminating in the exclusion of 808 records. A total of 37 records were selected for full text review and of these 13 were selected for inclusion in the review. Searches of reference lists of studies included in the review generated a total of four studies, of which one was included in the literature review. No unpublished grey literature was eligible for inclusion in the review. A flow diagram of the search process is shown in Figure 1. Details of excluded studies, along with reasons, can be found in Appendix A.

Inclusion and Exclusion Criteria

The following inclusion and exclusion criteria was used to assess the eligibility of studies for inclusion in the review.

Participants. Studies involving participants of compulsory school age, between the ages of 5 - 18 years were included. Studies that recruited participants regardless of level of anxiety symptomology or risk status were included. Studies which targeted participants displaying symptoms of anxiety sub-clinical, but not clinical anxiety, were included.

Study design. Studies carried out in any country were included. Randomised control trials (RCT), quasi-experimental, cross-sectional, pilot and feasibility studies were eligible for inclusion in the review. Studies involving an active, inactive or no control group were included.

Type of intervention. PPIs were defined as programmes, practices and interventions aimed at cultivating positive feelings, behaviours and cognitions with the primary focus of promoting wellbeing, resilience and flourishing (Sin & Lyubomirsky, 2009). SEL programmes (see Waters, 2011) were excluded from the search. Studies involving universally or targeted PPIs whereby the primary aim was in promoting the resilience and wellbeing of young people were included in the review. Interventions carried out in a school-based or educational setting were included. Those interventions which were carried outside of a school setting (e.g., clinical setting) were excluded. Studies which were delivered by school staff or other professionals were included. Studies involving online or computer-based interventions or programmes were excluded.

Outcome variables and analysis. Studies measuring anxiety symptomology as a primary or secondary outcome using a validated measure were included; studies with no reported outcomes related to anxiety were excluded. Studies which measured internalising behaviours and/or stress as outcomes were included due to the association of these factors to anxiety (McMahon, Grant, Compas & Thurm, 2003; McLaughlin & Hatzenbuehler, 2009; Trudeau, Spoth, Randall, Mason & Shin, 2013). Measures of wellbeing, resilience and positive functioning were reported where described.

Publication requirements. Both published studies and unpublished dissertations and theses were included. Studies which did not include statistical analysis at a group level were excluded, as were studies that did not provide sufficient details for data extraction. Studies which were not written in English were excluded.

Data Extraction and Quality Assessment

The key elements of the included studies (intervention type and design, sample, intervention, mode of delivery, outcome measures and key results relating to anxiety and resilience) are detailed in Appendix C. The quality of the studies were appraised using the Quality Index (see Appendix B for quality assessment data) which can be used to assess both randomised and non-randomised studies (Downs & Black, 1998). The Quality Index

uses a numerical rating scale as a way of reducing bias when critically appraising the quality of an article. However, some researchers (e.g., Voss & Rehfuess, 2013) have highlighted potential issues with using numerical rating scales such as arbitrary cut-off points and the increased tendency to rely on higher scores as an indicator of quality, meaning that other flaws are missed. With this in mind, the Quality Index was used primarily to provide a descriptive account of the methodological strengths and weaknesses; total scores were considered as secondary information.

Studies in the following sections will be referenced by a number in brackets. The corresponding number for each study can also be found next to the author name in the tables shown in Appendices B and C. Furthermore, where 'n' is reported in brackets this refers to the frequency of items/studies.

Number of records identified from electronic databases

N = 841

Number of studies identified from reference list searches

N = 4

Number of records screened

N = 845

Number of records excluded after screening titles and abstracts

N = 808

Number of records retrieved in full text

N = 37

Number of records excluded after assessing the full text (see Appendix B for reasons)

N = 24

Number of studies meeting the inclusion criteria

N = 13

Number of studies included in the review

N = 13

Figure 1. Flow chart showing literature review process

Quality Assessment

The methodological quality of the included studies was assessed using five sub-scales: reporting, external validity, internal validity (bias and confounding) and power (see Appendix C for quality assessment table). The overall quality of studies was quantified using a total checklist score of 25. The original Quality Index provides a total checklist score of 27, however two questions regarding confounding variables were combined for ease of use. The reporting of effect sizes was included as an additional question to the checklist. Reporting of effect sizes is meaningful because it provides information about the magnitude of the difference between groups, whereas reporting statistical significance alone only provides information about whether the findings are likely due to chance. It is important, therefore, to report both the *P* value and effect size so that the impact of the results can be fully understood (Sullivan & Feinn, 2012). Information about the source of the studies was described only and was not included in the overall score. Most studies scored between 16 and 21 indicating that the quality varied considerably amongst studies. All included studies were published in peer-reviewed journals, despite attempts to locate grey literature. This suggests that the current review may be limited by publication bias.

Reporting. Generally, details about the study aims and hypotheses, outcome measures, recruitment methods, details of sample and findings were clearly reported across the majority of studies. However, demographic characteristics of the sample (e.g., ethnicity, socio-economic status) was found to be inconsistently reported across studies. Seven of the studies described potential confounding variables, although this was often not supported with a clear link to the literature base. All of the studies reported using appropriate statistical methods of analysis, in which the majority of studies used general linear models (ANOVA or ANCOVA) as primary analysis methods. Less than half of the studies reported using multi-level modelling to explore cluster effects. Many of the studies reported effect sizes and full *P* values, although often these were only reported for significant results. None of the studies reported details of potentially harmful intervention or study effects to participants.

External validity. All studies provided details as to how the sample was recruited including information about the school context. As all studies were carried out in a school, it is likely that the sample is representative of the general school-based population. Further, the facilities and treatment that participants received is therefore considered to be representative of the treatment that the majority of school-aged children would receive.

Internal validity (bias). Only two studies (8, 10) described blinding participants from intervention allocation. Attempts to blind those measuring outcomes was

inconsistently reported across studies. In studies where blinding methods were not described, it was assumed that blinding had not taken place. Four studies described steps taken to ensure intervention fidelity such as using quality checklists and carrying out random intervention checks. All studies used reliable and appropriately validated outcome measures to assess anxiety. There was an overreliance on the use of self-report measures across all studies, increasing the likelihood of response bias amongst participants. Five studies utilised manipulation check measures to explore the overall effectiveness of the intervention. Details regarding participant acceptability and engagement were described in five studies.

Internal validity (confounding). Six studies provided details of group differences at baseline, five of which controlled for these differences (e.g., gender, age, anxiety level). In half of the studies, participants were recruited from different populations (e.g., different schools) at different times which could suggest selection bias amongst these studies. Rates of attrition were generally reported to be low across studies. Lost participants were described in the majority of studies (n = 10), however steps taken to account for these losses were not consistently described across studies. Most studies described using randomisation methods to allocate participants to conditions, however the randomisation process itself was only fully described in a small number of studies. Therefore, it is difficult to establish whether true randomisation had occurred across all studies.

Power. Only five studies reported a priori power calculations or described whether the study was under or over powered (2, 7, 8, 10, 13), making it difficult to establish whether studies were sufficiently powered.

Description of Data Extraction

Sample Characteristics

The reviewed studies included children and young people aged 8 - 17 years old. The mean age was inconsistently reported. The most common age of participants in the studies was 12 years old (n = 8). The studies were carried out in Australia (n = 5), the United States (n = 5), Sweden (n = 1), Israel (n = 1) and in the Netherlands (n = 1). The total number of participants involved in the studies was 3,179. Sample sizes varied across studies from 11 to 1038 participants.

Study Design

Of the studies explored, the majority were RCTs, eight of which used a wait-list or curriculum as normal control group (1, 2, 3, 7, 8, 9, 10, 13). The most common level of randomisation was at a school or class level. Three of the studies used a quasi-experimental design in which participants were allocated to conditions by age (11), by school (12) or by level of anxiety (6). Two studies used a pre-test post-test single group design (4, 5). All studies used at least two time points (pre and post intervention). Over half of the studies did not include a follow-up. Of the six studies that did include a follow-up period (7, 8, 9, 10, 12, 13), this ranged from 7 weeks to 3 years, of which 3 months was the most common duration for the follow-up period.

Interventions

Content. Eight studies employed mindfulness as the core component of the intervention (3, 4, 5, 6, 7, 8, 9, 10). Mindfulness can be described as a state of awareness which involves the purposeful direction of attention to the present moment with a curious, open and non-judgemental approach (Kabat-Zinn, 2003). By focusing on the present rather than the past or future, the practising of mindfulness helps to overcome any maladaptive tendencies to avoid, supress or over engage with distressing thoughts and emotions which may play a role in the maintenance of anxiety disorders (Keng, Smoski & Robins, 2011). The content of these mindfulness studies included a range of similar activities to focus on the breath (e.g., breath counting), on body sensations (e.g., body scan) and on emotions and thoughts (e.g., thought anchors or mantras). Four studies evaluated the same two interventions, 'Triple R' (5, 6) and 'Dot.be' (7, 8). Five studies used manualised programmes (MindfulKids, Dot.be and Triple R) and the remaining three studies used programmes which were adapted from existing interventions or approaches. One study used a mindfulness-cognitive therapy based approach, combining elements of cognitive approaches (e.g., noticing automatic thoughts, letting go of thoughts and negative emotions) with mindfulness practice (9).

Two of the thirteen studies (1, 2) employed acceptance and commitment therapy (ACT) as the core component, both of which used manualised interventions (Strong Minds and ACT Experiential Adolescent Group). ACT combines the practice of mindfulness with behavioural principles and personal values (Haynes, Strosahl & Wilson, 2012). The aim of ACT is to increase psychological flexibility and emotional regulation through an increased awareness on thoughts, feelings and body sensations; attention to the present moment; cognitive defusion strategies and the acceptance, rather than avoidance, of negative emotions. Further, identification of core values and taking committed action in-line with these values are also key aspects of ACT (Hayes et al., 2012; Burckhardt, Manicavasagar, Batterham & Hadzi-Pavlovic, 2016; Livheim et al., 2015).

The remaining four studies are described as multi-component interventions which used a variety of positive psychology approaches. In one study, the Penn Resiliency Program (Gillham, Jaycox, Reivich, Seligman & Silver 1990) was implemented (13) which focuses on developing emotional stability through cognitive-behavioural approaches and developing coping skills. Another study implemented the Maytiv School Program (Shoshani & Slone, 2014) (12) which aims to promote character strengths, positive emotions and positive relationships. One study (11) used relaxation strategies as the core component along with cognitive restructuring and gratitude practices.

Delivery. Eleven studies employed a universal delivery method, two studies (2, 4) employed a targeted delivery method and two studies used both universal and targeted methods (5, 6). Interventions were carried out across 32 elementary, primary and high schools. Ten interventions were delivered by non-school staff (1, 2, 4, 5, 6, 7, 8, 9, 10, 11), including by psychologists (n = 2), researchers (n = 3) or independent professionals (n = 5). In three studies interventions were carried out by teachers and school staff (3, 12, 13). In one study teachers and school staff also received ongoing supervision for the duration of the study (14).

The number of intervention sessions varied from 6 to 30 with the average number of sessions being ten. In the majority of studies sessions were delivered weekly. In other studies, sessions were delivered daily (3), twice weekly (1) or over the duration of a school year (12). Sessions ranged in duration from 30 to 120 minutes with the average being 60 minutes (one study did not specify the duration of sessions). Booster sessions were offered to participants in two studies (ranging from 2 - 6 sessions) and were delivered between 3 to 36 months post-intervention (6, 13).

Measures. Across the studies a wide variety of measures were used to assess anxiety. Self-report multi-component assessments measuring a variety of outcomes were

the most often used, of which The Depression Anxiety and Stress Scale (Lovibond & Lovibond, 1995) and the Revised Children's Anxiety and Depression Scale (Chorpita, Yim, Moffitt, Umemoto & Francis, 2000) were the most frequently used measures. The most commonly used stand-alone measures of anxiety were the Multidimensional Anxiety Scale for Children (March, Parker, Sullivan, Stallings & Conners, 1997) and the Revised Children's Manifest Anxiety Scale (Reynolds & Richmond, 1978). In two studies, measures were used to pre-screen anxiety levels as a way of allocating participants to an experimental condition (5, 6). One study (5) reported findings related to separation and generalised anxiety separately. Parental measures were also completed in three studies (4, 9, 10) and the Child Behavior Checklist (Achenbach & Rescorla, 2001) was found to be the most frequently used parental measure. In one study, academic tutors completed the teacher version of the Child Behaviour Checklist (13).

In addition to assessing anxiety, some studies also measured outcomes related to anxiety including internalising symptoms (n = 1) and/or measures of stress (n = 7). Other outcomes measured across studies included depression (n = 9), externalising behaviours (n = 1), behavioural problems (n = 2), psychological inflexibility (n = 1), emotional regulation (n = 1), hopelessness (n = 1), weight and shape concerns (n = 1), negative emotions (n = 1), thought rumination (n = 1), attribution style (n = 1) and sleep disturbance (n = 1). A wide range of measures to assess positive functioning were used in eight studies (1, 2, 5, 7, 8, 9, 11, 12), including measures to evaluate wellbeing/life satisfaction (n = 7), mindfulness (n = 5), self-esteem (n = 3), flourishing (n = 1), self-compassion (n = 1), emotional awareness (n = 1), school connectedness (n = 1), physical health (n = 2), self-efficacy (n = 2), locus of control (n = 1), positive emotions (n = 1), social competence (n = 1) and coping skills (n = 2).

Outcomes

All thirteen studies reported details of statistical analyses, although in many of these studies only significant results were reported in full (see Appendix C for data extraction table for more details). Eleven of the thirteen studies implemented universal interventions, two studies implemented targeted interventions involving youths experiencing elevated (subclinical) levels of anxiety (2, 4) and two studies implemented interventions at both universal and targeted levels (5, 6). Effect sizes were reported in the majority of studies using Cohen's effect size index in which effect can be broadly classified as small ($d = 0.2$), medium ($d = 0.5$) and large ($d > 0.8$) (Cohen, 1988). However, some studies only reported effect sizes for significant results therefore the mean calculated effect sizes reported in this review are likely to be biased towards significant outcomes.

Universal effects. Eight studies reported significant reductions in anxiety levels at post-intervention in favour of the experimental group(s) (1, 5, 6, 9, 10, 11, 12, 13). Of these studies, half administered follow-up measures in which significant results were maintained at follow-up at: 7 weeks (10), 3 months (9, 12), 6 months (13) and 8 months (12). Non-significant results for anxiety at post-intervention were reported in the remaining studies (3, 7, 8). Two studies which evaluated the same mindfulness intervention reported that anxiety decreased in all conditions (experimental and control) at post-intervention time points. Effects were maintained at follow-up at: three months (7), six months (8) and twelve months (8). Effect sizes for anxiety ranged from -0.01 to 0.54, with a mean effect size of 0.29 for post-intervention time points and a mean effect size of 0.23 for follow-up time points. Two of the eleven studies reported internalising behaviours (3, 11). Significantly lower internalising behaviours were reported in study 11 in favour of the experimental group at post-intervention with a medium effect size. In study 3, a non-significant post-intervention difference between groups with a small effect size for internalising behaviours was found.

Five studies reported outcomes related to resilience (1, 7, 8, 12, 13), of which non-significant findings were mainly found. Wellbeing was reported in two studies evaluating the same intervention (7, 8), although findings were non-significant. Flourishing was measured in two studies in which a non-significant difference was reported in one study (1). Significant findings for self-esteem and self-efficacy were reported in study 12. Active coping was measured in study 13 which yielded non-significant results.

Targeted effects. Four studies evaluated interventions implemented at a targeted level involving 68 participants with elevated levels of anxiety across five schools. Of these studies, three reported significant results at post-intervention time points in favour of the experimental condition (2, 4, 6), although no follow-up data was provided for these studies. Effect sizes across studies ranged from 0.73 – 0.88. In study 2, a significant time x condition interaction at post-intervention was reported with a large effect size. Other findings included a significant time x condition interaction for stress with a large effect size and a non-significant interaction for life satisfaction. Study 4 also showed similar results, in which a significant reduction in anxiety with a large effect size was found at post-intervention. Similarly, significant reductions in parent-reported internalising behaviours and self-reported stress levels were found. In another study which measured the same intervention (as study 4), comparisons between a universal and targeted intervention group were made. Additionally, participants in the universal group were organised into low and high anxiety sub-groups. Significant findings from pre- to post-intervention time

points were reported for the targeted and the high anxiety group but not for the low anxiety, universal or combined groups. In study 5, the intervention was delivered universally in one school and to a targeted group of anxious participants (identified by teacher report) in another school. Comparisons between the two groups were not made at analysis level, instead, the groups were combined. This study failed to yield significant results for anxiety but found significant negative associations related to separation anxiety and generalised anxiety.

Intervention Type

In addition to exploring universal and targeted effects, the types of intervention were also explored. Interventions were grouped according to their core components as a way of making meaningful comparisons across studies (Rimm-Kaufman & Hulleman, 2015).

ACT interventions. Two RCT studies evaluated manualised interventions, one of which was delivered at a universal level (1) and one at a targeted level (2). Collectively, these studies involved 299 participants (aged between 14 - 17 years, average age of 15 years) across two high schools. Both studies utilised an inactive control group. The interventions were carried out by professionals external to the school setting. There are key differences in the sample size used, level of delivery, and frequency and duration of sessions across these studies. Both studies report significant results pertaining to a reduction in anxiety from pre- to post-intervention time points in favour of the experimental condition. Also, both studies reported effect sizes ranging from small ($d = 0.28$) to large ($d = 0.80$). Significant results across the studies were reported for stress in favour of the experimental group (2); non-significant results for flourishing (1) and wellbeing (2) were also reported. Follow-up measures were not administered meaning that the longer-term effect beyond post-intervention could not be established in either study.

Mindfulness interventions. Eight studies explored the implementation of a variety of mindfulness interventions involving 1,321 participants (aged between 8 - 14 years, average age 12 years) across 23 schools (3, 4, 5, 6, 7, 8, 9, 10). Five studies employed a RCT experimental design (two used a passive control, two used a wait-list control and one used a matched activity control). Two studies of the eight studies employed a quasi-experimental design (5, 6) and one study use a single group no comparison design (4). The majority of studies (n = 6) evaluated interventions delivered at a universal level; two studies evaluated interventions delivered at a targeted level (6, 4). Five studies reported significant results at post-intervention time points (4, 5, 6, 9, 10), two of which administered follow-up measures. Significant findings were maintained in both of these studies at 7 weeks and 3 months (10, 9, respectively). Effect sizes ranged from 0.12 to 1.10

across studies. The range of effect sizes for universal interventions ranged from 0.12 to 0.41 with a mean effect size of 0.27. For targeted interventions, effect sizes were generally reported to be higher, ranging from 0.73 to 1.10, with an overall mean effect size of 0.73.

A range of differences between the studies were identified; this impacts on the ability to compare and generalise findings. For example, the sample size varied greatly across the studies (ranging from 11 to 555 participants; mean sample size of 165 participants). The type of intervention (manualised or non-manualised) also varied (n = 2 studies using a manualised programme). Typically, the content of the interventions differed but almost all described using a range of overlapping mindfulness techniques such as meditation practice; using a body scan to become aware of body sensations; mindful eating/walking and using an 'anchor' to help focus thoughts. The intervention duration ranged from 6 weeks to 16 weeks with the average being 8 weeks. Duration of sessions also varied, ranging from 30 minutes to 90 minutes; some intervention sessions were delivered daily, once or twice weekly.

Multi-component interventions. Three studies explored the implementation of multi-component interventions (11, 12, 13). The interventions varied widely with regards to their core components, duration and frequency of sessions, as well as the range of measures used. Therefore, variations across these studies should be taken into consideration when comparing outcomes. Moreover, as multi-component interventions employ a range of approaches, it is much more challenging to isolate the effects to a specific component (Rimm-Kaufman & Hulleman, 2015). Two studies used a RCT experimental design (11, 13) and one used a quasi-experimental design (12). Across RCTs, participants were compared to a wait-list or to an inactive control group. Study 12 employed a repeated measures, longitudinal design over two years. Combined, studies involved a total sample of 1,560 participants (aged between 10 - 17 years, mean age = 13.5 years) with sample sizes ranging from 114 to 1,038 (mean sample size = 520 participants).

Significant findings at post-intervention were reported in all three studies indicating reductions in anxiety in favour of the intervention group(s). Two studies administered follow-up measures and findings showed that these effects were maintained at 3 months (12), 6 months (13) and 8 months (12). Effect sizes were reported in all three studies which ranged from 0.17 to 0.58 (mean effect size: $d = 0.33$). Other outcome measures across these studies included stress, self-esteem, self-efficacy and active coping. These yielded significant results in favour of the intervention group with the exception of active coping in which a non-significant result was found.

Broader Outcomes

Moderating and mediating effects. Five studies (7, 8, 9, 10, 11, 12) controlled for moderating effects at baseline (e.g., age, gender, anxiety levels). No evidence was found to suggest that age of the participant impacted on the reduction of anxiety. Several studies highlighted differences in anxiety levels of females and males, in which females reported higher levels of anxiety in three studies (7, 8, 11). Contrastingly, males reported higher anxiety levels in one study and seemed to benefit from the intervention more so than females (12). Two studies found no differences in the effect of gender for anxiety (9, 10). One study (10) explored the mediating effects of attention on behaviour changes; results demonstrated that anxiety was found to impair attention. However, it was found that attention did not mediate the relationship between anxiety and behaviour problems.

Discussion

Schools are well-placed to support the development of young peoples' resilience and mental health (Stallard et al., 2014; Chodkiewicz & Boyle, 2017). School-based PPIs have been associated with a range of positive wellbeing outcomes for children and young people (Shankland & Rosset, 2017; Waters, 2011) and research exploring the effectiveness of PPIs in reducing negative factors is now beginning to emerge in the evidence base. There is a crucial need to ensure that school-based PPIs are based on robust theoretical groundings and are evaluated using stringent methodologies (Dawood, 2013; Chodkiewicz & Boyle, 2017). The aim of the current review was to address a gap in the evidence base by evaluating the effectiveness of school-based PPIs in promoting resilience and reducing anxiety in children and adolescents. In total, 13 studies were critically evaluated across three broad intervention types including ACT, mindfulness and multi-component interventions. The methodological quality of each study was also explored. The findings, strengths and limitations of this evidence base are discussed in the following sections. A further aim of this review was to highlight directions for future research and implications for educational psychology practice.

Summary and Discussion of Findings

Evaluations of school-based PPIs have been carried out in a range of countries with the majority being conducted in Australia and America; no studies within the current review were conducted in the UK. The thirteen studies reviewed involved children and adolescents aged 8 - 17 years (average age = 12 years). Of the three types of intervention evaluated, mindfulness was the most common intervention type. The majority of interventions were delivered at a universal level; a small number were conducted at a targeted level with participants with elevated levels of anxiety. Most of interventions were typically implemented by non-school staff and on average sessions were delivered weekly for 60 minutes over 8 to 10 weeks. Studies where the teachers received training to deliver the intervention tended to yield significant results.

Half of the studies evaluating universal interventions reported significant group differences for anxiety in favour of the intervention group. Of those studies which administered follow-up measures, effects were shown to be maintained up to 8 months later. There was a degree of variability in reported effect sizes which ranged from -0.01 to 0.54. Similarly, targeted interventions also reported significant reductions in anxiety in favour of the intervention group. However, these studies did not include follow-up data so the maintenance of longer term effects could not be established. Effect sizes across targeted studies were large and ranged between 0.73 and 1.10.

Across intervention type, significant results were reported for ACT (2/2), mindfulness (5/8) and multi-component interventions (3/3). A small number of studies reported significant outcomes for stress (2/3) and internalising behaviours (1/2). There was limited evidence to suggest that PPIs are effective in building resilience in children and adolescents. Of the studies which used measures related to resilience, only one study reported significant findings in favour of the intervention group for flourishing, self-esteem and self-efficacy. These findings could be due to the limited number of measures used across studies, including a lack of manipulation check measures.

Findings from the current review provide some evidence that PPIs can be effective in reducing symptoms of non-specific anxiety for children and adolescents compared to control groups. Similar findings have also been found in reviews of single-component PPIs which have used adult populations (Powers, Vörding & Emmelkamp, 2009) and in reviews of multi-component PPIs (Sin & Lyubomirsky, 2009). Effect sizes in the current review are in-line with the effect sizes reported in other reviews of school-based universal interventions for anxiety (e.g., Fisak et al., 2011; Teubert & Pinquart, 2011), with the exception of the review conducted by Neil & Christensen (2009) whereby larger effects sizes were reported. Small effect sizes are considered valuable in studies which use non-clinical populations due to the large majority of participants functioning within a normal range (Durlak & Wells, 1997).

Only a small number of studies in the current review explored the benefits of a targeted PPI. This review highlights there is some evidence to suggest that PPIs delivered at a targeted level are effective in reducing anxiety in children with elevated symptoms. Reported effect sizes are comparable with findings reported by other researchers (e.g., Neil & Christensen, 2009; Sin & Lyubomirsky, 2009). These findings support the concept of floor effects proposed by other researchers suggesting that participants who have poorer baseline levels have more room to make improvements (Costello & Etherington, 2017; Sin & Lyubomirsky, 2009). However, due to the small number of studies in the current review and the small sample sizes utilised, these findings should be interpreted with caution and replication of findings is needed before wider generalisations can be made.

The reviewed studies reported non-significant outcomes related to resilience and positive wellbeing. There are several possible reasons for this, one of which could be that the interventions were ineffective. Another reason could be that change could not be appropriately detected due to insufficiently sensitive measurement tools (MacKinnon, 2011). Both of these reasons are plausible. Due to the small number of studies which used a manipulation check it was difficult to evaluate whether the interventions themselves were

effective. Dawood (2013) has highlighted that within the research base there is a lack of valid and reliable assessment tools available to measure aspects of positive functioning in children, which has arisen due to a lack of consensus amongst researchers regarding the operalisation and conceptualisation of key constructs within positive psychology research. Furthermore, there is not an agreed standard with which to measure the effectiveness of PPIs, therefore, researchers tend to use a variety of outcomes. This makes interpretation and comparisons across studies much more difficult, and affects the ability to generalise findings more widely (Chodkiewicz & Boyle, 2017; Zack, Saekow, Kelly & Radke, 2014). This highlights a broader limitation of the current evidence base which needs to be considered when applying these findings more widely.

Strengths and Limitations of Literature Reviewed

Several methodological strengths of the current literature base were highlighted including the use of large sample sizes across a broad age range. RCTs are described to be the 'gold standard' of experimental design (Sullivan & Feinn, 2011) and were the most commonly used method amongst studies, with quasi-experimental methods the second most commonly utilised method. Rates of attrition were reported to be low across studies. Many studies reported high levels of participant agreeability and engagement which is likely to be a key factor in the retention of participants. All studies used appropriate methods of statistical analysis which varied from the use of t-tests to multi-level modelling, with the latter being viewed as a more flexible method which can account for cluster effects in the data (e.g., indirect school factors) (Greenland, 2000).

A number of methodological issues were highlighted in the current review including a reliance on self-report measures, lack of blinding in RCTs and the use of inactive control groups. The majority of studies that utilised a RCT design did not report using blinding of participants and/or researchers from condition allocation. Research evidence suggests that RCTs that do not use blinding have been found to be associated with exaggerated intervention effects. This is a particular issue in studies involving subjective outcomes (in comparison to objective measures) (Turner, Boutron, Hróbjartsson, Altman & Moher, 2013; Savovic, Jones, Altman, Harris, Juni & Pildal, 2012). Furthermore, the use of control groups can impact on the outcomes of an intervention. The majority of studies utilised an inactive control group (or wait-list control) which is less stringent than using a matched-activity control group (Davis et al., 2016). It could also be argued that the effects found in favour of the experimental condition could be due to participants experiencing something new and novel which could be reflected in differences in some outcome measures (Mercer,

2011). Several researchers have suggested that the use of active comparison groups can overcome this limitation (e.g., Flook et al., 2010; Meiklejon et al., 2012).

One key limitation of the current evidence base is the over-reliance on subjective assessment methods. When working with children, it is important to be mindful of the impact of cognitive and reading skills and how this can affect the reliability and validity of self-report measures. Therefore, the triangulation of data sources (such as parental and teacher report measures) could be used in future studies to improve the robustness of findings (Froh et al., 2011). It could be argued that another limitation was the small number of studies which explored moderating and mediating factors, although, some studies controlled for age, gender and anxiety level at baseline. It will be important for future research to explore the use of moderating and mediating factors to better understand the core components and mechanisms of change underlying PPIs.

In the current review, only a small number of interventions were delivered by teachers with the vast majority being implemented by researchers, psychologists or other professionals. Johnson et al. (2016) found that teachers identified feeling under skilled or lacking in motivation as two main barriers to teaching new skills. Chodkiewicz and Boyle (2017) suggest that time, resources, lack of training programmes and a lack of expertise in positive psychology can also present barriers to teachers delivering PPIs. Other researchers have suggested that teachers may benefit from additional training in order to feel more confident and competent (van de Weijer-bergsma et al., 2014). Waters (2011) carried out a review of school-based PPIs and found that interventions were carried out by teachers in nearly all of the studies reviewed (n = 12). However, it is important to note that many of these interventions were brief PPIs (BPPIs) and required less time and application of specialist knowledge. Waters concluded that the delivery of interventions by teachers was a key factor in promoting positive wellbeing and resilience amongst pupils. Other studies have also found trust and familiarity to be a particularly important factor in providing support for vulnerable pupils (Bluth et al., 2016). Shankland and Rosset (2017) argue that BPPIs which employ a 'little and often' approach (e.g., simple mindfulness practices, gratitude exercises, tasks to promote character strengths) may be more easily adopted by teachers as they require very little training and therefore are more likely to be incorporated into the curriculum (Lyubomirsky, Sheldon & Schade, 2005; Sin & Lyubomirsky, 2009). This could provide an accessible and sustainable way to incorporate positive psychology within a classroom setting.

Implications for Practice

The principles of positive psychology seem to naturally align with the practice of educational psychology, which has long moved away from deficit-focused approaches and towards positive and strength-based ways of working (Noble & McGrath, 2008; Clonan, Chafouleas, McDougal & Riley-Tilman, 2004). Educational psychologists (EPs) have a role to support schools to achieve positive outcomes for young people with a wide range of needs including providing advice and recommending interventions that are evidence-based. With an increasing focus on schools to support the wellbeing and mental health of young people, this role extends to supporting school staff to implement early intervention and preventative ways of working. EPs are becoming more aware of the knowledge base of positive psychology and the practical implications of utilising strength-based tools (Jimerson, Sharkey, Nyborg & Furlong, 2004) and are therefore well-placed to offer advice to education settings.

EPs are also able to offer support to promote a person-centred and holistic understanding of anxiety. From an interactionist perspective, anxiety arises through a complex interplay between individual and environmental factors. It is necessary for child practitioners to be aware of the inherent dangers and difficulties of constructing anxiety as an exclusively within-child problem. Two such issues include: 1) the dangers of colluding with the within-child message and how this may cause the child harm, and 2) the issue of discounting or limiting the contribution that environmental factors are able to provide to fully understand the child's anxiety. There is a key danger that subscribing to the view that anxiety is solely a within-child problem may indirectly provide a message to the child that they are somehow to blame or are at fault for the anxiety they are experiencing. Anxiety is a simple bodily response to threat and if children receive messages that they are 'wrong' to be experiencing anxiety, this could lead to a self-fulfilling prophecy (Hilton, Darley & Fleming, 1989). It is plausible that an anxious child could seek to avoid challenging situations out of a worry these might trigger their 'condition', and through this avoidance and negative reinforcement they experience worsened anxiety. Furthermore, it is conceivable that the child may supress their feelings and thoughts if they feel these are 'unacceptable', which could result in the child developing additional mental health problems. Therefore, it is of importance that practitioners are mindful of their biases, presenting behaviour and use of language when they are supporting young people and their families to ensure that they are not conveying an exclusively within-child message.

When understanding anxiety, it is key that the role of environmental factors are fully considered. Failure to do this means that sufficient support to manage these factors cannot be put in place. It is therefore necessary that practitioners consider the impact of

both individual and environmental risk and protective factors to gain a clearer contextual picture of the child's anxiety. EPs are skilled in using frameworks such as the interactive factors framework (IFF; Frederickson & Cline, 2009) and can support school staff to understand the interplay between individual and environmental factors. The IFF enables EPs to map biological, cognitive, social, affective and environmental risk and protective factors and their interacting links. This assists EPs to achieve a psychological formulation which can be shared with key adults to inform next steps such as environmental supports, coping strategies and/or interventions to support the child with their anxiety.

Intervention Design

When designing, delivering and evaluating a classroom-based PPI, there are several key factors that practitioners will need to be mindful of. These will be discussed in the following section and include: 1) intervention content, 2) measuring outcomes, 3) intervention deliverer, and 4) intervention duration and frequency of sessions. The current review explored PPIs which varied widely in terms of content, length, deliverer, frequency of sessions and assessment tools used which makes it more difficult to draw firm conclusions about implications for practice. Therefore, it is necessary to draw upon the wider evidence base in addition to the findings from this review to support practice recommendations.

Intervention content. The current review found that almost all of the studies involved teaching key elements of emotional (including bodily) awareness, practical strategies for emotional regulation (e.g., relaxation and coping strategies) and cognitive approaches such as accepting or reframing thoughts. Research from the wider literature base has found that a range of effective school-based anxiety programmes also included elements of psychoeducation related to recognising emotions and physiological indicators, and practical approaches to manage anxiety such as relaxation strategies and developing problem solving skills (Herzig-Anderson, Colognori, Fox, Stewart & Warner, 2013). This suggests that developing children's awareness of their bodily responses and emotions and to provide children with a repertoire of coping strategies are important factors to include in the intervention. Some limited research has also started to explore the benefits of BPPIs, which draw upon simple positive psychology practices such as promoting gratitude or breathing exercises. These are delivered for a short amount of time each day and can be easily implemented into the curriculum without much teacher training (see Waters, 2011; Shankland & Rosset, 2017 for more details). However, more research into the efficacy of specific components of PPIs and BPPIs is required before firmer conclusions can be drawn.

Measuring outcomes. During the initial stages of planning a PPI it is necessary to assess the individual's level of anxiety prior to the intervention using a suitably sensitive anxiety screening tool to understand the level of support required (e.g., universal, targeted or indicated). Furthermore, measures of anxiety which are administered at post-intervention and review time points can also provide information regarding the impact of the intervention on reducing children's anxiety over time. It may also be useful to carry out baseline measures which assess children's specific assets or resources (e.g., self-esteem, coping skills, level of social support) as a way of identifying individual strengths and resources which could be utilised during the intervention. As PPIs aim to promote positive emotions, cognitions and behaviours, it is therefore important that practitioners consider using suitable manipulation check tools (e.g., wellbeing or resilience measures) to provide a clearer understanding of the impact of the intervention on these outcomes.

Another important issue for practitioners to consider is the use of self-report and teacher/parent report measures. In positive psychology research and practice, there is a tendency to over rely on self-report measures (Luthar et al., 2014) which can mean that the opportunity to triangulate information from a range of reporters and across different contexts is missed. Practitioners should therefore consider using a range of assessment tools which use multiple reporters and assess a variety of outcomes. EPs have a good knowledge of a range of assessment tools and can provide school staff with advice regarding the suitability of the measures.

Intervention deliverer. Research suggests that teachers face barriers such as lack of time, confidence and limited positive psychology knowledge which prevent them from implementing PPIs (Chodkiewicz & Boyle, 2017). Other research has highlighted that interventions delivered by external facilitators can, in some instances, yield more efficacious results when compared to teacher-delivered interventions due to increased fidelity and expert knowledge of the programme content (Stallard et al., 2014). However, wider research draws attention to the benefits of teacher-pupil relationships as a key factor to the success of intervention outcomes for pupils, particularly for those pupils that are more vulnerable (Waters, 2011; Bluth et al., 2016). Teachers have more access to pupils during the school day and are better able to develop good relationships over time (Beyciouglu, Ozer & Ugurlu, 2010). They are also better able to support pupils to embed learning skills in other contexts (Waters, 2011). External facilitators may not be able to develop the same level of rapport with pupils or provide the same level of support if they are visiting infrequently or over a short period of time.

Another argument is that upskilling teachers contributes to their repertoire of skills and builds the school's capacity to support the emotional needs of more pupils. EPs can play a role in helping school staff to overcome key barriers, including promoting intervention fidelity and best practice. This could be achieved through jointly delivering the intervention alongside the teacher, and/or by providing ongoing training or supervision sessions. It is important that school practitioners consider the benefits and limitations of both deliverer methods as well as the specific needs of their school and pupils when deciding how best to embed practice within the school context.

Intervention duration and frequency of sessions. Findings from this review found that a brief intervention (between 8 - 10 weeks) involving weekly sessions for an hour were implemented in the majority of studies. Though, the intervention duration and session frequency/length should be adapted to consider the age, abilities, specific needs, progress and risk-level of the child or group of children. Similar findings were found in a review of school-based anxiety interventions, in which most of these were delivered for between 8 – 12 weeks for an hour per week (Herzig-Anderson et al., 2013). The average follow-up duration for the studies in the current review was 3 months. Effects were found to be maintained over this time suggesting that a brief intervention period is likely to be long enough for children to embed skills and knowledge, and to maintain these effects over this time frame. Practitioners and researches alike should consider carrying out follow-up measures to assess children's progress and the impact of the intervention over time using a variety of outcome measures. It may also be useful to consider whether booster sessions or ongoing support for pupils to embed skills in other contexts is required.

Conclusion

Notwithstanding the limitations, this review has aimed to address a gap in the literature base by exploring and evaluating the effectiveness of PPIs to reduce anxiety in youth. The wider literature base highlights a range of positive benefits associated with PPIs, although the current review found little evidence to support these findings. This review provides some evidence to suggest that PPIs are beneficial in reducing anxiety when delivered as a preventative intervention for a non-clinical population. Additionally, there is tentative evidence to suggest that PPIs delivered at a targeted level may also be effective for children with elevated levels of anxiety, although more evidence is needed to replicate findings before firmer conclusions can be drawn. It is important to note that the studies varied considerably across a number of factors such as intervention content, adherence to intervention fidelity, type of control group, measures used and delivery of the intervention (school staff vs. external professionals), all of which impacts on the

applicability of these results more widely. There may be barriers which prevent some teachers from implementing PPIs including lack of time, resources and training; therefore BPPIs may provide a sustainable and accessible way for teachers to implement positive psychology within the classroom. EPs could play a role in training and supporting school staff to plan, deliver and evaluate PPIs which are best suited to the needs of individuals or groups of children. Suggested directions for future research include the use of more robust methodologies to further evaluate the evidence base including the need to administer a variety of measures (teacher and parent report) and to use active control groups with appropriate blinding methods. Exploration of mediating and moderating factors to understand mechanisms of change will be beneficial for future research.

Chapter 2: Exploring the effectiveness of a school-based gratitude intervention on children's levels of anxiety, sense of school belonging and sleep quality

Introduction

Positive psychology is the study of the factors and processes which contribute to the wellbeing, resilience and flourishing of individuals, groups and organisations (Seligman, Steen, Park & Peterson, 2005). This area of study arose from an awareness of the need to gain a greater understanding of the positive aspects of human functioning, including insight into how promoting strengths and positive emotions can reduce negative factors (Keyes, 2002; Seligman & Csikszentimihalyi, 2014). Proponents of positive psychology, along with resilience researchers, have been instrumental in promoting the preventative model of mental health (Chodkiewicz & Boyle, 2016; Seligman, 2002; Luthar, Lyman & Crossman, 2014). The application of positive psychology to support the wellbeing of children and young people has rapidly developed as a research base in recent years (Shankland & Rosset, 2017). Along with this, there has been an increase in the implementation of positive psychology interventions (PPIs) in education settings (Oades, Robinson, Green & Spence, 2011; Renshaw & Olinger-Steeves, 2016). Though PPIs vary widely in terms of their content, delivery and core components, they share a common objective of promoting positive feelings, behaviours and cognitions (Sin & Lyubomirsky, 2009). Reviews of school-based PPIs have demonstrated a range of wellbeing benefits for children and adolescents including increases in positive emotions (Richards & Huppert, 2011), life satisfaction, self-perception (Marques, Pais-Riberiro & Lopez, 2011), self-acceptance (Broderick & Metz, 2009) and academic progress (Franco, Maňas, Cangas & Gallego, 2010; Quinn & Duckworth, 2007). Improvements in negative factors such as negative affect (Broderick & Metz, 2009), depression (Sin & Lyubomirsky, 2009), stress and anxiety (see Chapter 1) have also been demonstrated in the evidence base. One area of positive psychology research which has gained momentum, particularly in the last decade, is the study of gratitude (Wood, Froh & Geraghty, 2010).

Gratitude is a well-known construct which has been conceptualised in a myriad of ways including as an emotion, attitude, moral virtue, habit, trait or disposition and as a coping response (Emmons, 2007). Broadly speaking, gratitude can be defined as a cognitive-affective state which is experienced in response to receiving aid or a benefit (Bono & McCullough, 2006; Park, Peterson & Seligman, 2004; Fredrickson, 2004; Emmons & Stern, 2013). Recognising that one has received a benefit from another person can motivate the recipient or beneficiary to engage in prosocial or altruistic ways towards others (McCullough, Kilpatrick, Emmons & Larson, 2001; McCullough, Kimeldorf &

Cohen, 2008; Emmons & McCullough, 2003). In this way, gratitude is recognised as having a unique social function which makes it distinctly different from other psychological constructs such as optimism, joy, pride and hope (Fredrickson, 2004; Emmons & Mishra, 2011; McCullough et al., 2008; McAleer, 2012). As well as a momentary psychological state, gratitude can also be understood as a disposition or trait in which individuals vary in terms of their cognitive, emotional and behavioural tendencies towards gratitude (McCullough, Emmons & Tsang, 2002; Emmons & McCullough, 2003). A person with a grateful disposition is much more likely to experience grateful emotions more frequently and intensely than someone less disposed to gratitude. Furthermore, a grateful person is also more likely to feel thankfulness towards others and towards a broader range of life circumstances (McCullough, Emmons & Tsang, 2002; Wood et al., 2010).

Wood et al., (2010) suggests that in addition to the experience of receiving a benefit or aid from a benefactor, gratitude also arises "through the habitual focusing on and appreciation of positive aspects of life" (p.891). It is important to highlight the distinction between gratitude and appreciation. In brief, gratitude involves acknowledging aid or a benefit received from a benefactor (Wood et al., 2010; Emmons, 2007). Some researchers describe this as 'targeted' gratitude and refer to a triadic relationship between the benefit, the beneficiary and the benefactor (McAleer, 2012; Rush, 2019). Appreciation refers more broadly to acknowledging the positive aspects and experiences of life (Adler & Fagley, 2005). This is known as 'propositional' gratitude and can be considered as comprising of a dyadic relationship between the beneficiary and the benefit (McAleer, 2012; Rush, 2019). This suggests that gratitude can arise in the absence of a benefactor, such as when one is thankful to oneself or to an external source (e.g., luck, fate) for experiencing a favourable life circumstance or event (McAleer, 2012; Rush, 2019).

Gratitude as an Intervention

Gratitude interventions can be divided into two categories; those that cultivate gratitude (e.g., gratitude lists, gratitude journaling) and those that strengthen connections between people (e.g., gratitude letters, gratitude visits) (Kaczmarek et al. 2014). In school-based research, gratitude interventions have also included 'gratitude boxes' and 'gratitude graphs' both of which function as a way of sharing moments of thankfulness with others (Shankland & Rosset, 2017). Gratitude diary writing interventions (also known as gratitude lists or gratitude journals) are the most widely studied gratitude approaches within the research base (Shankland & Rosset, 2017). Research to date has mainly involved cross-sectional and correlational methods, although the number of studies exploring causal

relationships is increasing (Renshaw & Olinger-Steeves, 2016). The empirical evidence base has found gratitude diaries to be associated with increases in positive affect (Froh, Seflick & Emmons, 2008), wellbeing and life satisfaction (Boiler et al., 2013; Waters, 2011) and improvements in academic progress (Froh, Miller & Snyder, 2007). The therapeutic benefits of gratitude for distressed populations is now being explored more widely in the evidence base, although research is still in its infancy (Southwell & Gould, 2017; Davis et al., 2016). A small number of studies have demonstrated that gratitude can be linked to the alleviation of negative mental health factors, such as internalising behaviours, negative affect, stress, depressive symptoms, anxiety and sleep disturbances (Bono & McCullough, 2006; Southwell & Gould, 2017; Wood et al., 2008; Boiler et al., 2013). In a review of the evidence base, Wood et al. (2010) cautioned against the premature enthusiasm for gratitude diaries and raised attention to a number of methodological limitations affecting the evidence base, including the use of hassle diaries as a control condition and the lack of manipulation check measures. Davis et al. (2016) also raised concerns of a similar sentiment in their meta-analysis. Their suggestions for future research included the need to compare gratitude diaries to an active comparison group and to use robust randomisation methods.

Developmental Trajectory of Gratitude

The number of gratitude studies involving children and adolescents is increasing (Reckhart, Huebner, Hills & Valois, 2017) which highlights the importance of understanding the developmental trajectory of gratitude (Froh et al., 2007; Owens & Patterson, 2013). There is evidence to suggest that children as young as five years old can understand the construct of gratitude, although other studies have not yet replicated this finding (Owens & Patterson, 2013). In line with the typical developmental pathways of language, cognitive, social and emotional functioning, it is likely that the understanding of gratitude as a complex cognitive-social state develops between the ages of 7 - 10 years old (Froh, Kashdan, Ozimkowsk & Miller, 2008; Emmons & Sheldon, 2002). Studies have found that younger children up to eight years old are much more likely to understand gratitude as a feeling of joy and will tend to attribute this feeling towards material items (Gordon, Musher-Eizenman, Shayla, Holub & Dalrymple, 2004). Older children aged 9 - 12 years are more likely than younger children to attribute gratitude towards others and towards positive events and situations (Gordon et al., 2004). There has been a limited number of gratitude studies to date which have used adolescent samples, however research indicates that outcomes are comparable to studies using adult samples (e.g., Froh et al., 2008; Froh et al., 2014). This suggests that gratitude studies are likely to be most beneficial

for children aged eight years and older, although it is also important to consider children's individual developmental differences when planning, delivering and evaluating gratitude interventions.

Gratitude and Belonging

Researchers have also explored the social benefits of gratitude. The belonging hypothesis proposes that human beings have an innate drive to maintain social relationships. It is through the maintenance of these relationships or social connections that belonging occurs (Baumeister & Leary, 1995). In line with this theory, gratitude has been associated with the building of social resources. Studies have found gratitude to be linked to increases in altruistic tendencies, prosocial behaviour and social support (Wood, Maltby, Gillett, Linley & Joseph, 2008; McCullough et al., 2008; Algoe, Haidt & Gable, 2008). Gratitude has also been found to play a role in the formation and maintenance of relationships at an individual level. At a group level, the experience of gratitude may help to integrate and increase co-operation amongst group members (Algoe et al., 2008).

Studies exploring the social benefits of gratitude in a school-based context have demonstrated positive outcomes. In a study carried out by Froh et al. (2008), gratitude, satisfaction with school experience and prosocial behaviour significantly increased when using a gratitude diary at both post-intervention and follow-up time points. Though a direct relationship between prosocial behaviour and school satisfaction cannot be established from these findings, it could be hypothesised that children may have felt more satisfied with their school experience due to an increase in positive interactions with others. A study carried out by Diebel, Woodcock, Cooper and Brignell (2016) demonstrated that school belonging increased in children following a four week gratitude journaling task compared to controls who completed a neutral events diary. These results could suggest that keeping a gratitude diary which is focused on a specific aspect of life, such as school, may counter any negative appraisals and memories associated with this context (Hirsch & Mathews, 2000; Mathews & Mackintosh, 2000). Furthermore, these effects were maintained two weeks after the intervention suggesting that keeping a gratitude diary may have longer lasting protective benefits.

Gratitude and Anxiety

Childhood and adolescence is the core risk period in which anxiety disorders develop (Beesdo, Knappe & Pine, 2009). The experience of anxiety and fear is part of the typical course of childhood development (Malcarne, Hansdottir & Merz, 2010). Anxiety symptoms can range from mild to severe and may vary across the developmental period (Beesdo et al.,2009). Anxiety disorders are different from normal developmental

experiences of fear and are characterised by symptoms which are persistent, severe and impact adversely on daily functioning (Beesdo et al., 2009). Elevated levels of anxiety are also associated with attentional, interpretation and memory biases (Hertel & Andrews, 2011) meaning that anxious individuals are much more likely to attend to negative stimuli, and to process and recall environmental information in an overly negative way (Wilson & McLeod, 2003; Hertel & Andrews, 2011). Some researchers suggest that individuals can learn how to overcome these biases through reducing the affective and cognitive mechanisms which maintain or exacerbate the negative effects of anxiety (Hertel & Andrews, 2011).

A recent study carried out by Southwell and Gould (2017) demonstrated the potential benefits of a gratitude diary intervention in alleviating negative factors in distressed adults. In this study, participants (n = 107) with either a diagnosis of anxiety or depression were randomly allocated to a gratitude diary writing condition or to a wait-list condition. Measures of gratitude, subjective wellbeing, stress, anxiety, depression and sleep quality were completed at baseline, post-intervention and at a three-week follow-up period. Outcomes for all measures significantly improved post-intervention in favour of the intervention group. Further, findings showed significant differences in anxiety scores at follow-up indicated that symptoms continued to improve over a longer period. This was not found for other outcome measures including for depression. These findings suggest that gratitude journaling has the potential to promote therapeutic improvements in sleep quality and anxiety in a clinical population. The research base has yet to explore whether these effects could be replicated in a youth population.

Gratitude and Sleep

In young people, sleep disturbances have been associated with a range of negative outcomes such as poorer cognitive functioning, mental health, lower academic achievement, emotional regulation and behaviour problems such as impulsivity (Fallone, Owens & Deane, 2002; Hudson, Gradisar, Gamble, Schniering, Rebelo, 2009). If left untreated, sleep problems in young people are persistent and have been shown to have a high comorbidity with other mental health problems (Gregory et al., 2005). The literature base shows that improvements in subjective wellbeing have been found to be positively correlated with increased sleep quality (Jackowska, Brown, Ronaldson & Steptoe, 2016). Studies have mainly been correlational and cross-sectional in nature and have largely focused on understanding the relationship between sleep quality and subjective wellbeing (Ng & Wong, 2012). Researchers have also started to explore the relationship between gratitude and sleep in adult participants. In a cross-sectional study, Wood, Joseph, Lloyd

and Atkins (2009) found that pre-sleep cognitions, which have been suggested to be a protective factor for sleep quality, mediated the relationship between gratitude and sleep quality. It could therefore be suggested that gratitude may play a role in the cognitive appraisal of situations which may impact on sleep quality.

Sleep problems, such as reduced sleep quality, are associated with anxiety in adults (Ramsawh, Stein, Belik, Jacobi & Sareen, 2009). In youth, sleep disturbances are commonly associated with childhood and adolescent anxiety disorders (Alfano, Ginsberg & Kingery, 2007). However, the pathways between sleep quality and anxiety (or vice versa) are complex and unclear (Ng & Wong, 2012). For example, the presence of insomnia was found in 80% of anxious adults; for 40% of participants, insomnia appeared at the same time as diagnosis and for the other 40%, insomnia appeared after the anxiety disorder developed. This suggests that insomnia can be associated with both the onset and maintenance of an anxiety disorder (Ohaynon & Roth, 2002).

Research exploring the relationship between gratitude, anxiety and sleep is emerging and as of yet has only involved the use of adult samples. Significant group differences have been found when comparing a gratitude diary writing group to a wait-list control group for sleep quality, although, these effects were not found to be maintained at a follow-up period three weeks later (Southwell & Gould, 2017). The authors of this study concluded that gratitude likely impacts on anxiety and sleep through reducing worry and negative cognitions (Southwell & Gould, 2017). Research carried out by Ng and Wong (2012) explored the impact of sleep on the gratitude and anxiety relationship and found that sleep did indeed exert a mediating effect on the gratitude-anxiety link. It was concluded by the authors that it was likely that positive pre-sleep cognitions may be the underlying mechanism in this link. However, this is the only study to explore these effects and therefore replication is required to strengthen these findings.

Theoretical Perspectives of Gratitude

The broaden-and-build theory of positive emotions (Fredrickson 1998; 2001) can be applied to understand why gratitude may reduce anxiety symptoms in individuals. The theory presents that positive emotions broaden and build thought and behaviour tendencies, whereas negative emotions, like anxiety, narrow these tendencies (Fredrickson 1998; 2001; 2004). This is due to the body's physiological arousal response which narrows attentional flexibility in order to prepare the body to take a specific action response towards threat (Mogg & Bradley, 2005; Bar-Haim, Lamy, Pergamin, Bakermans-Kranenburg & van IJzendorn, 2007). The experience of positive emotions can lead to a broadening of cognitive states resulting in increased levels of creativity, problem solving, visual attention

and attentional flexibility (Johnson, Waugh & Fredrickson, 2010). The habitual experiencing of positive emotional states may help individuals to shift their attention towards the positive aspects of life, leading to the development of physical, psychological and social resources which over time can promote resilience and positive functioning (Fredrickson, 2000; Fredrickson, Tugade, Waugh & Larkin, 2003).

Research has shown that grateful people tend to use a range of coping strategies such as positive reframing which may act as a buffer to stress (Wood et al., 2007). Heightened levels of anxiety have been found to impact on how individuals appraise others and situations (Hirsch & Mathews, 2000; Mathews & Mackintosh, 2000). According to the Lazarus theory of stress, appraisal style impacts on an individual's cognitive appraisal of events and on the coping strategies they utilise (Lazarus, 1991). A positive appraisal style can buffer against stressful events, resulting in more positive emotional reactions and coping responses, whereas a negative appraisal style may lead to increases in negative emotions and maladaptive coping responses (Suldo & Huebner, 2004; Lyubomirsky, King & Diener, 2005). Researchers exploring cognitive biases in anxious youths have found that individuals can be trained to focus towards non-threat information, which may be a more effective approach than using threat-avoidance strategies (Mogg & Bradley, 2016; Hertel & Mathews, 2011). In relation to gratitude and anxiety, other researchers have hypothesised that engaging in grateful recounting may enhance an individual's ability to appraise situations in a more positive way, which in turn may lead to a reduction in anxiety levels (Watkins et al., 2015). This is also likely to have an impact on sleep quality which in turn may reduce levels of anxiety (Ng & Wong, 2012; Wood et al., 2009).

Study Aims and Hypotheses

The current study aims to address a gap in the literature base by exploring the impact of a gratitude diary intervention on children's levels of anxiety and sleep quality. In addition to this, it aims to strengthen the current evidence base surrounding gratitude and school belonging through replication of a previous study carried out by Diebel et al. (2016). It is hypothesised that gratitude proneness will increase in primary-aged children who complete a gratitude diary writing task. A two-week gratitude diary with a follow-up period of three weeks has been shown to be effective in cultivating gratitude in young people and in demonstrating maintenance effects (Froh et al., 2007). Furthermore, it is hypothesised that there will be improvements in anxiety, quality of sleep and sense of school belonging in primary-aged children participating in the gratitude diary intervention. The current study also aims to overcome limitations highlighted by reviews of gratitude diary interventions (Wood et al., 2010; Davis et al., 2016) by using a an active control

group and a manipulation check to measure the effectiveness of the gratitude intervention. Furthermore, as the reliance on self-report measures has been raised as a broader issue in positive psychology research (Luthar et al., 2014), the use of parents as informers in the current study will overcome this limitation.

Children in Year 6 (aged 10 - 11 years) will participate in this study. Children of this age are in their last year of primary school before transitioning to secondary school. During this academic year, children also sit their SATs (standardised assessment tests). Research has shown that Year 6 can be a particularly difficult and anxiety provoking year as children learn how to manage increased academic pressures, social challenges and the skills needed to help them prepare them for their SATs and the transition to secondary school. All of these factors are likely to impact on children's overall mental wellbeing and resilience (Grills-Taquechel, Norton & Ollendick, 2010; Locker & Cropley, 2004; Putwain, Connors, Woods & Nicholson, 2012; Rice, Fredrickson & Seymour, 2011).

Method

Design

A randomised control design was employed to evaluate the impact of a school-based gratitude diary intervention on primary-aged children's levels of anxiety, gratitude proneness, school belonging and sleep quality. Participants were randomised at a class level to either a gratitude or an event diary writing condition (control group) using a web-based programme called Research Randomizer (Version 4; Urbaniak & Plous, 2013). Measures were completed at three time points: baseline (T1), post-intervention (T2) and at three week follow-up (T3). Participants were not made aware of the different conditions. This was achieved by ensuring that both types of diaries looked the same with the only difference being the instructions within the diary itself. It was not possible to blind the class teacher from participant allocation.

Participants

A priori power calculations were carried out using G* Power Version 3 (Faul, Buchner, Erdfelder & Lang, 2014). The sample size to detect a significant group difference (alpha = .05 and power of 80%) was calculated to be 124 participants to achieve a medium effect. In total, 189 participants aged 10 - 11 years from eight Year 6 classes across six mainstream primary and junior schools in South-East England participated in the study (n = 70 males, n = 94 females). Figure 2 shows the flow of participants in the study. Four of the schools were located in rural villages and two schools were located in two large towns. Across the sample, participants were mainly from a white British background; a low number of pupils were from other ethnic backgrounds. The proportion of pupils identified as having special educational needs (SEN) was also low with the exception of one school in which the number of pupils identified as having SEN was reported to be above average. Generally, these schools had lower than average number of pupils identified as being in vulnerable groups with the exception of two schools who identified a higher than average number of pupils.

Recruitment of participants. A recruitment email was sent directly to head teachers of all state schools (including faith and free schools) within one local authority. Email addresses of head teachers were freely available on a school directory website provided by the local authority. In total, 23 of 59 schools requested further information and 10 of 23 schools agreed to a face-to-face follow-up meeting to discuss the research in detail. Six head teachers provided consent to participate (see Appendix I for consent form). One of these schools agreed to take part in a pilot study to trial run the questionnaires and the intervention.

Measures

Gratitude proneness. The Gratitude Questionnaire (GQ-6; McCullough, Emmons & Tsang, 2002) was used as a manipulation check measure to assess self-reported levels of gratitude proneness (see Appendix D). The GQ-6 is a six-item scale which uses a 7-point response scale (1 = strongly disagree to 7 = strongly agree). A total score of 42 can be achieved with a higher score indicating higher levels of gratitude proneness. The GQ-6 scores have demonstrated good internal consistency (α = .82) in adult samples (McCullough et al., 2002) and in samples of children aged 10 - 19 years. For children aged 10 - 11 years, the GQ-6 demonstrated good internal consistency (α = .81) (Froh et al., 2011).

Anxiety. The Spence Children's Anxiety Scale (SCAS; Spence, 1998) was used as a broadband anxiety measure (see Appendix E). The SCAS is a 44-item self-report questionnaire (including six positive filler questions) which is designed to be used to assess the severity of anxiety symptoms in children aged 8 - 15 years. A total anxiety score is derived from the sum totals of six subscales (separation anxiety, social phobia, obsessive compulsive problems, panic/agoraphobia, generalised anxiety/overanxious symptoms and fears of physical injury). Participants are asked to rate on a four-point scale using the response options 'never', 'sometimes', 'often', and 'always'. The total score is 114 with scores over 90 indicating elevated levels of anxiety. This scale has shown high internal consistency in clinical and community samples (Brown-Jacobsen, Wallace & Whiteside, 2011; Essau, Sasagawa, Anastassiou-Hadjicharalambous, Guzmán & Ollendick, 2011).

Sense of school belonging. The Belonging Scale (Frederickson, Simmonds, Evans & Soulsby, 2007) was used to measure children's sense of school belonging (see Appendix F). The scale was adapted from the Psychological Sense of School Belonging Membership Scale (Goodenow, 1993) to make it suitable for British children and a younger age group. The Belonging Scale is a 12-item self-report questionnaire which uses a three-point scale using the response options 'not true', 'not sure' and 'true'. Previous research has demonstrated that a low school belonging score would be below 2 (Fredrickson et al., 2007). This questionnaire showed acceptable to high internal reliability when used with samples of children aged 8 - 11 years (Frederickson et al., 2007; Diebel et al., 2016).

Sleep quality. The Children's Sleep Habits Questionnaire (CSHQ; Owens, Spirito & McGuinn, 2000) is a widely used measure for assessing children's sleep habits and quality (Markovich, Gendron, Violet & Corkum, 2014) (see Appendix G). The CSHQ is a 33-item questionnaire which uses a three-point scale using the response options 'usually' (5 to 7 times per week), 'sometimes' (2 to 4 times per week) and 'rarely' (0 to 1 time per week).

In the current study the scale was administered to parents at T1 and T2 time points. The measure can be used for children aged between 4 - 10 years of age. It is organised into eight sub-scales which assess: bedtime resistance, sleep onset delay, sleep duration, sleep anxiety, night wakings, parasomnias, sleep disordered breathing and daytime sleepiness. A total score of 93 can be achieved with higher scores on the CSHQ indicating poorer sleep quality and the presence of sleep problems. A total sleep score, rather than sub-scale scores were calculated in the current study. Sub-scale scores which are one to two standard deviations from the mean indicate the presence of a specific sleep problem (Owens et al., 2000). The scale has demonstrated acceptable to good internal consistency in community (α = .68) and clinical samples (α = .78) (Owens et al., 2000).

Internal Consistency

The internal consistency of the outcome measures in the current study is shown in Table 1. Cronbach alpha values above 0.7 indicate an acceptable level of consistency and values between 0.8 and 0.9 indicate a good to excellent level of reliability (Tavakol & Dennick, 2011). All alpha values for the current sample were above the acceptable range across all measures and time points, with the exception of the GQ-6 at T1.

Table 1.

Cronbach alpha values for outcome measures across time points

Measure	Time points		
	T1	*T2*	*T3*
GQ-6	.631	.751	.777
SCAS	.937	.939	.941
BS	.785	.831	.850
CSHQ	.793	.827	-

Note. GQ-6 = The Gratitude Six Item Questionnaire, SCAS = Spence Children's Anxiety Scale, BS = The Belonging Scale. Parent-report scales: CSHQ = The Children's Sleep Habits Questionnaire. The CSHQ was not administered at T3.

Pilot Study

A pilot study was conducted in one school which involved 14 participants. The purpose of this pilot was to explore children's understanding of the questionnaires and the usability of the diaries. Data was gathered from participants (children only) at T1 and T2 but not T3. Following the pilot study, only minor changes to the format of the paper

questionnaires were made to make these easier for participants to read. Following some suggestions from school staff, some changes to the briefing and debriefing statements were made to provide children with clearer information about the outcome measures and what these were assessing. Minor changes to the format of the diaries were made which included inputting examples of exemplar diary entries. A small group of parents (n = 6) volunteered to provide feedback about the research procedure and the sleep questionnaire. They provided general guidance on the usability and format of the sleep questionnaire which was amended to provide clarity regarding question responses. Two parents also felt a separate debriefing letter (along with the letter provided for children) to inform parents that the research had come to an end should be included in the study. Due to the implementation of these changes and also due to participants not completing follow-up measures, the data collected for this sample was analysed separately to reflect these differences from the main study (see Results section).

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┌─────────────────────────────┐
│ Total number of participants │
│ eligible for inclusion in the│
│ study including pilot (n = 208)│
└─────────────────────────────┘
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┌─────────────────────────────┐
│ Declined to participate (n = 14)│
│                              │
│ Withdrew at baseline (n = 5) │
└─────────────────────────────┘
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┌─────────────────┐      ┌─────────────────────────────┐
│ Parents completed│◄─────│ Baseline (T1) measures       │
│ T1 sleep measures│      │ administered (n = 189)       │
│ (n = 82)         │      └─────────────────────────────┘
└─────────────────┘
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┌─────────────────────────────┐
│ Random allocation to condition│
│ (n = 189)                    │
└─────────────────────────────┘
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┌─────────────────────────┐                    ┌─────────────────────────┐
│ Allocated to gratitude diary│                │ Allocated to event diary │
│ condition (n = 94)      │                    │ condition (n = 95)      │
└─────────────────────────┘                    └─────────────────────────┘
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┌─────────────────────┐                        ┌─────────────────────┐
│ Completed intervention│◄──────────────────────►│ Completed intervention│
│ (n = 92)            │                        │ (n = 92)            │
└─────────────────────┘                        └─────────────────────┘
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┌─────────────────────┐      ┌─────────────────────────┐
│ Parents completed T2 │◄─────│ Post-intervention (T2)   │
│ sleep measures (n =  │      │ measures administered    │
│ 58)                 │      └─────────────────────────┘
└─────────────────────┘
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┌─────────────────────┐                        ┌─────────────────────┐
│ Completed T2 measures│◄──────────────────────►│ Completed T2 measures│
│ (n = 87)            │                        │ (n = 85)            │
└─────────────────────┘                        └─────────────────────┘
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┌─────────────────────────┐
│ Follow-up (T3) measures  │
│ administered             │
└─────────────────────────┘
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┌─────────────────────────┐                    ┌─────────────────────────┐
│ Completion of T3 measures│◄──────────────────►│ Completion of T3 measures│
│ (n = 77)                │                    │ (n = 76)                │
└─────────────────────────┘                    └─────────────────────────┘
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┌─────────────────────────┐
│ Analysis                 │
└─────────────────────────┘
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┌─────────────────────────┐                    ┌─────────────────────────┐
│ Analysed (n = 74) in addition│                │ Analysed (n = 76) in addition│
│ to n = 7 from pilot study│                    │ to n = 7 from pilot study│
└─────────────────────────┘                    └─────────────────────────┘
```
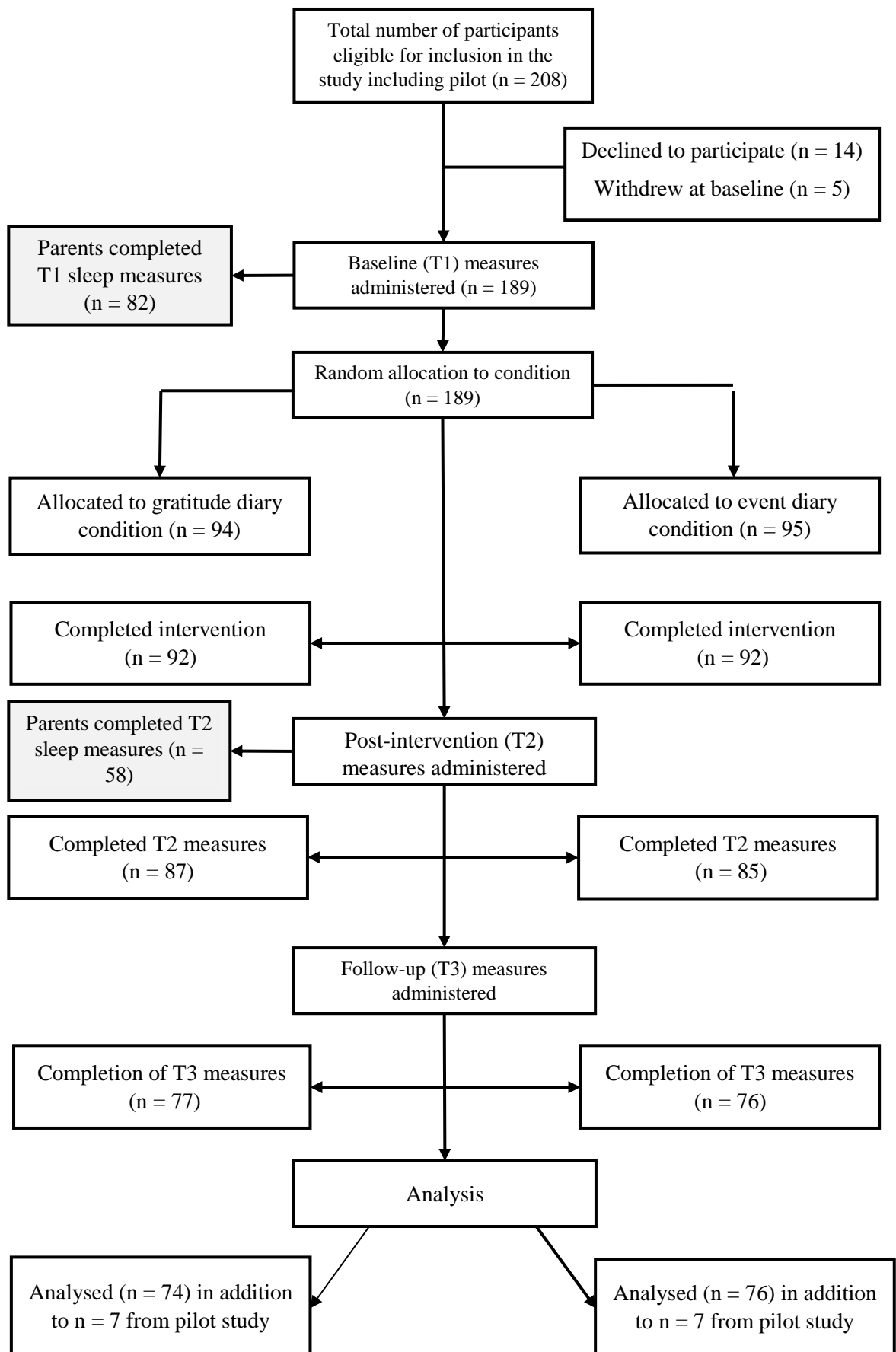
Figure 2. Flow diagram of flow of participants

Procedure

Ethical approval was obtained from the University of Southampton's School of Psychology Ethics Committee and Research Governance prior to commencing the research (see Appendix H). The pilot study and interventions were carried out during the autumn term (September to December 2018). The researcher was mindful to ensure that conditions amongst schools were as similar as possible (i.e., the intervention was implemented as part of a typical school day) therefore participation was staggered to allow for flexibility around various school commitments (e.g., residential trips and school visits). All participants were eligible to participate in the study but were free to withdraw at any point. Parents were given an information sheet and opt-out child consent form prior to the start of the study (see Appendix J). Parents provided their own consent to participate by completing the sleep questionnaires. The outcome measures assessing gratitude proneness, anxiety and school belonging were administered to participants in their classrooms at T1, T2 and T3 time points (see Figure 3 for visual representation of the intervention procedure).

Before administering outcome measures, the researcher briefed the participants of the nature of the study and explained the outcome measures (see Appendix L). The researcher read each question aloud to participants to control for reading difficulties. Sleep questionnaires were also completed by parents at T1 (one week before the start of the intervention) and at T2. The order, format and administration of questionnaires was kept exactly the same at each time point. After completing baseline measures, participants (children) were randomly allocated to a diary writing condition. Participants were then taken outside of their classroom in two small group where they were given a diary and the diary writing task was explained to them (see below for intervention details). Participants were asked to write in their diaries every school day for two weeks (see Appendix L for script). Class teachers were asked to allocate 10 - 15 minutes at the end of each day as quiet 'reflection time' so that participants could complete their diaries. Participants were asked not to share their diary entries with others in the class, but that if they wanted to they could share their diary with other adults. Participants were debriefed at T3, three weeks following the end of the intervention (see Appendix N). All participants, regardless of the condition they were allocated to, were given a letter (see Appendix O) and a blank gratitude diary to take home to thank them for taking part. Parents received a separate debriefing letter to explain the details of the study and to thank them for their participation (see Appendix P).
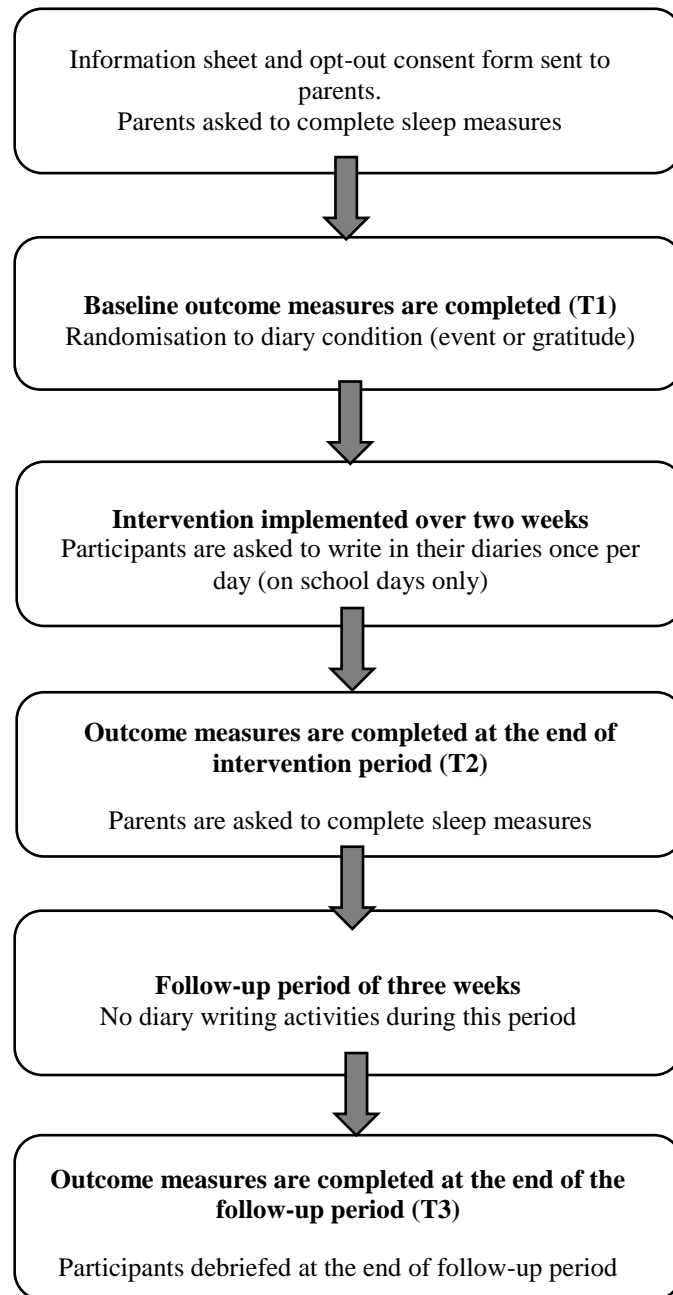
```
┌─────────────────────────────────────────────┐
│   Information sheet and opt-out consent       │
│   form sent to parents.                       │
│   Parents asked to complete sleep measures    │
└─────────────────────────────────────────────┘
                      ↓
┌─────────────────────────────────────────────┐
│   Baseline outcome measures are completed (T1)│
│   Randomisation to diary condition            │
│   (event or gratitude)                        │
└─────────────────────────────────────────────┘
                      ↓
┌─────────────────────────────────────────────┐
│   Intervention implemented over two weeks     │
│   Participants are asked to write in their    │
│   diaries once per day (on school days only)  │
└─────────────────────────────────────────────┘
                      ↓
┌─────────────────────────────────────────────┐
│   Outcome measures are completed at the end   │
│   of intervention period (T2)                 │
│                                               │
│   Parents are asked to complete sleep measures│
└─────────────────────────────────────────────┘
                      ↓
┌─────────────────────────────────────────────┐
│   Follow-up period of three weeks             │
│   No diary writing activities during this     │
│   period                                      │
└─────────────────────────────────────────────┘
                      ↓
┌─────────────────────────────────────────────┐
│   Outcome measures are completed at the end   │
│   of the follow-up period (T3)                │
│                                               │
│   Participants debriefed at the end of        │
│   follow-up period                            │
└─────────────────────────────────────────────┘
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Figure 3. Visual representation of experimental procedure

Intervention

Gratitude diary condition. In the gratitude diary condition, participants were asked to record three small and novel things that had happened during the school day for which they were thankful for. They were provided with a sentence starter on each page of the diary: 'I am thankful…' The following instructions were provided in the diary:

"Sometimes it is good to think about things that make you feel thankful. These thoughts are like jewels in a treasure chest. Even the smallest jewels are precious. Your task is to keep a daily diary for 10 days to write about 3 things you are thankful for that have happened during your day at school. Write a sentence each about 3 small things that have happened in your school day that you are thankful for. Write about new things each day."

Participants were given a description of a treasure chest that filled up daily with small jewels; each jewel represented something that they were grateful for. They were asked to choose the most precious (or highly valued) 'jewels' and to record details of these things in their diaries. Participants were encouraged to record smaller rather than broader things they were grateful for. There were two reasons for this: 1) to increase engagement with the intervention and reduce 'gratitude fatigue' (Emmons, 2013) and 2) to encourage participants to actively notice a range of things they were grateful for during the day. Participants were given examples such as 'I am thankful that my friend helped me with a maths question' as a reminder to include an element of gratitude in their sentence.

Event diary condition. Participants in the event diary writing condition were instructed to write down three things that happened during the school day. The diary contained the following instructions:

"Sometimes it is good to keep a record of the things that happen during the day. Your task is to keep a daily diary for 10 days to write about 3 events which have happened during your day at school. Write a short sentence for each event to briefly describe what happened at school today."

Participants in the event diary condition were provided with examples of events which were described in a neutral and factual way (e.g., 'In science, I learned about volcanoes') to encourage them to write their diary entries in a similar way.

Intervention integrity. Teachers were asked to complete a checklist to show adherence to the study procedure (Appendix K). The researcher completed the first diary entry with participants. Teachers were asked to prompt participants to record diary entries for the remaining nine days. Class teachers were asked to read a short script to their class:

"It's now time to write in your diaries. Please can you re-read the instructions inside your diaries so that you remember what you need to do and spend ten minutes writing your entries. When you've finished you can put your diaries away."

The pilot study indicated that around ten minutes was a sufficient amount of time for participants to spend writing their entries. If a day was missed then teachers were advised to provide time to complete the diary as early as possible on the following day whilst reminding pupils to reflect on the previous day. Participants who were absent from school were asked to miss the diary entry and continue writing in their diaries on the day they returned to school. Participants who needed additional support to write in their diaries (n = 6) were supported by an adult who scribed their diary entry but did not provide any prompting regarding the content of the entry.

Ethical Considerations and Risk to Participants

The current study used an opt-out approach in which participants were eligible for participation in the study unless they actively chose to withdraw. A key benefit of using this approach was the ability to collect data from a larger sample and to reduce selection bias which might arise through a volunteer selection method. To overcome the ethical issues associated with an opt-out approach, participants (schools, parents and children) were informed in detail of the nature of the study and of their right to withdraw from the study at any point without repercussions. To make the withdrawal process easier for children, they were told that they could tell their teacher or their parents/carer of their decision to withdraw at any point. To ensure compliance with the current general data protection regulations (GDPR), data was annoymised at point of collection using a participant number. The researcher did not have access to any identifiable information about the child or parent at any point, apart from the gender of the child (see Appendix Q for further details).

The researcher was aware of the need to ensure that children who identified as experiencing elevated levels of anxiety, sleep difficulties or low levels of school belonging were supported to seek further help. In the current study, three children scored highly on the anxiety scale which indicated that they were experiencing elevated levels of anxiety. Parents were notified via the class teacher who held the 'master' participant list. Parents were advised that the anxiety measure was used as an early screening tool and to seek advice from their GP or another medical professional. They were also told that they could contact the researcher directly should they have any questions or queries. No specific concerns regarding sleep difficulties or school belonging were raised for any participants.

Every care was taken throughout the duration of the study to minimise risks and potential harm to participants. There was a risk that some participants, particularly those in the event diary intervention, may have chosen to write about negative evaluations, problems or worries. To manage this risk, it was reiterated to participants through briefing,

written examples and instructions reminding them to record neutral events in a factual and non-emotional way as if they were a news reporter. Participants were asked to share any worries or concerns that arose with their teacher or another trusted adult. Another potential risk was that participants may have used the diary to record content of a wellbeing or safeguarding nature. At T2, the content of the diaries were screened by the researcher to identify any content which could indicate a safeguarding or wellbeing concern. No diary content was raised as a cause for concern in the current study but if this had occurred parents would have been notified via the class teacher and appropriate action would have been taken following the school's safeguarding procedures.

Results

Approach to Analysis

The data for 164 participants was analysed. Data from 150 participants who completed the intervention and outcome measures at T1, T2 and T3 (gratitude, n = 76, event, n = 74; n = 64 males, n = 86 females) was analysed using SPSS (Version 25). Data from 14 participants involved in the pilot study who completed outcome measures at T1 and T2 (n = 6 males, 8 = females) was analysed separately. Data from 58 parents who completed sleep measures at T1 and T2 time points was also analysed. A 2 x 3 mixed ANOVA was conducted to explore the differences between the groups (gratitude and event) at three time points. Further, a 2 x 2 mixed ANOVA was conducted using data gathered from the pilot study to explore the differences between the groups at two time points (T1 and T2). Sleep quality for the two groups was also analysed using a 2 x 2 mixed ANOVA. Effect sizes were measured using Partial Eta Squared; a value of >.1 is considered to be small, >.25 is considered to be medium, and a value of >.4 is considered to indicate a large effect (Portney & Watkins, 2000).

Exploration of descriptive data and histograms indicated a normal distribution for gratitude and school belonging. The distributions for anxiety and sleep were positively skewed. Research suggests that the F-statistic (in ANOVA) is robust to moderate violations of normality when sample sizes are equal (Glass, Peckham & Saunders, 1972; Forshaw; 2007; Field, 2013). Therefore, as the sample sizes for each condition were almost equal, the decision to continue without transforming the data was made. Exploration of box plots highlighted that there were no extreme outliers at baseline with the exception of three participants who scored highly on the SCAS. Two of these participants were in the event diary group which may explain why this group had higher mean and standard deviation figures than the gratitude group at baseline (see Table 2). However, the decision was made not to remove these participants from analysis as doing so would have made the groups unequal.

The means and standard deviations for each group (n = 150) at baseline (T1) are shown in Table 2 (the descriptive statistics for the pilot group can be found in Table 3). The gratitude group had a lower group mean than the event diary group at baseline for both gratitude and anxiety. Analyses were conducted to explore the significance of group differences at T1 which confirmed that there were no significant differences between the experimental group (gratitude) and the control group in terms of gratitude, $F(1, 149) = 2.42$, $p = .121$; anxiety, $F(1, 149) = 0.51$, $p = .822$; school belonging, $F(1, 149) = 5.47$, $p = .461$ and sleep, $F(1, 56) = .388$, $p = .5.36$.

Table 2.

Descriptive statistics for gratitude, anxiety and school belonging scores across time points T1, T2 and T3, and sleep quality scores across T1 and T2

Time point	Outcome Measure	Condition	
		Event diary	**Gratitude diary**
		Mean (SD)	Mean (SD)
T1	Gratitude	34.01 (4.42)	32.67 (5.99)
	Anxiety	31.79 (17.53)	32.51 (21.24)
	School Belonging	30.33 (3.94)	29.82 (4.45)
	Sleep	40.85 (7.22)	39.69 (5.53)
T2	Gratitude	33.21 (6.10)	33.07 (5.99)
	Anxiety	28.20 (17.80)	28.34 (20.33)
	School Belonging	30.31 (4.67)	30.32 (4.53)
	Sleep	40.30 (6.14)	38.57 (5.46)
T3	Gratitude	33.08 (5.97)	33.57 (6.49)
	Anxiety	28.51 (17.85)	25.69 (20.31)
	School Belonging	29.36 (4.89)	30.56 (4.96)

Main Analyses

Assumptions of sphericity were violated for school belonging, $\mathcal{X}^2(2) = .955$, $p = .033$ and anxiety $\mathcal{X}^2(2) = .947$, $p = .018$ but not gratitude $\mathcal{X}^2(2) = .989$, $p = .455$ (indicated with a significant probability value). Therefore, the probability values for school belonging and anxiety were corrected using Greenhouse-Geisser values to account for these violations (Field, 2013).

Manipulation Check

An ANOVA was conducted to explore whether the intervention had induced significantly different levels of gratitude in the intervention group compared to the control group across time points. A significant overall interaction was found $F(2, 296) = 3.29$, $p = .039$, $\eta^2 = .22$. Visual exploration of the interaction graph (Figure 4) shows gratitude

proneness increased in the intervention group from T1 to T3 and declined in the event writing group from T1 to T3.
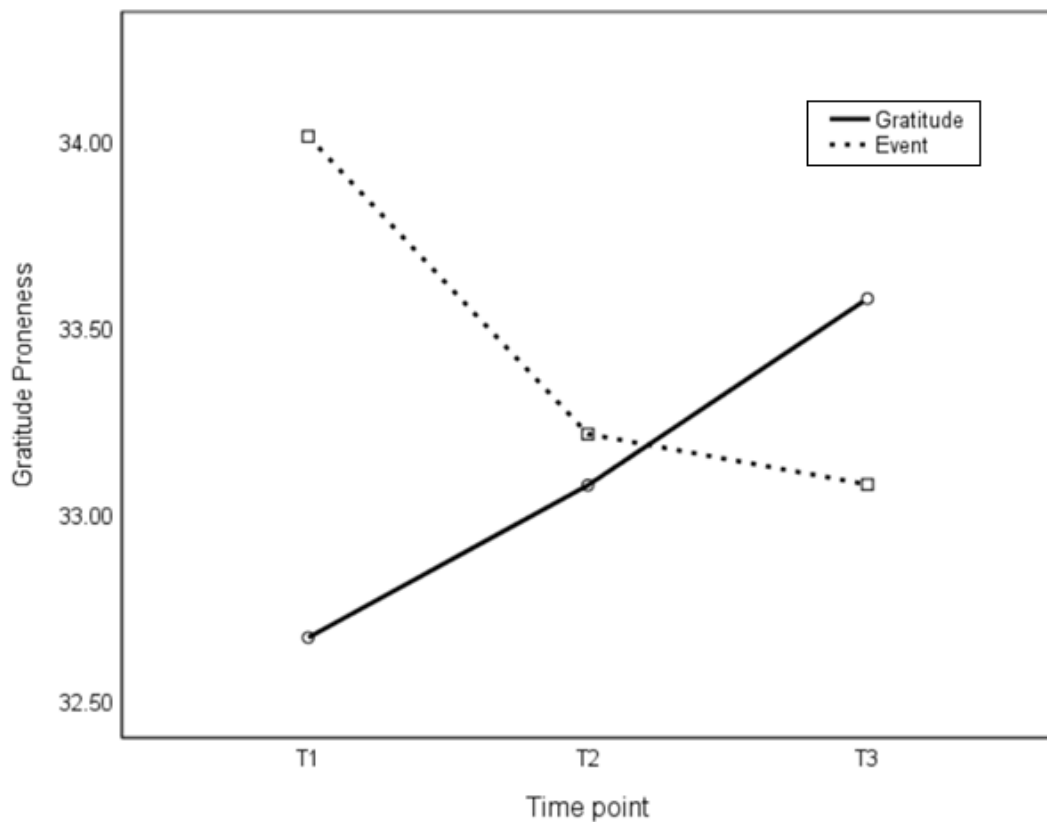

Figure 4. Gratitude proneness scores for the intervention (gratitude diary) and control group (event diary) across time points.

Anxiety

A significant interaction for condition over time was found for anxiety, $F(1.89, 281.07) = 3.20$, $p = .045$, $\eta^2 = .21$ (Greenhouse-Geisser corrected) indicating significant differences in anxiety levels between the groups over time. Contrasts showed a non-significant interaction effect at T2, $F(1, 148) = .143$, $p = .706$, $\eta^2 = .001$ and a significant interaction effect at T3, $F(1, 148) = 4.97$, $p = .027$, $\eta^2 = .032$. A significant main effect for time was found, $F(1.89, 281.07) = 24.93$, $p < .001$, $\eta^2 = .14$ (Greenhouse-Geisser corrected). The interaction graph (Figure 5) shows that anxiety reduced from baseline (T1) to post-intervention (T2) for both groups, but that anxiety continued to reduce in the gratitude group but not in the event diary group. This suggests that the process of keeping a daily diary was beneficial in reducing anxiety for both groups during the intervention period but that only the gratitude diary group continued to benefit from longer-term reductions in anxiety.
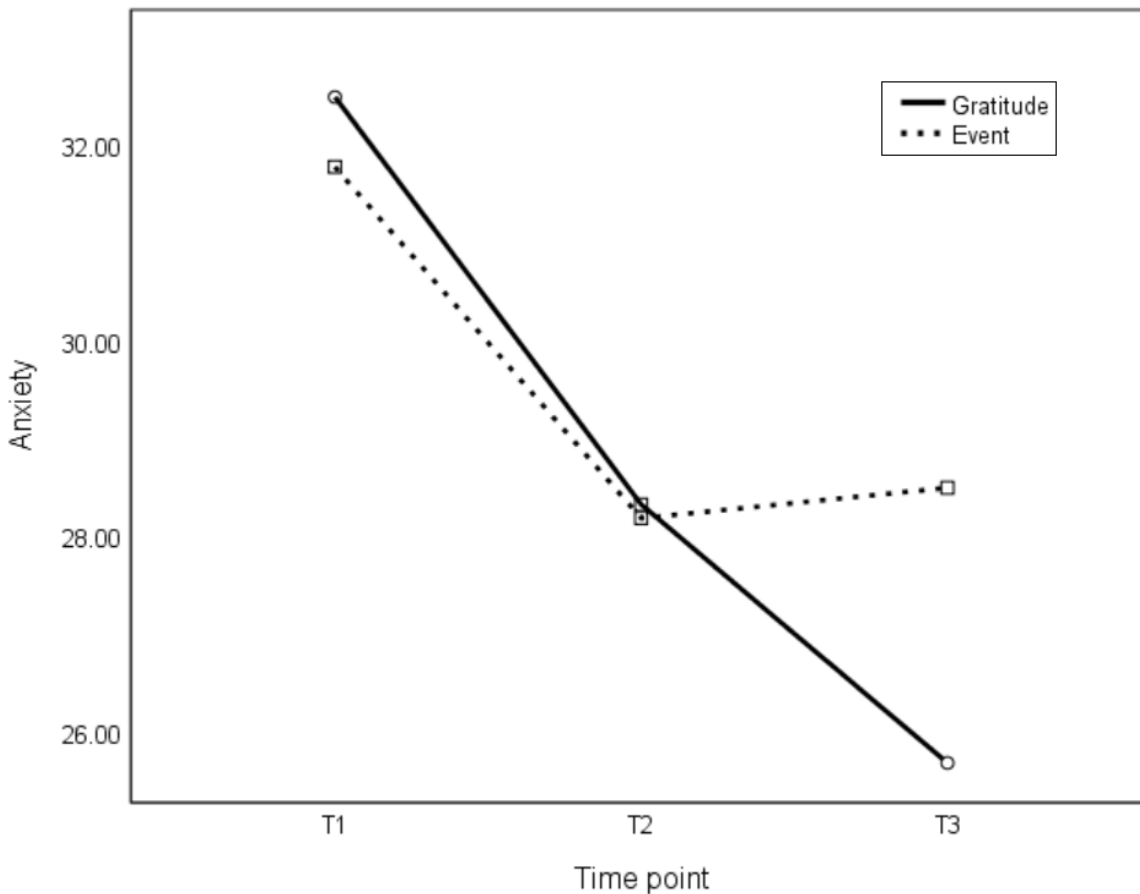
Figure 5. Anxiety scores for the intervention (gratitude diary) and control group (event diary) across time points.

School Belonging

A highly significant interaction for time and condition was found $F(1.91, 283.20) = 6.16$, $p = .003$, $\eta^2 = .40$ for school belonging indicating a significant difference between groups over time (Greenhouse-Geisser corrected). Contrasts showed a non-significant interaction effect at T2 $F(1, 148) = 1.32$, $p = .252$, $\eta^2 = .009$ and a significant interaction effect at T3 $F(1, 148) = 5.90$, $p = .016$, $\eta^2 = .38$. No significant main effects were found $F(1.91, 283.20) = 1.04$, $p = .349$, $\eta^2 = .007$. The interaction graph (Figure 6) shows that school belonging increased in favour of the gratitude diary group from T1 to T3. Furthermore, school belonging for the event diary group appeared to remain stable from T1 to T2 but decreased at T3. This suggests that keeping a daily gratitude diary might function as a protective mechanism for school belonging.
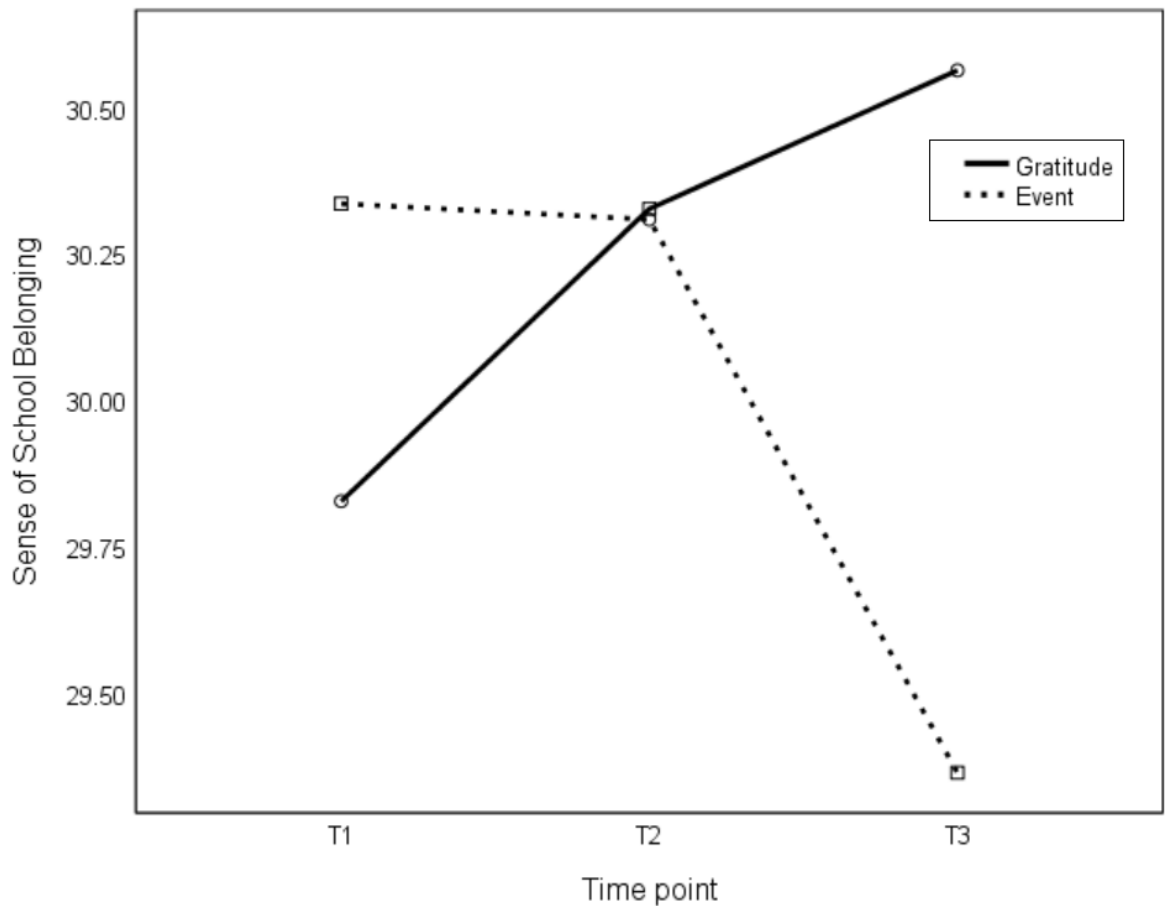
Figure 6. School Belonging scores for the intervention (gratitude diary) and control group (event diary) across time points.

Sleep

No significant interactions or main effects were found for sleep quality. The main effect of time showed a downward trend (indicating lower sleep disturbances) suggesting that sleep quality improved for both the gratitude and event diary groups, $F(1, 51) = 2.954$, $p = .092$, $\eta^2 = .55$. A non-significant time x condition interaction indicated that improvements in sleep quality over time were similar for both groups, $F(1, 51) = .345$, $p = .559$, $\eta^2 = .007$. The interaction graph (Figure 7) shows that sleep quality improved in both groups but more so in the gratitude group. This indicates that the gratitude diary intervention did not have a significant effect on sleep quality despite improvements in group mean scores.
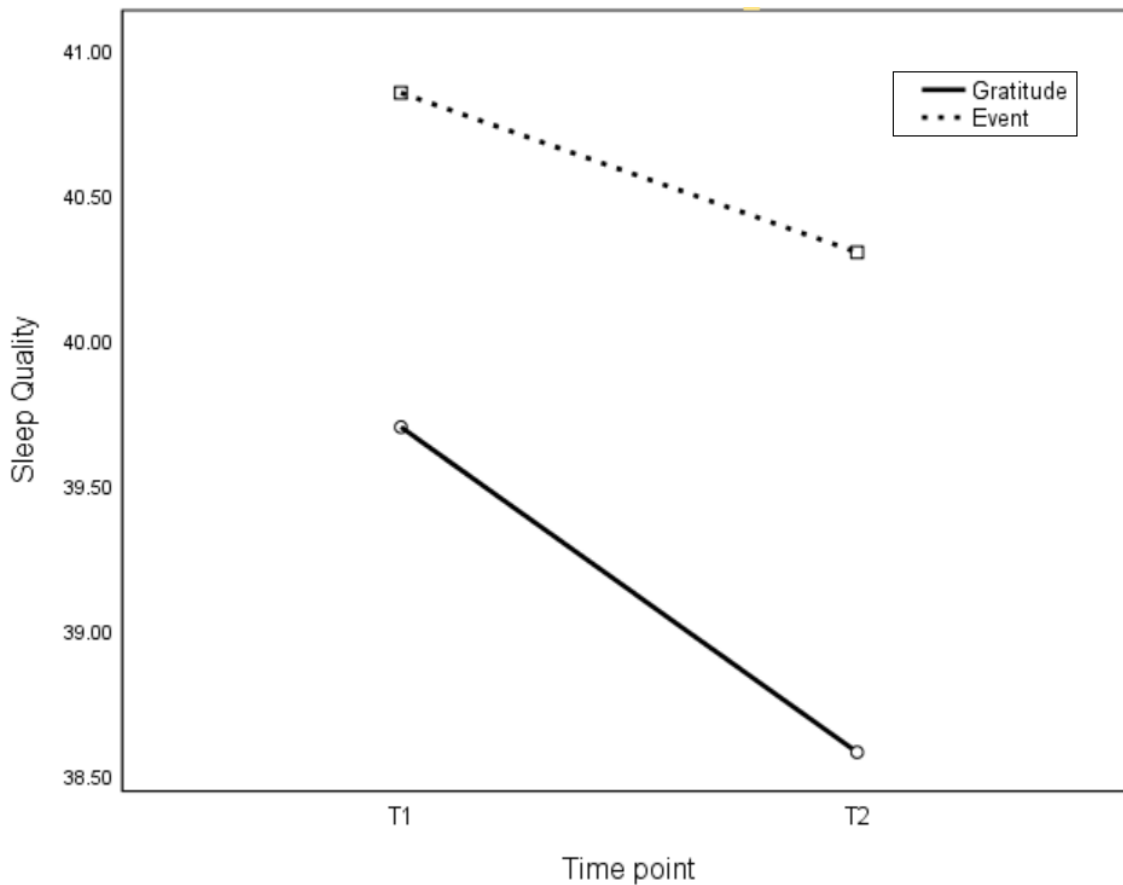
Figure 7. Sleep Quality scores for the intervention (gratitude diary) and control group (event diary) across T1 and T2 time points.

Further Analyses

Additional T1 and T2 Data from Pilot Study

The data from the pilot study involving 14 participants (gratitude, n = 7, event, n = 7; n = 6 males, n = 8 females) was analysed separately. Exploration of descriptive data and histograms indicated a normal distribution across measures for each group. Exploration of box plots highlighted that there were no extreme outliers. Table 3 shows descriptive statistics for each group at each time point. Sleep measures were not completed by parents in the pilot study.

Descriptive statistics showed that gratitude was much lower in the gratitude diary group at baseline. Levels of baseline anxiety were higher in the gratitude group and baseline school belonging levels were the same across both groups. Analyses were conducted to explore group differences at T1 which confirmed that there were no significant differences between the intervention and control group for gratitude, anxiety and school belonging at baseline.

Table 3.

Descriptive statistics for the pilot study (n = 14) for gratitude, anxiety and school belonging scores across time points T1 and T2.

Time point	Outcome Measure	Condition	
		Event diary	**Gratitude diary**
		Mean (SD)	Mean (SD)
T1	Gratitude	34.28 (2.36)	32.14 (9.71)
	Anxiety	26.85 (17.09)	27.00 (10.89)
	School Belonging	31.28 (4.57)	31.28 (7.73)
T2	Gratitude	33.00 (4.35)	33.00 (6.48)
	Anxiety	25.42 (14.68)	28.42 (10.75)
	School Belonging	29.28 (4.95)	30.42 (7.13)

Results from a 2 x 2 mixed ANOVA showed that non-significant time x condition interactions for gratitude, $F(1, 12) = .753$, $p =.403$, $\eta^2 = .059$; anxiety, $F(1, 12) = .821$, $p =.383$, $\eta^2 = .064$ and for school belonging, $F(1, 12) = .626$, $p =.444$, $\eta^2 = .050$ were found.. These findings should be interpreted with caution due to the small sample size and lack of statistical power which may increase the likelihood of Type I and II errors (Maxwell, 2004).

Unplanned Analyses

Gender

Unplanned analyses for gender were carried out post-data collection to explore the possible effects of gender. A mixed 2 x 2 x 3 ANOVA was carried out to explore the differences between gender and condition across three time points. The groups for males and females were unequal (males = 64, females = 86) which should be considered when interpreting the findings, particularly as uneven groups can impact on the validity of the findings. Analyses to explore baseline differences indicated that there were no significant differences between males and females for gratitude, belonging or sleep. Findings revealed non-significant three-way interactions for gratitude, $F(2, 292) = 1.09$, $p =.335$, $\eta^2 = .007$; anxiety, $F(1.89, 278.84) = .349$, $p =.695$, $\eta^2 = .002$ (Greenhouse-Geisser corrected value) and for school belonging, $F(1.91, 281.93) = 1.25$, $p =.286$, $\eta^2 = .008$ (Greenhouse-Geisser

corrected value) which suggests that effect of gender was non-significant for both conditions and across all time points.

Discussion

Research has shown that PPIs delivered at a universal level can be beneficial for promoting children's resilience and wellbeing (Shankland & Rosset, 2017; Dawood, 2013). Gratitude diary interventions are becoming increasingly more common-place in school-based contexts (Oades et al., 2011) and have been associated with a range of positive outcomes for young people (Waters, 2011; Froh et al., 2008; Diebel et al., 2016). The aim of the current study was to explore the effectiveness of a brief school-based gratitude diary writing intervention on primary school children's level of anxiety, sleep quality and sense of school belonging. It was hypothesised that a two week gratitude diary intervention would increase gratitude proneness and would be effective in improving sense of school belonging, sleep quality and anxiety levels in this population. The main research findings will be discussed along with the strengths and limitations of the current study. Directions for future research and implications for practice will also be discussed.

Discussion of Findings

Gratitude. To explore whether a two week gratitude diary intervention was successful in inducing gratitude in the intervention group, the GQ-6, a measure of gratitude proneness, was administered across three time points. A significant interaction in favour of the intervention group was found which demonstrates that the gratitude diary writing task was successful in increasing levels of gratitude proneness in participants. This effect was shown to be maintained three weeks later at the follow-up time point. The use of a manipulation check provides further clarity regarding the effectiveness of the gratitude intervention and addresses this as a limitation previously highlighted in a review conducted by Wood et al. (2010). In addition, these findings contribute to the understanding of the developmental trajectory of gratitude, providing support that children aged 10 - 11 years typically appear to have a good understanding of the concept of gratitude (Froh, Kashdan, Ozimkowsk & Miller, 2008; Emmons & Sheldon, 2002).

Findings from the current study also support the use of the GQ-6 as an effective measure of gratitude proneness to use with children of this age range. Analyses to explore the internal consistency of the GQ-6 measure found values to be within or above the acceptable range. Further exploration of item factor loadings showed that item 6 had a much lower factor loading than the other items across all three time points (see Appendix D for outcome measure). Previous research has also highlighted item 6 as having a much lower factor loading in comparison to other items (Froh et al., 2008). Informal discussions with children at the debriefing stage in the current study highlighted that children found the wording of item 6 to be abstract and unclear. Other feedback from the pilot study indicated

that some children found it difficult to use the response scale for the GQ-6 without a visual prompt. Therefore, it may be useful to consider removing item 6 when administering this measure with children of this age in future studies to improve the internal consistency of the scale. It may also be helpful to include the use of a visual number scale to support children's understanding of the response options.

Anxiety. As hypothesised, those who participated in the intervention condition experienced a significant reduction in self-reported levels of anxiety. Contrast analyses showed that anxiety levels for both groups declined between T1 and T2 time points. Also, it was found that anxiety levels continued to decrease post-intervention for the gratitude group but not the control group. This suggests that the act of keeping a gratitude diary may have protective benefits for anxiety. It is not fully clear why anxiety levels also declined between T1 and T2 time points for the control group. However, it could be speculated that this effect could be due to the intrinsic therapeutic benefits of journaling which have been reported in other studies (e.g., Chang, Huang, & Lin, 2013).

At follow-up, anxiety continued to show a downward trend for the gratitude diary group, whereas levels of anxiety slightly increased for the event diary group. This could suggest that the benefits of writing a gratitude diary seem to result in a lasting change for participants, however, subsequent follow-up measures would be required to explore whether these benefits extend beyond three weeks and whether 'booster sessions' are needed to maintain these effects over a longer period of time. Delayed effects, such as these, have been reported in other studies. Froh et al. (2008) found a delayed response in which differences in favour of the intervention group were only evident at the follow-up time point. The authors concluded that it likely takes participants some time to integrate and adjust to the intervention. This explanation could also be plausible in explaining the delayed effects observed for participants in the current study. Overall, these findings provide support for previous research carried out by Southwell and Gould (2017) in which significant reductions in anxiety levels were found for clinically anxious adults who completed a three week gratitude diary. In addition, these results show that significant reductions in anxiety levels can be obtained with a non-clinical youth population.

The mechanisms underlying the reductions in anxiety levels are likely due to changes at a cognitive and affective level. It could be speculated that keeping a gratitude diary helped children to shift their mind set towards appreciating the positive aspects of the school day or towards positive interpersonal interactions, which became more habitual over time (Fredrickson, 2001; 2004; Wood et al., 2008). An additional hypothesis could be that participants were able to process potentially negative events in a more positive light.

Research has found that grateful appraisal (i.e., appreciating the positive consequences) of unpleasant events can help individuals to bring a sense of closure to the event (Watkins, Cruz, Hoben & Kolts, 2008). Therefore, grateful processing may play a key role in the processing of negative experiences in a more positive way which may explain the reduction in anxiety levels that were found in this study. However, more research is needed to explore this explanation further.

Sense of school belonging. In line with previous research, it was hypothesised that increases in school belonging in favour of the gratitude diary group would be found, which was supported by findings in the current study. Analyses showed that school belonging increased over time for the gratitude group and not the control group, indicating clear benefits for keeping a gratitude diary over an event diary. These findings provide support for a previous study conducted by Diebel et al. (2016) which reported similar effects for school belonging following a four week gratitude diary intervention and demonstrates that these outcomes can be achieved and maintained following a shorter gratitude intervention. As previously mentioned, gratitude has a social function which makes it distinctly different from other positive emotions. It is likely that keeping a gratitude diary encourages participants to direct their attention towards noticing positive interactions and over time an increased sense of connectedness, social support and belonging is experienced (Wood et al., 2008; Froh et al., 2008).

In the current study, the event diary group experienced a differing effect in which sense of belonging remained relatively stable from T1 to T2 and then markedly decreased at T3. The decline in school belonging experienced by the control group at T3 was not anticipated and is not straightforward to explain through quantitative analysis alone. In a previous study, Diebel (2014) explored the content of children's gratitude and event diaries. She found that participants in the gratitude diary condition were more likely to write about their positive interactions with peers and teachers compared to participants in the control group who tended to write about solitary learning activities. Keeping findings from Diebel's study in mind, it could be that the control group in the current study may have shifted their focus towards more solitary aspects of school life which may have led to decreased feelings of connectedness and/or belonging amongst these participants.

Sleep quality. Despite a descriptive trend in which quality of sleep improved for the gratitude group, the hypothesised findings for sleep were not found. Previous researchers have explored the relationship between gratitude and sleep and have proposed that positive pre-sleep cognitions as a result of grateful reflection could be an underlying mechanism which impacts positively on sleep quality (Lambert et al., 2009; Wood et al., 2007; Ng &

Wong, 2012). It could therefore by hypothesised that practising gratitude before going to sleep may play a role in cultivating positive cognitions. However, in order to fully benefit from the effects on sleep quality, children may need to complete their gratitude diary before going to sleep (Wood et al., 2009). This may explain why this study failed to obtain significant findings. In addition, these findings could also be attributed to the fact that sleep habits can take a longer amount of time to change and parents may have needed a longer duration to feel confident that their child's sleep quality had improved.

A limitation of this research was that follow-up measures were not completed by parents. Based on the delayed outcomes demonstrated at follow-up time points for anxiety and school belonging, it is plausible that a significant effect could have been found at a later time point had follow-up measures been used. In addition to the use of follow-up measures, future research could also consider using self-report as an alternative way of measuring sleep quality. Research has found that children as young as eight years old are able to provide valid reports on their sleep experiences and habits (Meltzer, Avis, Biggs, Reynolds & Crabree, 2013). Another benefit is that children provide additional information that would otherwise be lost if there was a reliance on parent report measures. Therefore, it may be beneficial to carry out both parent and child report measures to ensure that sleep habits and sleep quality are captured sufficiently from both perspectives.

Strengths and Limitations of Current Research

This was the first study to explore the impact of a school-based gratitude diary intervention on levels of anxiety and sleep quality using a youth and non-clinical population; therefore providing a unique contribution to the existing research base. Further, this study replicated results obtained by Diebel et al. (2016) to demonstrate the benefits of a brief school-based gratitude diary on increasing children's school belonging. The researcher was mindful to address limitations raised in the literature base through using a manipulation check, RCT methodology and an active control group (Wood et al., 2010; Davis et al., 2016). This study also used parents as reporters, which is a key strength and overcomes a previously noted limitation of positive psychology research (Luthar et al., 2014).

It is important to note that the current study may be limited by a possible response bias related to the instructions presented in the gratitude and event diaries (see Appendix M for more details). In the gratitude diary condition, participants were asked to think of grateful events as 'jewels' in a 'treasure chest'. This was to encourage children to identify different novel and small experiences each day. Whereas, in the event diary writing group participants were instructed to record neutral events but they were not explicitly told to

record the most important or prominent events of the day. This could imply that the task instructed of the gratitude diary group may have been deemed by participants as more valuable and possibly more interesting or novel, and may have influenced their responses on outcome measures. Future research could overcome this problem by providing instructions which describe both tasks as of equal value and without the use of descriptions.

A further limitation of this study was that the wording of the written examples provided in the diaries did not explicitly provide a distinction between gratitude and appreciation. It is therefore difficult to draw firmer conclusions as to whether participants were practising thankfulness towards another person or appreciation for a positive situation or circumstance. It could be speculated that a gratitude diary may increase feelings of connectedness and belonging, whereas an appreciation diary may impact on factors linked to wellbeing such as positive affect, life satisfaction and anxiety etc. It would be beneficial for future research to explore this distinction further. Moreover, it is recommended that researchers make the distinction between gratitude and appreciation explicit to participants through specific diary entry examples and carefully worded instructions related to these concepts.

A key difficulty which arose during this study was the high attrition rate of parent participants. This resulted in a smaller data set than previously anticipated meaning that this part of the study was slightly underpowered. Underpowered studies are at risk of increased Type I and Type II errors, therefore the validity and applicability of these findings should be interpreted with caution (Maxwell, 2004). To overcome these difficulties in future studies, researchers could find more ways to involve parents so that they feel more engaged in the study. Suggested ways of doing this could be through holding short briefing/debriefing sessions for parents and involving school administration staff to follow-up on questionnaires. The latter strategy was found to be successful in increasing the response rate of parents in two of the six schools.

Implications for Practice

Findings from the current study suggest that a brief gratitude diary intervention may be an effective way of inducing gratitude and promoting positive wellbeing outcomes in children and adolescents. The impact of keeping a gratitude diary for as little as two weeks can lead to longer-term benefits in school belonging and potential benefits in reducing anxiety symptoms. Other research has demonstrated wider benefits for young people such as increased positive affect (Froh, Seflick & Emmons, 2008), and improvements in life satisfaction and wellbeing (Boiler et al., 2013). The intervention itself is time and cost-

effective and can easily be embedded into the school curriculum. Furthermore, teachers do not need any training or special resources meaning that it does not greatly add to their workload (Shankland & Rosset, 2017).

Research suggests that gratitude diaries may be more beneficial for children over the age of eight years old as they are more likely than younger children to have a broader understanding of gratitude. To reduce 'gratitude fatigue' it is suggested that young people recount up to three small and novel things each day. Looking for novel events may encourage young people to focus on looking for a broader range of things to feel grateful for in their daily life. It is important to consider that a gratitude diary intervention may be less engaging or beneficial for some young people, or that adaptations to the intervention may be required to suit the needs of individuals. For example, some young people may find it challenging to reflect on social situations or may experience difficulties in recalling aspects of the day for which they feel grateful. These young people may benefit from additional support to talk through or notice these experiences. Other young people may have difficulties with, or dislike, writing and may need additional support or alternative ways to record their experiences (e.g., using a laptop, writing frames, being provided with a scribe).

Directions for Future Research

A possible area of future research could include exploring the benefits of a gratitude diary intervention with children with elevated levels of anxiety. Cognitive processing biases have been well documented as characteristics of anxiety disorders (Field, Hadwin & Lester, 2011; Field & Lester, 2010). Keeping a gratitude diary may be beneficial for supporting highly anxious children as a way to shift their attention towards appreciating positive aspects of their environment and others (Mogg et al., 2000). Moreover, the frequent engaging in grateful processing may also be beneficial in supporting children to positively reframe situations (Mogg et al., 2000). Other directions of research could also include exploring moderating and mediating factors to further understand which groups benefit the most from gratitude journaling (MacKinnon, 2011). Exploring the distinctions between gratitude and appreciation diaries may be a useful line of enquiry; this would enable further exploration into whether differences in recounting impact on outcomes such as anxiety, sleep and school belonging in varying ways. Finally, there has been limited attention into exploring the content of children's gratitude diaries or into understanding children's experiences of gratitude journaling. Understanding children's views has important ethical and moral value and can provide important contextual information alongside quantitative data.

Conclusion

The current study provides a unique contribution to the existing research base by exploring the benefits of a universal school-based gratitude diary intervention on children's sense of school belonging, levels of anxiety and sleep quality. Hypothesised improvements in gratitude proneness, school belonging and anxiety, but not sleep quality were found. Future research to explore the effectiveness of a gratitude diary intervention on children's sleep quality will be beneficial and should include follow-up and self-report measures. A classroom-based gratitude diary intervention can be easily implemented by teachers without the need for specialist training or resources and could provide a cost and time effective way of promoting positive wellbeing outcomes for children. According to Huppert (2009), even small shifts towards promoting positive functioning and resilience through a universal approach, at a key developmental stage, are beneficial in reaching more young people who are languishing rather than flourishing. Universal positive psychology interventions, such as a gratitude diary intervention, can potentially have more overall impact than targeting youth either at risk or with mental health problems and should be considered alongside other programmes of support.

Appendix A. List of Excluded Studies

Reference	Rationale for Exclusion
Bluth, K., Gaylord, S. A., Campo, R. A., Mullarkey, M. C., & Hobbs, L. (2016). Making friends with yourself: A mixed methods pilot study of a mindful self-compassion program for adolescents. Mindfulness, 7(2), 479-492	Not delivered as a school-based intervention
Boniwell, I., Osin, E. N., & Martinez, C. (2016). Teaching happiness at school: Non-randomised controlled mixed-methods feasibility study on the effectiveness of Personal Well-Being Lessons. *The Journal of Positive Psychology*, *11*(1), 85-98	Did not assess anxiety as a primary or secondary outcome
Bazzano, A. N., Anderson, C. E., Hylton, C., & Gustat, J. (2018). Effect of mindfulness and yoga on quality of life for elementary school students and teachers: results of a randomized controlled school-based study. *Psychology Research and Behavior Management*, 11, 81	Did not assess anxiety as a primary or secondary outcome
Bradley, C., Cordaro, D. T., Zhu, F., Vildostegui, M., Han, R. J., Brackett, M., & Jones, J. (2018). Supporting improvements in classroom climate for students and teachers with the Four Pillars of Wellbeing Curriculum. *Translational Issues in Psychological Science, 4*(3), 245-264	Did not assess anxiety as a primary or secondary outcome
Proctor, C., Tsukayama, E., Wood, A. M., Maltby, J., Eades, J. F., & Linley, P. A. (2011). Strengths gym: The impact of a character strengths-based intervention on the life satisfaction and well-being of adolescents. *The Journal of Positive Psychology*, *6*(5), 377-388	Did not assess anxiety as a primary or secondary outcome
Carter, P. J., Hore, B., McGarrigle, L., Edwards, M., Doeg, G., Oakes, R., & Parkinson, J. A. (2018). Happy thoughts: Enhancing well-being in the classroom with a positive events diary. *The Journal of Positive Psychology, 13*(2), 110-121	Did not assess anxiety as a primary or secondary outcome
Dabas, P., & Singh, A. (2018). Bhagavad Gita teachings and positive psychology: Efficacy for semi-urban Indian students of NCR. *Cogent Psychology*, *5*(1), 1467255	Did not assess anxiety as a primary or secondary outcome
Frank, J. L., Kohler, K., Peal, A., & Bose, B. (2017). Effectiveness of a school-based yoga program on adolescent mental health and school performance: Findings from a randomized controlled trial. *Mindfulness*, *8*(3), 544-553	Did not assess anxiety as a primary or secondary outcome
Holen, S., Waaktaar, T., Lervåg, A., & Ystgaard, M. (2012). The effectiveness of a universal school-based programme on coping and mental health: a randomised, controlled study of Zippy's Friends. *Educational Psychology*, *32*(5), 657-677	Did not assess anxiety as a primary or secondary outcome
Huppert, F. A., & Johnson, D. M. (2010). A controlled trial of mindfulness training in schools: The importance of practice for an impact on well-being. *The Journal of Positive Psychology*, *5*(4), 264-274	Did not assess anxiety as a primary or secondary outcome
Joyce, A., Etty-Leal, J., Zazryn, T., & Hamilton, A. (2010). Exploring a mindfulness meditation program on the mental health of upper primary children: A pilot study. *Advances in School Mental Health Promotion*, *3*(2), 17-25	Did not assess anxiety as a primary or secondary outcome
Kuyken, W., Weare, K., Ukoumunne, O. C., Vicary, R., Motton, N., Burnett, R., & Huppert, F. (2013). Effectiveness of the Mindfulness in Schools Programme: Non-randomised controlled feasibility study. *The British Journal of Psychiatry*, *203*(2), 126-131	Did not assess anxiety as a primary or secondary outcome

Lam, K. (2016). School-based cognitive mindfulness intervention for internalizing problems: Pilot study with Hong Kong elementary students. *Journal of Child and Family Studies*, *25*(11), 3293-3308	Not defined as a positive psychology intervention.
Liehr, P., & Diaz, N. (2010). A pilot study examining the effect of mindfulness on depression and anxiety for minority children. *Archives of Psychiatric Nursing*, *24*(1), 69-71	Not delivered as a school-based intervention
Manicavasagar, V., Horswood, D., Burckhardt, R., Lum, A., Hadzi-Pavlovic, D., & Parker, G. (2014). Feasibility and effectiveness of a web-based positive psychology program for youth mental health: Randomized controlled trial. *Journal of Medical Internet Research*, *16*(6), e140.	Not delivered as a school-based intervention.
Mendelson, T., Greenberg, M. T., Dariotis, J. K., Gould, L. F., Rhoades, B. L., & Leaf, P. J. (2010). Feasibility and preliminary outcomes of a school-based mindfulness intervention for urban youth. *Journal of Abnormal Child Psychology*, *38*(7), 985-994	Did not assess anxiety as a primary or secondary outcome
Metz, S. M., Frank, J. L., Reibel, D., Cantrell, T., Sanders, R., & Broderick, P. C. (2013). The effectiveness of the learning to BREATHE program on adolescent emotion regulation. *Research in Human Development*, *10*(3), 252-272	Did not assess anxiety as a primary or secondary outcome
Roth, R. A., Suldo, S. M., Raffaele-Mendez, L., & Ferron, J. (2014). Improving middle school students' subjective well-being: Efficacy of a multicomponent positive psychology intervention targeting small groups of youth (Unpublished thesis). University of South Florida, Florida.	Did not assess anxiety as a primary or secondary outcome
Shoshani, A., & Slone, M. (2017). Positive education for young children: Effects of a positive psychology intervention for preschool children on subjective well being and learning behaviors. *Frontiers in Psychology*, (8), 1-11	Did not assess anxiety as a primary or secondary outcome
Shoshani, A., Steinmetz, S., & Kanat-Maymon, Y. (2016). Effects of the Maytiv positive psychology school program on early adolescents' well-being, engagement, and achievement. *Journal of School Psychology*, 57, 73-92	Did not assess anxiety as a primary or secondary outcome
Sibinga, E. M., Perry-Parrish, C., Chung, S. E., Johnson, S. B., Smith, M., & Ellen, J. M. (2013). School-based mindfulness instruction for urban male youth: A small randomized controlled trial. *Preventive Medicine*, *57*(6), 799-801	Not delivered as a school-based intervention
Suldo, S. M., Hearon, B. V., Bander, B., McCullough, M., Garofano, J., Roth, R. A., & Tan, S. Y. (2015). Increasing elementary school students' subjective well-being through a classwide positive psychology intervention: Results of a pilot study. *Contemporary School Psychology*, *19*(4), 300-311	Did not assess anxiety as a primary or secondary outcome
Vohra, S., Punja, S., Sibinga, E., Baydala, L., Wikman, E., Singhal, A., & Van Vliet, K. J. (2019). Mindfulness-based stress reduction for mental health in youth: A cluster randomized controlled trial. *Child and Adolescent Mental Health*, *24*(1), 29-35	Did not assess anxiety as a primary or secondary outcome
Volanen, S. M., Lassander, M., Hankonen, N., Santalahti, P., Hintsanen, M., Simonsen, N., & Suominen, S. (2016). Healthy Learning Mind - a school-based mindfulness and relaxation program: A study protocol for a cluster randomized controlled trial. *BMC Psychology*, *4*(1), 35-44	Did not assess anxiety as a primary or secondary outcome

Appendix B. Quality Appraisal of Included Studies

Study (Table 1 of 3)	Aims and hypotheses clearly described	Outcomes measures clearly described	Sample characteristics clearly described	Conditions/ interventions clearly described	Findings clearly described	Distribution of data and estimates of random variability	Potential adverse intervention effects reported	Lost participants described	Actual probability values reported
1) Burckhardt et al. (2016)	Y	Y	Y	Y	Y	Y	N	Y	Y
2) Livheim et al. (2015)	Y	Y	N	Y	Y	Y	N	Y	Y
3) Britton et al. (2012)	Y	Y	N	Y	Y	Y	N	N	Y
4) Crowley et al. (2017)	Y	Y	N	Y	Y	Y	N	Y	Y
5) Dove et al. (2017)	Y	Y	N	Y	Y	Y	N	N	Y
6) Etherington et al. (2018)	Y	Y	N	Y	Y	N	N	N	Y
7) Johnson et al. (2016)	Y	Y	N	Y	N	Y	N	Y	N
8) Johnson et al. (2017)	Y	N	Y	Y	N	Y	N	Y	N
9) van de Wijer-Bergsma et al. (2014)	Y	Y	Y	Y	Y	Y	N	Y	Y
10) Semple et al. (2010)	Y	Y	Y	Y	N	Y	N	Y	Y

Study									
11) Foret et al. (2011)	Y	Y	Y	Y	Y	Y	N	Y	Y
12) Shoshani et al. (2014)	Y	Y	Y	Y	Y	Y	N	N	Y
13) Gillham et al. (2012)	Y	Y	Y	Y	Y	Y	N	Y	N

Study (Table 2 of 3)	Effect sizes reported	Representative sample	Intervention within representative context	Participants blind to intervention	Attempts to blind those measuring outcomes	All unplanned analyses reported	Time periods between intervention and tests appropriate	Appropriate statistical tests	Steps taken to ensure intervention fidelity
1) Burckhardt et al. (2016)	Y	Y	Y	N	N	U	Y	Y	Y
2) Livheim et al. (2015)	Y	Y	Y	U	U	U	Y	Y	N
3) Britton et al. (2012)	Y	Y	Y	U	U	U	Y	Y	N
4) Crowley et al. (2017)	Y	Y	Y	N	N	U	Y	Y	N
5) Dove et al. (2017)	Y	Y	Y	N	U	U	U	Y	N
6) Etherington et al. (2018)	N	Y	Y	N	U	U	Y	Y	N
7) Johnson et al. (2016)	N	Y	Y	N	N	Y	Y	Y	N

8) Johnson et al. (2017)	N	Y	Y	Y	U	U	Y	Y	Y
9) van de Wijer-Bergsma et al. (2014)	N	Y	Y	U	U	U	Y	Y	N
10) Semple et al. (2010)	Y	Y	Y	Y	U	Y	Y	Y	Y
11) Foret et al. (2011)	Y	Y	Y	U	U	Y	Y	Y	Y
12) Shoshani et al. (2014)	Y	Y	Y	U	U	U	Y	Y	Y
13) Gillham et al. (2012)	Y	Y	Y	U	U	U	Y	Y	Y

Study (Table 3 of 3)	Appropriate outcome measures	Participants from same population at same time	Random allocation of participants	Professionals blind to allocation	Adjustment for confounding variables	Lost participants taken into account	Power calculations reported	Source (not included in total score)	Total rating out of 25
1) Burckhardt et al. (2016)	Y	Y	Y	N	N	N	N	Published in peer reviewed journal	17
2) Livheim et al. (2015)	Y	Y	Y	U	N	Y	Y	Published in peer reviewed journal	16
3) Britton et al. (2012)	Y	Y	Y	U	N	N	N	Published in peer reviewed journal	14
4) Crowley et al. (2017)	Y	Y	N	N	N	Y	N	Published in peer reviewed journal	15

5) Dove et al. (2017)	Y	N	N	N	N	N	N	Published in peer reviewed journal	11
6) Etherington et al. (2018)	Y	N	N	U	N	N	N	Published in peer reviewed journal	10
7) Johnson et al. (2016)	Y	N	Y	N	Y	Y	Y	Published in peer reviewed journal	14
8) Johnson et al. (2017)	Y	U	Y	N	Y	Y	Y	Published in peer reviewed journal	15
9) van de Wijer-Bergsma et al. (2014)	Y	U	Y	U	Y	Y	N	Published in peer reviewed journal	16
10) Semple et al. (2010)	Y	N	Y	Y	Y	Y	Y	Published in peer reviewed journal	21
11) Foret et al. (2011)	Y	N	N	U	Y	Y	N	Published in peer reviewed journal	18
12) Shoshani et al. (2014)	Y	N	Y	N	Y	N	N	Published in peer reviewed journal	16
13) Gillham et al. (2012)	Y	Y	Y	U	Y	Y	Y	Published in peer reviewed journal	19

Appendix C. Data Extraction for Studies Included in the Review

Study	Design	Target sample	Intervention	Results reported in related to anxiety and resilience
Acceptance and Commitment Therapy Interventions				
1) Burckkhardt, Manicavasagar, Batterham & Hadzi-Pavlovic (2016) Australia	Universal intervention. Randomised allocation of participants. One intervention group, one non-intervention control group. No follow up.	n = 267 **Age range**: 15-17 years, mean age 16.37 years **Context:** Independent high school in Australia **Recruitment method:** volunteer	Strong Minds is an intervention based on acceptance and commitment therapy **Experimental group:** n = 139 16 x sessions (lasting 30 minutes) over 3 months delivered twice weekly in school by psychologist **Control group:** n = 128 Standard curriculum	**Impact on anxiety:** Significant differences in year group scores for anxiety for Year 10 but not for Year 11 across condition and time. Non-significant results for combined group across time and condition. Time x Condition interaction (Year 10): $F(1,28) = 4.16$, $p = .05$, $d = 0.54$ Time x Condition interaction (Year 11): $F(1,29) = 0.57$, $p = .46$, $d = -0.28$ Time x Year x Condition interaction: $F(1,52) = 3.80$, $p = .46$, $d = -0.01$ **Other findings:** Flourishing: Non-significant time x condition interaction: $F(1,224) = 32.49$, $p = .116$, $d = -0.16$

2) Livheim, Hayes, Ghaderi, Magnusdottir, Högfeldt, Rowse, turner, Hayes & Tengström Study 2 (2015) Sweden	Targeted intervention for adolescents with high levels of stress and distress. Randomised allocation of participants. One intervention group, one control group. No follow-up.	n = 32 **Age range:** 14 – 15 years. **Context:** Public high school in Sweden **Recruitment method:** volunteer	ACT Experiential Adolescent Group is a manualised intervention based on acceptance and commitment therapy **Experimental group:** n = 15 8 x group sessions (lasting 90 minutes) over 6 weeks delivered by researchers. **Control group:** n = 7 Normal support provided (visit to the school nurse for a 1:1 counselling session)	**Impact on anxiety**: Marginal significant reduction in anxiety over time for the experimental group with a large effect size. Time x Condition interaction: $F(1,24.038) = 4.00, p = .057, d = 0.80$ **Other findings:** Stress: Significant time x condition interaction: $F(1,23.0) = 8.21, p = .009, d = 1.20$ Wellbeing (life satisfaction): $F(1,52) = 2.52, p = .126$
Mindfulness Interventions				

3) Britton, Lepp, Niles, Rocha, Fisher & Gold (2012) USA	Universal intervention. Randomised allocation of participants. One intervention group, one non-intervention control group. No follow up.	n = 100 **Age range:** 11-12 years, mean age 11.79 years **Context:** Independent school in USA **Recruitment method:** volunteer	Mindfulness intervention formulated using Integrative Contemplative Pedagogy. Intervention included 3 minutes of daily mindfulness practice (e.g., breath counting, awareness of thoughts and body) **Experimental group**: n = 52 Asian history course with daily mindfulness meditation practice (daily over 6 weeks). Delivered by teachers as part of school curriculum **Control group**: n = 48 African history course with daily matched experiential activity (daily over 6 weeks)	**Impact on anxiety:** Non- significant time x condition interaction for anxiety: $F(1,98) = 3.95, p < .050, d = 0.41$ **Other findings:** Non-significant time x condition interaction for internalising behaviour: $F(1,98) = 0.7, p = .39, d = 0.20$ Significant main effects for time and for all measured scales indicating large improvements in clinical symptoms in both groups. This highlights the limited effectiveness of the experimental condition.

4) Crowley, Nicholls, McCarthy, Wu & Mayes (2017) USA	Targeted intervention for adolescents with elevated levels of anxiety One intervention group, no comparison group No follow-up.	$n = 11$ **Age range:** 12-13 years, mean age 13.12 years **Context:** Middle school in USA **Recruitment method:** volunteer	Mindfulness intervention informed by materials from Mindfulness-Based Stress Reduction; Mindful Schools; MindUP and Semple's Mindfulness program for anxiety in children. **Experimental group:** $n = 11$ Delivered over x 10 (1 hour sessions) for 10 weeks by an Occupational Therapist.	**Impact on anxiety:** Significant reduction in anxiety with large effect size: $t(1,9) = 4.26, p = .022, d = 0.88$ **Other findings:** Significant reductions in self-reported internalising behaviours: $t(9) = 3.65, p = .005, d = 1.15$ Significant reductions in parent-reported internalising behaviours: $t(9) = 4.26, p = .002, d = 1.34$ Stress: Significant reductions in stress: $t(9) = 3.638, p = .013, d = 0.98$
5) Dove & Costello 2017) Australia	Universally delivered to one class. Also delivered to a small group of children with heightened anxiety or depressive symptoms in another school.	$n = 57$ **Age range:** 9 – 10 years **Context:** Three primary schools in Australia.	Triple R (Robust, Resilient, Ready to Go) is a mindfulness intervention. 6 x sessions (lasting 60 minutes) over 6 weeks delivered by psychologists and a teacher.	**Impact on anxiety:** Results did not explore differences across groups. Increased mindfulness skills were significantly associated with decreased negative emotional symptoms related to separation anxiety ($r = -.42, p = .01$) and generalised anxiety ($r = -.32, p < .001$).

	Correlational within-subjects repeated design study. No follow-up.	**Recruitment method:** volunteer		Pre- to post- time points for groups combined: Separation anxiety: $t(56) = 1.27$, $p = .21$, $d = 0.12$ Generalised anxiety: $t(56) = 1.48$, $p = .15$, $d = 0.17$
6) Etherington & Costello (2018) Australia	Comparison between the universal group and the targeted group Two intervention groups selected for conditions by pre-screening anxiety scores. No follow up.	$n = 66$ **Age range:** 9 – 12 years **Context:** Two middle schools in Australia. **Recruitment method:** volunteer	Triple R (Robust, Resilient, Ready to Go) is a mindfulness intervention. **Universal group**: $n = 46$ were categorised to 'low-average anxiety' or 'high anxiety group' **Targeted group**: $n = 20$ Described as an 'at risk' group (identified by teachers). Both conditions: 8 x sessions (lasting 60 minutes) over 16 weeks (2 of which were 'booster sessions') delivered by mental health professionals.	**Impact on anxiety:** Significant differences in mean anxiety at baseline between low-average, high and targeted groups. No difference between high and targeted group at baseline. Targeted group: Significant difference in reported anxiety post intervention: $t(19) = 3.27$, $p = .004$, $d = 0.73$ Universal group: No difference as whole group between pre and post scores: $t(45) = 1.557$, $p = .126$ Low-average anxiety group: No significant change in anxiety scores between pre and post test scores $t(34) = .518$, $p = .608$

				High anxiety group: Significant change in mean anxiety scores post intervention $t(10) = 3.377, p = .007, d = 1.10$
7) Johnson, Burke, Brinkman & Wade (2016) Australia	Universal intervention. Randomised allocation of participants. One intervention group, one non-intervention control group. Follow up carried out at 3 months.	$n = 308$ **Age range:** 11 – 12 years **Context:** Four secondary schools and one primary school in Australia. **Recruitment method:** volunteer	Dot.be is a manualised mindfulness intervention. **Experimental group:** $n = 132$ 8x weekly lessons (lasting between 35 – 60 mins) delivered by researchers. **Control group:** $n = 176$ participated in a normal curriculum sessions.	**Impact on anxiety:** Non-significant time x condition interaction: $F(1,243) = 2.54, p = ns$ (p value not reported) Significant main effect for time: $F(1,240) = 6.89, p = .005$ indicating that anxiety reduced in both groups over time. **Other findings:** Wellbeing: Non-significant time x condition interaction: $F(1,236) = 0.04, p = ns$ (p value not reported). No significant main effects for wellbeing.
8) Johnson, Burke, Brinkman & Wade (2017) Australia	Universal intervention. Randomised allocation of participants.	$n = 555$ **Age range:** mean age 13.44 years. **Context:**	Dot.be is a manualised mindfulness intervention. **Experimental group 1:** $n = 178$ (mindfulness group)	**Impact on anxiety:** Non-significant time x condition interaction: $F(1,386) = 1.68 , p = ns$ (p value not reported) Significant main effect for time: $F(1,383) = 5.90, p < .01$ indicating that anxiety reduced in both groups over time.

	Two intervention groups and one non-intervention control group. Follow up carried out at 6 and 12 months.	Four secondary schools in Australia. **Recruitment method:** volunteer	**Experimental group 2:** $n = 191$ (mindfulness with parent involvement) 9x weekly lessons (lasting between 40 – 60 mins) delivered by independent practitioner. **Control group:** $n = 178$ participated in a normal curriculum sessions.	**Other findings:** Wellbeing: Non-significant time x condition interaction: $F(1, 375) = 0.23$, $p = ns$ (p value not reported) No significant main effects for wellbeing.
9) Semple, Lee, Rosa & Miller (2010) USA	Universal intervention. Randomised allocation of participants. Four intervention groups organised by age (two immediate-intervention and two wait list-control groups)	$\textit{n} = 25$ **Age range:** 9 – 13 years **Context:** Three elementary schools in Amsterdam. **Recruitment method:** volunteer	Mindfulness-cognitive therapy intervention adapted from the Adult Mindfulness-Based Cognitive Therapy Program. **Experimental groups 1 & 2 combined:** $n = 13$ **Wait list-control groups 3 & 4 combined:**	**Impact on anxiety:** Significant differences between pre and follow-up tests for a total combined group showed significant reductions in state anxiety: $t(24) = 2.46$, $p = .02$, $d = 0.38$ Clinically relevant reductions in anxiety were found in a sub-group of children who initially reported experiencing greater levels of anxiety ($n = 6$) on completion of the program.

	Follow up carried out 3 months after post-test measures.		$n = 12$ 12x sessions (lasting between 90 mins) delivered weekly by researchers.	
10) van de Wijer- Bergsma, Langenberg, Brandsma, Oort & Bögels (2012) Netherlands	Universal intervention. Randomised allocation of participants. Two groups (one immediate-intervention and one wait list-control group) Follow up carried out 7 weeks after post-test measures.	$n = 199$ **Age range:** $8 - 12$ years **Context:** Three elementary schools in Amsterdam. **Recruitment method:** volunteer	MindfulKids is a mindfulness intervention. **Experimental group:** $n = 95$ **Wait list control group:** $n = 104$ 12x sessions (lasting between 30 mins) delivered over 6 weeks by an independent trainer.	**Impact on anxiety:** Parent reported anxiety symptoms significantly decreased from pre-test to follow-up, with a small effect size: ($X^2 = 4.047$, $df = 1$, $p = .044$) No significant differences from baseline to post-test.
Multi-Component Interventions				
11) Foret, Scult, Wilcher, Chudnofsky, Malloy, Hasheminejad & Park	Universal intervention.	$n = 114$ **Age range:** $15 - 17$ years	Relaxation response-based curriculum focused on relaxation exercises, cognitive	**Impact on anxiety:** Reductions for experimental group (16 -17 year olds) in post-test state anxiety (mean pre $= 44.81$, mean post $= 39.43$; $p = .004$, $d = 0.58$)

(2011) USA	Non-randomised cohort study with wait list-control. No follow up.	**Context:** One high school in USA **Recruitment method:** volunteer	restructuring and gratitude. **Experimental group:** n = 42 (grouped by cohort – 16 – 17 years olds) **Wait list-control group:** n = 44 (grouped by cohort – 15 -16 year olds) 8x sessions (lasting between 45 mins) delivered over 4 weeks by two trainers.	Girls in experimental group reported significantly greater improvements in state anxiety compared with boys: 46.06 – 40.00, mean change of 1.04; p < .001, **Other findings:** Significantly lower reported perceived stress scores from Perceived Stress Scale (experimental group): mean pre = 20.36, mean post = 17.65; p = < .001, d = 0.66
12) Shoshani & Steinmetz (2014) Israel	Universal intervention. Non-randomised allocation of conditions. Longitudinal repeated measures design over 2 years.	n = 1038 pupils and staff members (n = 80) **Age range:** 15 – 17 years **Context:** Two middle schools in Israel (one	Maytiv School Program based on promoting positive emotions, gratitude, goal fulfilment, optimism, character strengths and positive relationships. **Experimental group:** n = 537 pupils only	**Impact on anxiety:** Experimental group exhibited significant decreases from beginning to end in anxiety symptoms (mean change = -0.08, d = 0.17). Control group exhibited significant increases in anxiety symptoms (mean change – 0.04, d = 0.08).

			experimental school and a control school)	**Other findings:**
	Follow-up at 3 months and 8 months.		15x sessions delivered by teachers over the school year. Teachers were trained by clinical psychologists for 15x workshops (lasting 2 hours) over the school year.	Significant increases in self-esteem for experimental group over time (mean change = 0.35, $d = 0.07$).
		Recruitment method: volunteer		Significant increases in self-efficacy for experimental group over time (mean change = 5.12, $d = 0.77$).
			Control group: $n = 501$ pupils only	Significant decreases in self-esteem and self-efficacy for the control group, respectively (mean change = -1.13, $d = 0.22$) and (mean change = -1.72, $d = 0.25$)
			Followed a normal curriculum over same time period.	
13) Gillham, Reivich, Brunwasser, Freres, Chajon, Kash-MacDonald, Chaplin, Abenovoli, Matlin, Gallop & Seligman (2012) USA	Universal intervention. Randomised allocation of conditions. Follow up at 6 months.	n = 408 pupils **Age range:** 10 – 15 years **Context:** Five middle schools in USA. **Recruitment method:** volunteer	The Penn Resiliency Program based on developing emotional awareness through a cognitive-behavioural approach, and developing problem-solving and relaxation skills. **Experimental group 1:** $n = 137$	**Impact on anxiety:** There were no significant intervention effects on anxiety including clinical levels of anxiety symptoms between groups 1 and 2. Anxiety symptoms in both groups (1 and 2 combined) were significantly reduced compared to controls at: Post-intervention: $F(1,183) = -6.78$, $p = .010$, $d = 0.27$

Participated in the Penn Resiliency Program over 10x sessions delivered weekly. Booster sessions (x6) were delivered 5 months after group ended and were offered once every 6 months. Delivered by school staff participating in 30-hours training workshop and 90 mins supervision sessions every 2-3 weeks.

Experimental group 2:
$n = 142$

Participated in PRP sessions and parents also participated in sessions designed to teach them core skills (managing their own lives, understanding and supporting child with skills in PRP) over 6-7x sessions delivered fortnightly. Booster

Follow-up:
$t(184) = -2.13, p = .031, d = 0.30$

Other findings:

Active coping:
No significant results were reported for active coping between groups or across time points.

	sessions (x3) held monthly. **Control:** $n = 129$ Normal school curriculum.

Appendix D. Gratitude Questionnaire (GQ-6)

(McCullough, Emmons & Tsang, 2002)

The Gratitude Questionnaire (GQ-6)
Using the scale as a guide, write a number beside each statement to indicate how much you agree with it. 1 = strongly disagree 2 = disagree 3 = slightly disagree 4 = neutral 5 = slightly agree 6 = agree 7 = strongly agree

Score (1 – 7)	Statement
	I have so much in life to be thankful for
	If I had to list everything that I felt grateful for, it would be a very long list
	When I look at the world, I don't see much to be grateful for
	I am grateful to a wide variety of people
	As I get older I am more able to appreciate the people, events, and situations that have been part of my life history
	Long amounts of time can go by before I feel grateful to something or someone

Appendix E. Spence Children's Anxiety Scale (SCAS)

(Spence, 1998)

Spence Children's Anxiety Scale (SCAS) Put a circle around the word that shows how often these things happen to you. There are no wrong or right answers.					
1	I worry about things	Never	Sometimes	Often	Always
2	I am scared of the dark	Never	Sometimes	Often	Always
3	When I have a problem, I get a funny feeling in my stomach	Never	Sometimes	Often	Always
4	I feel afraid	Never	Sometimes	Often	Always
5	I would feel afraid of being on my own at home	Never	Sometimes	Often	Always
6	I feel scared when I take a test	Never	Sometimes	Often	Always
7	I feel afraid if I have to use public toilets or bathrooms	Never	Sometimes	Often	Always
8	I worry about being away from my parents	Never	Sometimes	Often	Always
9	I feel afraid that I will make a fool of myself in front of people	Never	Sometimes	Often	Always
10	I worry that I will do badly at my school work	Never	Sometimes	Often	Always
11	I am popular amongst other children my own age	Never	Sometimes	Often	Always
12	I worry that something awful will happen to someone in my family	Never	Sometimes	Often	Always
13	I suddenly feel as if I can't breathe when there is no reason for this	Never	Sometimes	Often	Always
14	I have to keep checking that I have done things right (like the switch is off or the door is locked)	Never	Sometimes	Often	Always
15	I feel scared to sleep on my own	Never	Sometimes	Often	Always
16	I have trouble going to school in the mornings because I feel nervous or afraid	Never	Sometimes	Often	Always
17	I am good at sports	Never	Sometimes	Often	Always
18	I am scared of dogs	Never	Sometimes	Often	Always
19	I can't seem to get bad or silly thoughts out of my head	Never	Sometimes	Often	Always
20	When I have a problem, my heart beats really fast	Never	Sometimes	Often	Always
21	I suddenly start to tremble or shake when there is no reason for this	Never	Sometimes	Often	Always
22	I worry that something bad will happen to me	Never	Sometimes	Often	Always
23	I am scared of going to the doctors or dentist	Never	Sometimes	Often	Always
24	When I have a problem, I feel shaky	Never	Sometimes	Often	Always
25	I am scared of being in high places or lifts	Never	Sometimes	Often	Always
26	I am a good person	Never	Sometimes	Often	Always
27	I have to think of special thoughts (like numbers or words) to stop bad things from happening	Never	Sometimes	Often	Always

28	I feel scared if I have to travel in the car or on a bus or train	Never	Sometimes	Often	Always
29	I worry what other people think of me	Never	Sometimes	Often	Always
30	I am afraid of crowded places (like shopping centres, buses, busy playgrounds)	Never	Sometimes	Often	Always
31	I feel happy	Never	Sometimes	Often	Always
32	All of a sudden I feel really scared for no reason at all	Never	Sometimes	Often	Always
33	I am scared of insects or spiders	Never	Sometimes	Often	Always
34	I suddenly become dizzy or faint when there is no reason for this at all	Never	Sometimes	Often	Always
35	I feel afraid if I have to talk in front of my class	Never	Sometimes	Often	Always
36	My heart suddenly starts to beat too quickly for no reason	Never	Sometimes	Often	Always
37	I worry that I will suddenly get a scared feeling when there is nothing to be afraid of	Never	Sometimes	Often	Always
38	I like myself	Never	Sometimes	Often	Always
39	I am afraid of being in small closed places, like tunnels or small rooms	Never	Sometimes	Often	Always
40	I have to do some things over and over again (like washing my hands or putting things in a certain order)	Never	Sometimes	Often	Always
41	I get bothered by bad or silly thoughts or pictures in my mind	Never	Sometimes	Often	Always
42	I have to do some things just the right way to stop bad things happening	Never	Sometimes	Often	Always
43	I am proud of my school work	Never	Sometimes	Often	Always
44	I would feel scared if I had to stay away from home overnight	Never	Sometimes	Often	Always

(Frederickson, Simmonds, Evans & Soulsby, 2009)

The Belonging Scale Read each statement and decide how much you agree or disagree with it. Circle your answer. Remember there are no right or wrong answers.				
Statement		**No, not true**	**Don't know**	**Yes, true**
1	I feel really happy at my school	No	?	Yes
2	People here notice when I'm good at something	No	?	Yes
3	It is hard for people like me to feel happy here	No	?	Yes
4	Most teachers at my school like me	No	?	Yes
5	Sometimes I feel as if I shouldn't be at this school	No	?	Yes
6	There is an adult in school I can talk to about my problems	No	?	Yes
7	People at this school are friendly to me	No	?	Yes
8	Teachers here don't like people like me	No	?	Yes
9	I feel very different from most other kids here	No	?	Yes
10	I wish I were in a different school	No	?	Yes
11	I feel happy being at my school	No	?	Yes
12	Other kids here like me the way I am	No	?	Yes

Appendix G. The Children's Sleep Habits Questionnaire (CSHQ)

(Owens, Spirito & McGuinn, 2000)

The following statements are about your child's sleep habits and possible difficulties with sleep. Think about the past week in your child's life when answering the questions. If last week was unusual for a specific reason (such as your child had an ear infection and did not sleep well), choose the most recent typical week.

- Please tick **USUALLY** if something occurs **5 or more times** in a week.
- Please tick **SOMETIMES** if it occurs **2 - 4 times** in a week.
- Please tick **RARELY** if something occurs **never** or **1 time** during the week.

Also, please indicate whether or not the sleep habit is a problem by circling Yes (Y), No (N), or Not Applicable (N/A).

Sleep Habits

	Usually (5+)	Sometimes (2-4)	Rarely (0-1)	Problem? (circle)		
1. Child goes to bed at the same time at night.				Y	N	N/A
2. Child falls asleep within 20 minutes				Y	N	N/A
3. Child falls asleep in own bed				Y	N	N/A
4. Child falls asleep in sibling's or parent's bed				Y	N	N/A
5. Child need parents in the room to fall asleep				Y	N	N/A
6. Child struggles at bedtime (cries, refuses to stay in bed)				Y	N	N/A
7. Child is afraid of sleeping in the dark				Y	N	N/A
8. Child is afraid of sleeping alone				Y	N	N/A

Sleep Behaviour

	Usually (5+)	Sometimes (2-4)	Rarely (0-1)	Problem?		
9. Child sleeps too little				Y	N	N/A
10. Child sleeps the right amount				Y	N	N/A
11. Child sleeps the same amount each day				Y	N	N/A
12. Child wets the bed at night				Y	N	N/A
	Usually (5+)	Sometimes (2-4)	Rarely (0-1)	Problem?		
13. Child talks during sleep				Y	N	N/A
14. Child is restless during the night				Y	N	N/A

				Problem?		
15. Child sleepwalks during the night				Y	N	N/A
16. Child moves to someone else's bed during the night (parent, sibling)				Y	N	N/A
17. Child sleepwalks during the night				Y	N	N/A
18. Child snores loudly				Y	N	N/A
19. Child seems to stop breathing during sleep				Y	N	N/A
20. Child snorts and/or gasps in sleep				Y	N	N/A
21. Child has trouble sleeping away from home				Y	N	N/A
22. Child awakens during night screaming, sweating, and inconsolable				Y	N	N/A
23. Child awakens by a frightening dream				Y	N	N/A
24. Child awakes once during night				Y	N	N/A
25. Child awakes more than once during the night				Y	N	N/A

Morning Waking

	Usually (5+)	Sometimes (2-4)	Rarely (0-1)	Problem?		
26. Child wakes up by him/herself				Y	N	N/A
27. Child wakes up in negative mood				Y	N	N/A
28. Adults or sibling wake child up				Y	N	N/A
29. Child has difficulty getting out of bed in the morning				Y	N	N/A
30. Child takes a long time to become alert in the morning				Y	N	N/A
31. Child seems tired during the day				Y	N	N/A
32. Child falls asleep watching TV				Y	N	N/A
33. Child falls asleep riding in car				Y	N	N/A

Appendix H. Ethical Approval and Research Governance

UNIVERSITY OF Southampton

ERGO II – Ethics and Research Governance Online https://www.ergo2.soton.ac.uk

Submission ID: 31782.A1
Submission Title: The effectiveness of gratitude diaries on anxiety, sleep and sense of belonging in primary-aged children (Amendment 1)
Submitter Name: Danielle Cripps

Your submission has now been approved by the Faculty Ethics Committee. You can begin your research unless you are still awaiting any other reviews or conditions of your approval.

Comments:

- Good luck in your research!

Click here to view the submission

Tld: 23011_Email_to_submitter___Approval_from_Faculty_Ethics_committee__cat_B___C_ Id: 61228

D.Cripps@soton.ac.uk coordinator

UNIVERSITY OF
Southampton

Information for School Staff

Dear Head Teacher,

I am a Trainee Educational Psychology studying for the Doctorate in Educational Psychology at University of Southampton. I am looking for schools to participate in my research study. I am particularly interested in exploring the impact of keeping a gratitude diary on children's levels of anxiety, sense of school belonging and their quality of sleep. Specific details about this study are detailed below:

Study Title: 'The impact of a gratitude diary intervention on primary-aged children's levels of anxiety, sense of school belonging and quality of sleep'

Researcher's name: Danielle Cripps

ERGO (Ethics Committee) Study ID number: 31782

Which children will take part?
This study involves children aged 10 – 11 years (in Year 6). As you are fully aware, Year 6 is a particularly busy school year; children are preparing for their SATS tests and their transition to secondary school take place. I am interested in children's levels of anxiety, sense of school belonging and sleep quality during this busy time and whether keeping a gratitude diary can be helpful for children.

What will the research involve?
Before the research starts, children will be asked to complete three short questionnaires at school to explore their views about gratitude, anxiety and school belonging. Parents of children participating in this study will be asked to complete a short questionnaire about their child's sleep quality and habits. Next, children will be randomly allocated to a diary writing task. Over two weeks, each child will be asked to reflect on their school day and write three things in their diary that they remember from the day. This exercise will take five minutes per day. Children will not be asked to keep the diary on weekend days. At the end of the two weeks, children and parents will be asked to complete the same questionnaires at the end of the study. This will help the researcher to understand the longer term impact of keeping a daily diary.

Are there any benefits for children taking part?
This research study is grounded in positive psychology which aims to explore ways in which psychology can be used to help individuals to achieve happiness, a positive sense of well-being and to flourish. It is hoped that by keeping a daily diary, children will be better able to reflect upon their school day. By participating in this research, Year 6 children will help to answer questions about the benefits of keeping a diary and whether this is a helpful intervention to use in schools.

Are there any risks involved?
The research is low risk as this study focuses on promoting positive well-being. However, there is a small chance that some children may score highly on the anxiety and/or sleep questionnaires meaning that they may be experiencing difficulties with anxiety and/or sleep. If this situation occurs, their teacher and their parents will be notified and it will be recommended that further advice is sought from a trained medical professional. Furthermore, some children may choose to write about aspects of their day which they perceive to be negative. In this instance, children will be asked to talk to their teacher or another adult within school if they have any worries or concerns.

How will the information gathered in this study be used?
Information gathered in this research will be anonymised at point of collection. This means that all personal information, such as names and school details, will be removed and replaced with a participant number. A participant list which links the child's participant number along with their class register will be held by the school. The researcher will not have access to this information. This information will be stored as confidential data in-line with the school's current data protection policy. The researcher will keep the data until it is no longer required, at which point it will be destroyed. The findings from the study will be written up in a research thesis and will be disseminated more widely as appropriate.

What happens if parents do not wish for their children to take part?
Parents/carers will be sent an opt-out consent letter informing them about the research. Parents/carers have the right to withdraw permission for their child to take part at any time by notifying their child's teacher. Equally, every child has the right to change their mind and to decide not to take part. They can do this by telling their teacher or parents/carers that they do not want to take part.

Where can I get more information?
This research is supervised by Colin Woodcock and Dr Catherine Brignell from the University of Southampton. If you have any questions and require further information about the study, please email Danielle Cripps (researcher): d.cripps@soton.ac.uk.

In the unlikely case of concern or complaint please contact Colin Woodcock (research supervisor): xxxxxxxxxxxx or the University of Southampton ethics committee: Ethics Committee, Psychology, University of Southampton, SO17 1BJ, UK. Phone: +44 (0)23 8059 3856, email fshs-rso@soton.ac.uk

_____

I provide permission for my school to take part in this research study. I confirm that any personal data collected as part of this research will be held in accordance with current data protection regulations.

Name _____ **Role** _____

Name of School _____

Date _____ **Signature** _____

UNIVERSITY OF
Southampton

Research Information for Parents/Carers

Dear Parent/Carer,

My name is Danielle Cripps; I am a Trainee Educational Psychology studying for the Doctorate in Educational Psychology at University of Southampton. Your child has been selected to participate in a research study I am conducting which aims to explore the impact of a gratitude diary intervention on children's levels of anxiety, their sense of belonging to school and their quality of sleep. Specific details about this study are outlined below:

Study Title: 'The impact of a gratitude diary intervention on primary-aged children's

levels of anxiety, sense of school belonging and quality of sleep'

ERGO (Ethics Committee) Study ID number: 31782

Why has my child been selected to take part?
This study involves children aged 10 – 11 years, in Year 6. I am interested in children's levels of anxiety, sense of school belonging and sleep quality and whether keeping a gratitude diary can be helpful for children of this age.

What will happen to my child if they take part?
Before the research starts, children will be asked to complete three short questionnaires at school. Parents/carers will also be asked to complete a short questionnaire about their child's sleep quality. Over two weeks, your child will be asked to reflect on their school day and write three things in a diary that they remember from the day. This exercise will take 5 minutes per day. Children will not be asked to keep the diary on weekend days. At the end of the two weeks, children and parents/carers will be asked to complete the same questionnaires at the end of the study and also 3 weeks later. This will help the researcher to understand the longer term impact of keeping a daily diary.

Are there any benefits in my child taking part?
This research study is grounded in positive psychology which aims to explore ways in which psychology can be used to help individuals to achieve happiness, a positive sense of well-being and to flourish. It is hoped that by keeping a daily diary, children will be better able to reflect upon their school day. By participating in this research, your child will help to answer questions about the benefits of keeping a gratitude diary and whether this is a helpful intervention to use in schools.

Are there any risks involved?
The research is low risk as this study focuses on promoting positive well-being. However, there is a small chance that some children may score highly on the anxiety and/or sleep questionnaires meaning that they may be experiencing anxiety or sleep difficulties. If this situation occurs, parents/carers will be notified and it will be recommended that further advice is sought from a trained medical professional. Furthermore, some children may

choose to write about aspects of their day which they perceive to be negative. In this instance, children will be asked to talk to their teacher or another member of school staff if they have any worries or concerns.

How will the information gathered in this research be used?
Information gathered in this research will be anonymised at point of collection. This means that all personal information, such as names, will be removed and replaced with a participant number. A participant list which links the child's participant number along with their class register will be held by the school. Parents will also be allocated the same participant number as their child. The researcher will not have access to this information. This information will be stored as confidential data in-line with current data protection guidance. The researcher will keep the anonymous data until it is no longer required, at which point it will be destroyed. The findings from the study will be written up in a research thesis and will be disseminated more widely as appropriate.

What happens if I don't want my child to take part?
You have the right to withdraw permission for your child to take part at any time completing the slip below or by notifying your child's teacher. Equally, your child has the right to change their mind and decide not to take part. They can do this by telling their teacher that they do not want to take part.

Where can I get more information?
This research is supervised by Colin Woodcock and Dr Catherine Brignell from the University of Southampton. If you have any questions and require further information about the study, please email Danielle Cripps (researcher): d.cripps@soton.ac.uk

In the unlikely case of concern or complaint please contact Colin Woodcock (research supervisor): xxxxxxxxxxxxx or the University of Southampton ethics committee: Ethics Committee, Psychology, University of Southampton, SO17 1BJ, UK. Phone: +44 (0)23 8059 3856, email fshs-rso@soton.ac.uk

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THIS SLIP INDICATES THAT YOU DO **NOT** WISH FOR YOUR CHILD TO TAKE PART IN THE GRATITUDE STUDY BEING UNDERTAKEN BY DANIELLE CRIPPS.

PLEASE RETURN TO YOUR CHILD'S CLASS TEACHER

Child's name .... Class ....

Teacher ....

I confirm I do not wish for my child to take part in the gratitude diary study as outlined in the Parent Information Letter.

Parent's/Carer's name .... Signature ....

Appendix K. Research Checklist for School Staff

Research Checklist

Before starting the intervention…

- ○ Initial meeting with member of school staff on _____
- ○ Consent form signed by Head Teacher and returned to researcher
- ○ Pupils randomly allocated with a participant number and diary condition
- ○ Parent information sheet and sleep questionnaire given out to parents (completed questionnaires are matched to participant numbers) and returned to researcher.
- ○ Pre-intervention questionnaires administered on _____
- ○ Children briefed about the intervention by the researcher (allow 10 minutes for each group)

Week 1 of the intervention

- ○ Children complete their diary entries (total of 5 per week) at the end of each school day. Allow 5 -10 minutes for this. Children do not need to write in their diary during weekends.

Week 2 of the intervention

- ○ Children complete their diary entries (total of 5 per week) at the end of each school days. Allow 5 -10 minutes for this. Children do not need to write in their diary during weekends.
- ○ Post-intervention measures will be administered at the end of the 2 weeks on
_____
- ○ Parents sleep questionnaires are given out to parents (allow 1 week for parents to return questionnaire).

Weeks 3 – 5

- ○ Review measures are administered on _____
- ○ Children are debriefed about the intervention (allow 15 minutes for this – whole class)
- ○ Children are given a new gratitude diary and a letter home to parents

Things to note…

- • If a day is missed, ask the children to complete their diary on the following morning, asking them to reflect on the previous day.
- • It is helpful if the children are discouraged (as much as possible) from talking about their diaries or diary entries with others in the class.
- • If a child is absent from school leave that diary entry blank.
- • Please remind parents to complete and return their questionnaires, their information is valuable to the research!
- • Thank you for participating in this research, it is greatly appreciated. If you have any questions, please email me on xxxxxxxxxxxxx or call me on xxxxxxxxxxxxx

Appendix L. Participant Briefing Script

Addressing a Year 6 class

Hello everyone, my name is Danielle Cripps. I'm training to be an Educational Psychologist and my role involves working with children like all of you and their teachers, in lots of different schools. My job is to understand what children think about school and how they learn best. I am also a researcher. I am interested in how children like you feel about themselves and how they feel about school. Today I am going to ask you to help me by doing two jobs for me. The first things we are going to do today is to complete three very short questionnaires; we will be going through these all together. The second job will involve splitting your class into two groups and I will tell you a bit more about what we are going to do in our groups in a little while.

Before we get started on completing our questionnaires, I want to let you know that it is ok for anyone to choose not to participate in this study at any time by telling your teacher or another adults that you don't want to take part anymore. Does everyone understand that they are able to do this? [Children to show researcher they understand by showing thumbs up gesture. Researcher to explain again if one or more child is not sure.]

Part 1 – Complete questionnaires

These questionnaires are to help me to understand how children in Year 6 feel about themselves and about school. The first questionnaire is all about how you gratitude. We are going to go through each question together and I am going to read each question and you need to circle yes or now. If anyone gets stuck or doesn't know how to answer the question just put your hand up and I'll come round and help you. [Researcher to read the instructions of the questionnaires aloud and to administer the questionnaire as specified by the instructions].

Well done everyone, there is another short questionnaire to complete. This one is all about how Year 6 children feel about school. If anyone gets stuck or doesn't know how to answer the question just put your hand up and I'll come round and help you. [Researcher to read the instructions of the questionnaires aloud and to administer the questionnaire as specified by the instructions].

Well done everyone, there is one shorter questionnaire to complete. This one is all about how children feel and the worries they might have. If anyone gets stuck or doesn't know how to answer the question just put your hand up and I'll come round and help you.

[Researcher to read the instructions of the questionnaires aloud and to administer the questionnaire as specified by the instructions].

Thank you everyone for completing your questionnaires. Please write your name on a Post-It note and stick it to the front of your questionnaire. I will now come and collect the questionnaires. All of the information I have gathered will be kept in a safe, locked place or held on a computer. I will make all of this information anonymous, which means that it will be impossible for other people to trace back who said what and that I won't share any of this information with anyone unless they are helping me with my research. Does that make sense? Do you have questions for me? Now we are going to get into two groups. [Teacher/researcher to read out the list of names to organise children into two groups].

Part 2 – Allocating the children into groups

Ok Group 1 (event diary group), can you come with me [researcher to take children to a quiet space away from the other children]. Group 1, you're going to help me by keeping a diary every day for two weeks. It's going to be short diary, your only need to write three things in your diary each day, that is three short sentences. In your diary, I would like you to write down three things that you remember from your school day in a factual way, like a news reporter would record details about the news. For example, you could write 'We had PE today and we got to play basketball' [researchers to show examples]. It doesn't matter about spelling or punctuation, just concentrate on write three sentences for three events during the day.

 Here is your diary [researcher to show children their diary]. You can write your number on the front cover. It is really important that you don't show anyone your diary and you will need to keep it in a safe place (say where). No-one will look at your diary apart from me. Does that sound like something you can do? Does anyone have any questions? If you think of any questions you would like to ask once I have gone or if you have any worries, then you can ask to speak to (insert name of school staff member). If you would like to withdraw your information then this can be arranged by asking (school contact) to contact me. [Children to go back to class].

Ok Group 2 (gratitude diary group), can you come with me [researcher to take children to a quiet space away from the other children]. Group 2, you're going to help me by keeping a diary every day for two weeks. It's going to be short diary, your only need to write three things in your diary each day, that is three short sentences. In your diary, I would like you to write down three things that went well during your school day. Your diary is called a

gratitude diary, does anyone know what gratitude means? Gratitude means you are thankful for something or something that someone has done for you. For example, you could be thankful for your friend because they played with you at lunchtime. Your sentence is going to start with 'I am thankful…' and you just need to complete the sentence and say why [researchers to show examples]. It doesn't matter about spelling or punctuation, just concentrate on write three sentences for three events during the day.

 Here is your diary [researcher to show children their diary]. You can write your number on the front cover. It is really important that you don't show anyone your diary and you will need to keep it in a safe place (say where). No-one will look at your diary apart from me. Does that sound like something you can do? Does anyone have any questions? If you think of any questions you would like to ask once I have gone or if you have any worries, then you can ask to speak to (insert name of school staff member). If you would like to withdraw your information then this can be arranged by asking (school contact) to contact me. [Children to go back to class].

Appendix M. Diary Templates

Front cover for both diaries
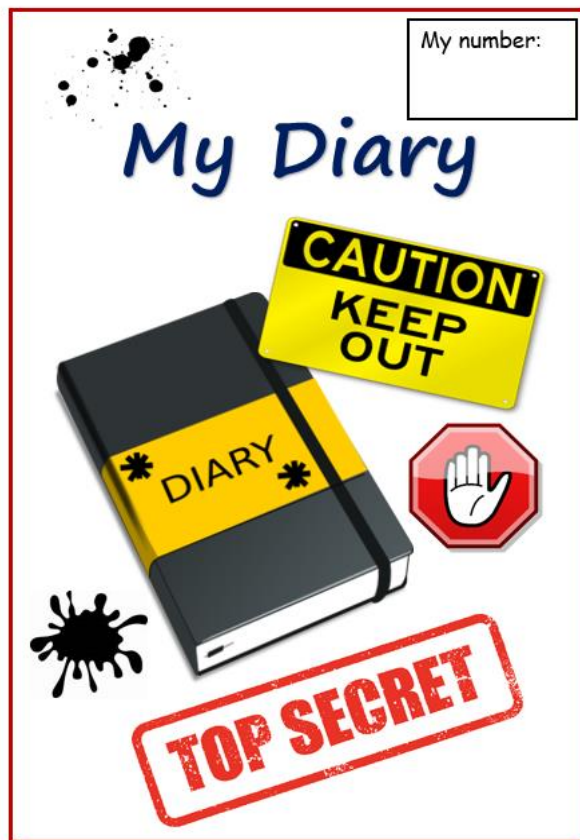
Instructions page – Event diary
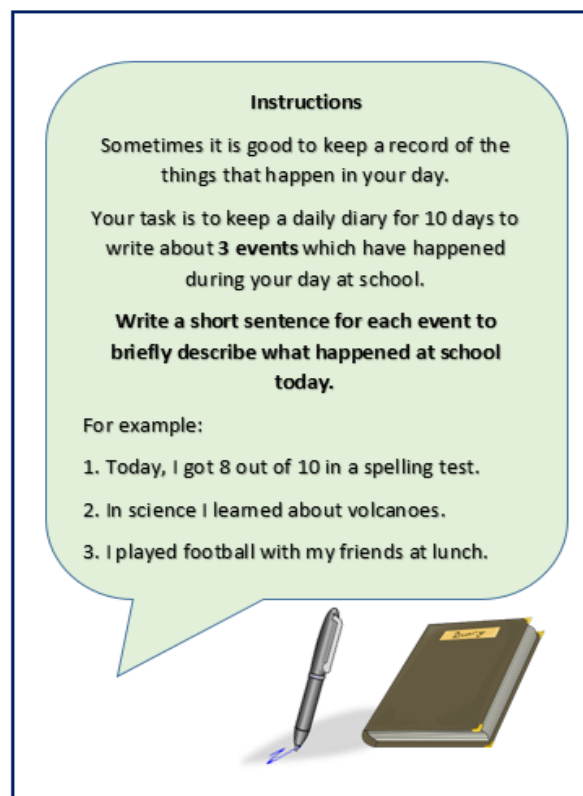
Instructions page – Gratitude diary

Instructions

Sometimes it is good to think about things that make you feel thankful. These thoughts are like jewels in a treasure chest. Even the smallest jewels are precious.

Your task is to keep a daily diary for 10 days to write about **3 things** you are thankful for which have happened during your day at school.

Write a sentence each about 3 small things that have happened in your school day that you are thankful for. Write about new things each day.

For example:

1. I am thankful for my friend who helped me with a maths question.

2. I am thankful for getting all of my spellings right.

3. I am thankful that it didn't rain today because we had PE outside.

Entry page – Event diary

Write down 3 things that happened at school today...

1._____

_____

_____

2._____

_____

_____

3._____

_____

_____

Entry page – Gratitude diary

Write down 3 things that happened at school today which you are thankful for…

1. I am thankful…

_____

_____

_____

2. I am thankful…

_____

_____

_____

3. I am thankful…

_____

_____

_____

Appendix N. Participant Debriefing Script

Thank you for taking part in my research. A few weeks ago, you were randomly chosen to keep either a gratitude diary or an event diary for two weeks. If you kept the gratitude diary you were asked to write down three things each day that you felt you were thankful for. If you kept an events diary you were asked to write down three things that you remembered from the day. Also, you have helped me by completing some questionnaires about your feelings and how your feel about school. Your parents or carers were also asked to complete a questionnaire about your sleeping habits.

These questionnaires are to help me to understand whether keeping a diary, either a gratitude diary or an events diary, makes a difference for children in terms of their feelings about themselves and about school, and how well they sleep. I now need to analyse all of the results. All of the information I have gathered, so all of the questionnaires you and your parents completed and your diary entries will be kept in a safe, locked place or held on a computer. I will make all of this information anonymous, which means that it will be impossible for other people to trace back who said what and that I won't share any of this information with anyone unless they are helping me with my research. After I have gathered all of the results from other children I have been working with, I will write-up my findings in a report and share this with adults.

Does that make sense? Do you have questions or feedback for me?

If you think of any questions you would like to ask once I have gone or if you have any worries, then you can ask to speak to (insert name of school staff member). If you would like to withdraw your information then this can be arranged by asking (school contact) to contact me by (date).

Dear Pupil,

Thank you for participating in the diary writing research and for completing the questionnaires. I wanted to find out if keeping a daily gratitude diary could help children to feel less anxious, improve their sleep and their feelings of belonging to school. I hope you enjoyed keeping a diary and found it helpful to write about your school day.

Here is a blank gratitude diary for you to share with your family members or friends.

If you have any worries or questions about the research, please talk to your class teacher (or named person identified by the school).

Wishing you the best for Year 6. Thank you.

Danielle Cripps

Trainee Educational Psychologist

Appendix P. Parent Debriefing Letter

UNIVERSITY OF
Southampton

Dear Parent/Carer,

Thank you for participating in this research and for completing sleep habit questionnaires[1]. The aim of this research was to explore the impact of a school-based gratitude diary intervention on children's levels of anxiety, their sense of belonging to school and their quality of sleep. Your child was randomly allocated to a diary writing activity in which they were either asked to keep a daily event diary (keeping a record of things that happened during the school day) or to keep a gratitude diary (writing down things that they are thankful for). Your child completed questionnaires which assessed their levels of anxiety, gratitude and sense of school belonging.

I have yet to analyse the information I have collected. I'm hoping that keeping a gratitude diary compared to keeping an event diary will reduce children's anxiety levels, improve sense of school belonging and sleep habits. I will be looking at information that was provided in the questionnaires to see if there were any meaningful changes that can be associated with the different diary writing tasks and whether there were any changes occurred after the intervention at during the follow-up period.

Any information collected from this study was anonymised on point of collection, therefore I have not had access to any identifiable information at any point during the research process. The information I've collected for this study will be shared with the school and University of Southampton. In the future, it is expected that this information will be shared more widely to inform practitioners working with children of the outcomes of this study.

I hope your child enjoyed participating in this study and found keeping a diary helpful. If you have any questions about the research, please contact me or speak with your child's class teacher. My email address is d.cripps@soton.ac.uk. Alternatively, you can contact my research supervisor, Colin Woodcock via email: xxxxxxxxxxxxxx.

Best wishes,

Danielle Cripps
Trainee Educational Psychologist
University of Southampton

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[1] Optional sentence depending on whether parents completed questionnaires.

Appendix Q. Opt-Out Consent in Compliance with GDPR

The following document provides further clarification as to why opt-out consent will be used in this research and how this will be in accordance with current GDPR (General Data Protection Regulations).

In summary:

- Parents will be provided with information about the nature of the study, including the associated benefits and risks, as well as the process for opting out of the research. This is in-line with the current BPS Code of Human Ethics for Research.
- The data will be fully anonymised for the full duration of the research meaning that the researcher will not have access to information about children or parents at any point. Therefore, GDPR do not apply, see Recital 26 of the GDRP guidance (details below).

Data Collection

- Before starting the experiment, child participants will be allocated a participant number which will correspond to the class register list held by the school. Parents will also be allocated the same participant number as their child. A 'master copy' of this list will be held by the school but not the researcher.
- Parents will be sent a letter to inform them about the study including details regarding the benefits and potential risks of the study, and information regarding the terms of opt-out consent. Parents will also be asked to complete a short sleep measure for their child. Returning this measure to school also provides further consent for participation in the research.
- Participants will be randomly allocated to an experimental condition once parental measures have been received. Parents who have identified that they do not want their child to participate in the study will not be included in the research but their children will be provided with an alternative activity to do by their class teacher.
- This method of gathering consent means that the researcher will **not** have access to the child's name at any point and therefore the data will remain anonymous throughout the process. Should the researcher discover that a child has scored highly on a measure, the researcher will share the participant number this with an identified member of school staff who will have access to the master copy of the participant list. Therefore, this member of school staff will be able to identify the child based on their participant number.

Data Processing

As the data will be annoymised at point of collection, Recital 26 (GDPR) states:

> *"The principles of data protection should therefore not apply to anonymous information, namely information which does not relate to an identified or identifiable natural person or to personal data rendered anonymous in such a manner that the data subject is not or no longer identifiable."*

> *"This Regulation does not therefore concern the processing of such anonymous information, including for statistical or research purposes."*

This suggests that opt-out consent would seem an appropriate form of gathering consent considering that the researcher will not have access to the parent's or child's information at any point for the entire duration of the research.

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