

**UNIVERSITY OF SOUTHAMPTON**

**FACULTY OF SOCIAL, HUMAN AND MATHEMATICAL  
SCIENCES**

School of Psychology

**Exploring the roles of anxiety, sleep and sense of belonging in school  
attendance and school refusal behaviour**

by

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Thesis for the degree of Doctorate in Educational Psychology

April 2017

Word Count: 19,896

(excluding abstract, tables, figures, references, appendices and footnotes)



# UNIVERSITY OF SOUTHAMPTON

## ABSTRACT

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### **EXPLORING THE ROLES OF ANXIETY, SLEEP AND SENSE OF BELONGING IN SCHOOL ATTENDANCE AND SCHOOL REFUSAL BEHAVIOUR**

Sharon Amanda McKenzie

Reductions in school refusal behaviour (SRB), defined as a general difficulty with attending or remaining in school, have been a longstanding strategic priority for schools, local authorities and central government. Research into risk factors associated with SRB is vital for the development of effective assessment and intervention practices to address the problem. A systematic literature review, embedded within a theoretical framework of risk and resilience, was conducted to appraise the research evidence into anxiety as a risk factor for SRB. Twenty-one studies were reviewed, spanning the past three decades. Support was gained for anxiety as a significant risk factor for SRB in some cases, but not as an overall or central explanation for the problem. The need was highlighted in future research for collective commitment towards addressing a range of terminological, methodological and reporting issues in order to improve comparability between studies, and increase the generalisability of findings. The incorporation of physiological measures of anxiety in conjunction with self-report measures was proposed as a potentially fruitful extension for future investigations.

The empirical paper presented a pilot study which extended previous research comparing anxious high-attenders with anxious low-attenders. The sample comprised 13 girls in Year 8 ( $n=9$ ) and Year 9 ( $n=4$ ) attending an average-sized mainstream secondary school, who reported elevated anxiety. The girls were grouped by attendance: high ( $n=7$ ,  $M=99.7\%$ ,  $SD=0.63$ ) and low ( $n=6$ ,  $M=92.2\%$ ,  $SD=1.58$ ). Physiological measures of psychological stress (i.e. heart rate variability: HRV) and sleep, assessed using electrocardiogram and wrist actigraphy respectively, were incorporated within an exploration of anxiety, sleep and sense of belonging as factors that may differentiate between the two groups. The groups did not differ on sense of belonging or any indices of psychopathology by self-report, nor on any physiological measures of sleep or psychological stress at the beginning of the week. However, the high attendance group showed non-significant trends towards poorer sleep quality and lower HRV, at the end of the week. The findings tentatively challenge the assumption that anxious students who sustain high attendance in school are demonstrating psychological resilience. Implications for Educational Psychology practice and future research are discussed.



## Table of Contents

Abstract.....	i
Table of Contents .....	iii
List of Tables.....	v
List of Figures.....	vi
Declaration of Authorship.....	vii
Acknowledgements .....	viii
Abbreviations .....	ix
Chapter 1: Review Paper .....	1
Introduction .....	2
School Refusal Behaviour .....	2
Definitional issues .....	2
Prevalence, Course and Impact .....	3
Anxiety and SRB.....	4
Theoretical Framework – Risk and Resilience.....	5
Aims and Scope of Systematic Literature Review .....	6
Review Methodology .....	8
Data Sources and Search Strategy .....	8
Inclusion and Exclusion Criteria .....	10
Systematic Review Results .....	11
Organisation of the Review .....	11
Profile of Reviewed Literature .....	11
Key Findings from the Literature .....	17
Discussion .....	26
Summary of Review Findings.....	26
Strengths and Limitations of the Literature.....	28
Conclusions and Implications for Practice and Future Research .....	30
Chapter 2: Empirical Paper .....	32
Introduction .....	34
Risk and Resilience .....	34
Physiological measurement of anxiety and sleep.....	37
Aims of the Study.....	38
Method.....	39
Design.....	39
Participants .....	39
Measures.....	41
Procedure.....	46

Data Analysis .....	48
Results.....	49
Sample characteristics.....	49
Main Descriptive and Inferential Analyses.....	52
Discussion .....	59
Key Findings.....	61
Limitations .....	62
Conclusions and Implications for Practice and Future Research.....	63
Appendices.....	66
Appendix A: Search terms, database specific search limiters and filters applied in the systematic review .....	68
Appendix B: Rationale for studies excluded from the systematic review after assessment of full text.....	69
Appendix C: Data extraction table for studies included in the systematic review ....	70
Appendix D: Autonomic nervous system and echocardiogram: key information...	106
Appendix E: Regulated parental qualification levels (proxy measure for SES).....	108
Appendix F: Research diary.....	111
Appendix G: Electrocardiogram procedure: attachment of SOMNOWatch™ and sensors to upper body.....	113
Appendix H: Ethics Committee approval for study.....	114
Appendix I: Introductory letter to Headteacher .....	115
Appendix J: Headteacher consent form .....	117
Appendix K: Opt out parental consent letter to parents in respect of initial screening process.....	118
Appendix L: Verbal script for screening process undertaken by form tutors .....	119
Appendix M: Participant information sheet.....	120
Appendix N: Parental consent form.....	123
Appendix O: Student assent form .....	124
Appendix P: Introductory home-visit schedule .....	125
Appendix Q: Participant debriefing form .....	127
References .....	128

## List of Tables

<b>Table 1.</b> Anxiety disorders associated with SRB: core features and average age of onset.....	6
<b>Table 2.</b> Included studies in the review .....	12
<b>Table 3.</b> Validated structured clinical interview schedules used in reviewed studies	17
<b>Table 4.</b> Standardised questionnaires used in reviewed studies .....	18
<b>Table 5.</b> Prevalence of specific anxiety diagnoses reported as primary diagnoses in clinical samples of children and adolescents with SRB .....	20
<b>Table 6.</b> Attendance and anxiety characteristics of screening sample.....	50
<b>Table 7.</b> Educational, sociodemographic, physical development and lifestyle characteristics of adolescent girls with elevated anxiety.....	51
<b>Table 8.</b> Descriptive and inferential statistics for child- and parent-report questionnaires by group.....	54
<b>Table 9.</b> Descriptive and inferential statistics for ECG variables by group .....	56
<b>Table 10.</b> Descriptive and inferential statistics for sleep actigraphy and diary variables by group .....	58
<b>Table 11.</b> Kendall's tau correlation coefficients for HRV and sleep actigraphy variables on Friday .....	59

**List of Figures**

**Figure 1.** Interdisciplinary model of school absenteeism (Reproduced from Kearney, 2008a, p. 268)..... 7

**Figure 2.** Flow chart illustrating selection of studies for systematic review..... 9

**Figure 3.** ECG trace showing normal heart rhythm (sinus rhythm)..... 38

**Figure 4.** Electrocardiogram, sleep actigraphy and student diary data collection cycle ..... 48

**Figure 5.** Sleep actigraphy and ECG variables on Monday and Friday by group ... 60



## DECLARATION OF AUTHORSHIP

I, **Sharon Amanda McKenzie**, declare that this thesis and the work presented in it are my own and have been generated by me as the result of my own original research.

**Exploring the roles of anxiety, sleep and sense of belonging in school attendance and school refusal behaviour**

I confirm that:

This work was done wholly or mainly while in candidature for a research degree at this University;

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;

Where I have consulted the published work of others, this is always clearly attributed;

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;

I have acknowledged all main sources of help;

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;

None of this work has been published before submission

Signed: .....

Date: .....

## **Acknowledgements**

This thesis is dedicated to my husband, Tom and our daughter Shardé (aka ‘Pudding’). Thank you for your unrelenting support, encouragement, patience and love through this journey, without which I could never have got to this point.

I would like to thank my mother for her unwavering pride and belief in me and my brother for having an outlook in life that has helped me to maintain perspective. My appreciation also goes to my wider family and closest friends for their care and understanding. You have all in your own ways inspired me to embrace this opportunity and keep going.

I am indebted to my primary supervisor, Dr Julie Hadwin, for her unstinting commitment, support and advice in the development and completion of this thesis, and for teaching me lessons in composure.

My thanks and appreciation also go to my secondary supervisor, Dr Catherine Hill for her invaluable advice, and to my research assistant, Amy Gwyther for her hard work, attention to detail and flexibility.

Finally, I would like to thank the staff, parents and young people who have made this research possible, and who share my passion to make a positive difference for children and young people who experience anxiety in school.

## Abbreviations

<b>ADHD</b>	Attention Deficit Hyperactivity Disorder
<b>ANS</b>	Autonomic nervous system
<b>ASD</b>	Autism Spectrum Disorder
<b>ASHS</b>	Adolescent Sleep Habits Survey
<b>BMI</b>	Body mass index
<b>BPM</b>	Beats per minute
<b>CDI2 SR[S]</b>	Children's Depression Inventory 2 self-rated scale [short form]
<b>CYP</b>	Children and young people
<b>DCW</b>	Data collection week (i.e. for ECG and sleep actigraphy)
<b>DfE</b>	Department for Education
<b>DSM</b>	Diagnostic and Statistical Manual for Mental Disorders
<b>ECG</b>	Electrocardiogram
<b>FSSC-R</b>	Fear Survey Schedule for Children – Revised
<b>GA subscale</b>	Generalised anxiety subscale (of SCAS)
<b>GAD</b>	Generalised Anxiety Disorder
<b>HF</b>	High frequency power component of HRV
<b>HR</b>	Heart rate
<b>HRV</b>	Heart rate variability
<b>Hz</b>	Hertz: unit of frequency, one cycle per second
<b>KS2 SATs</b>	Key Stage 2 Standard Assessment Tests
<b>LF</b>	Low frequency power component of HRV
<b><i>M</i></b>	Mean average
<b><i>Mdn</i></b>	Median average
<b>ms</b>	Milliseconds
<b><i>N/n</i></b>	Number of cases/studies
<b><i>p</i></b>	Probability
<b>PD</b>	Panic Disorder
<b>PRISMA</b>	Preferred Reporting Items for Reporting Systematic Reviews and Meta-Analyses statement
<b>PSG</b>	Polysomnography
<b>PSNS</b>	Parasympathetic nervous system
<b>PSSM</b>	Psychological Sense of School Membership scale
<b>PTSD</b>	Post-traumatic Stress Disorder
<b><i>r</i></b>	Pearson correlation coefficient for effect-size
<b>RCMAS</b>	Revised Children's Manifest Anxiety Scale
<b>RMS</b>	Root mean square

<b>SAD</b>	Separation Anxiety Disorder
<b>SCAS – C/P</b>	Spence Children’s Anxiety Scale (Child/Parent version)
<b>SD</b>	Standard deviation
<b>SDQ</b>	Strengths and Difficulties Questionnaire
<b>SE</b>	Standard error/sleep efficiency
<b>SES</b>	Socioeconomic status
<b>SNS</b>	Sympathetic nervous system
<b>SOL</b>	Sleep onset latency
<b>SRAS – C/P</b>	School Refusal Assessment Scale (Child/Parent version)
<b>SRB</b>	School refusal behaviour
<b><i>T</i></b>	Wilcoxon signed-rank test statistic
<b>TST</b>	Total sleep time
<b><i>U</i></b>	Mann-Whitney test statistic
<b><math>X^2</math></b>	Chi-square test statistic
<b><i>z</i></b>	<i>z</i> -score: standardised test statistic
<b><math>\alpha</math></b>	Cronbach’s alpha coefficient for internal consistency
<b><math>\tau</math></b>	Kendall’s tau rank correlation coefficient

## **Chapter 1: Review Paper**

**Exploring the role of anxiety in school attendance and school refusal  
behaviour: a systematic review of the literature**

Word Count: 9,998

## Introduction

The Education Act of 1880 made school attendance a legal matter in the UK. Since its inception, parents have held a statutory duty to ensure that their children attend school regularly<sup>1</sup>. Notwithstanding the legal position, school refusal behaviour (SRB) is a serious problem because it impacts detrimentally on a child's social, emotional and educational development, and is associated with a myriad of negative long-term outcomes (Flakierska-Prakin, Lindstrom, & Gillberg, 1997; King & Bernstein, 2001). Research in this area has extended across several fields of study, including most prominently, psychology, education, and social/criminal justice (Kearney, 2008a). It has been argued that diverse approaches to conceptualising and investigating the problem have resulted in poor comparability between studies, hampering the development of effective assessment and intervention approaches (Elliot, 1999; Ingul, Klockner, Silverman, & Nordahl, 2012; Kearney, 2008a; Pellegrini, 2007).

This paper presents a systematic review of the literature into the role played by anxiety in SRB, within clinical and community populations. The review begins with an overview of definitional issues surrounding SRB, and a synopsis of the prevalence, course and impact of the problem. This is followed by an introduction to anxiety in the context of SRB and an outline of the theoretical framework of risk and resilience, through which the interplay between anxiety and SRB is explored. The aims and scope of the review are then defined and the methodology reported. Finally, the results of the review are presented, summarised and critically appraised in order to highlight directions for future research and to inform the development of assessment and intervention practices for children and young people who experience SRB.

## School Refusal Behaviour

### Definitional issues

Children and young people (CYP) who do not sustain regular attendance in school have traditionally been divided within the research literature into two groups: those whose absence from school centres around anxiety, and those whose absence stems from a lack of interest, and/or overt defiance to authority (Egger, Costello, & Angold, 2003). The term 'school refusal' has been widely used to describe the first group, whose difficulties have

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<sup>1</sup> Strictly, parents have a legal responsibility to ensure that their children are in receipt of a suitable full-time education, thus it is education rather than school that is a statutory requirement; however, once a child is registered in school, parents become legally responsible for ensuring the child's regular attendance at that school, while of compulsory school age (Department for Education: DfE, 2015a)

## EXPLORING ANXIETY, SLEEP AND SENSE OF BELONGING IN SRB

been understood to reflect an underlying emotional or psychological disorder (Stroobant & Jones, 2006). Other terms which have been used interchangeably with school refusal include 'anxious school refusal', 'school phobia' and 'school avoidance'. Historically, 'separation anxiety' (i.e. worries about separation from significant caregivers) has also been partnered with these constructs (Egger et al., 2003; Stroobant & Jones, 2006). School refusal has been distinguished from 'truancy', a term associated with the second group, which is essentially construed as wilful absence from school (Stroobant & Jones, 2006).

The assumption that school refusal and truancy are mutually exclusive has been reflected within definitions of school refusal (Egger et al., 2003; Kearney, 2008b). However, it has been argued that a child who displays conduct issues or disaffection may be affected by underlying anxiety, and conversely, an anxious child may not necessarily show compliance to authority (Gresham, Vance, Chenier, & Hunter, 2013; Kearney, 2008b). Gresham et al. (2013) contended that the historical difficulties in classifying youths who engage in SRB have been compounded by the lack of a specific diagnosis relating to the problem. They argued that SRB has consequently been construed as symptomatic of one or more psychiatric disorders. However, this presupposes (erroneously) that all youths presenting with SRB meet the criteria for a psychiatric diagnosis (Egger et al., 2003; Gresham et al., 2013; Kearney, 2008b; Kearney and Albano, 2004).

Kearney and Silverman (1996) argued that understanding the characteristics of children who show difficulties with attending school required an inclusive definition, free of aetiological assumptions regarding psychopathology. They defined SRB as a general difficulty with either attending school or remaining there for the full day, thereby positioning it as an umbrella term for the constructs of 'school refusal', 'truancy' and 'school phobia' (Kearney, 2003; 2008b). Kearney and Silverman (1993) also developed a functional taxonomy of SRB, which shifted the focus away from within-child deficits, towards factors motivating the behaviour from the child's perspective. This has been argued to support greater examination of the wider relationships and systems within the child's environment that may be maintaining the behaviour, as well as promoting more direct links to treatment (Kearney & Silverman, 1993).

The complexity of defining and responding to SRB has been increasingly recognised by researchers and clinicians. SRB is contemporarily understood as a 'collection of problem behaviours', which stem from diverse aetiologies and are maintained by a range of factors (Stroobant & Jones, 2006, p. 211). Conceptualisations of SRB have therefore evolved from being fixed and unidimensional to dynamic and multi-dimensional (Kearney, 2001).

### **Prevalence, Course and Impact**

Estimated prevalence rates for SRB in school-aged children have ranged between 1 and 5% in recent years (Baker & Bishop, 2015; King & Bernstein, 2001; Nuttal & Woods,

2013; Pelligrini, 2007). Peaks in SRB are understood to occur during transitional phases in education, including school entry, primary to secondary transfer in the UK and elementary to middle school transfer in the US (Elliott, 1999; Pellegrini, 2007). The onset of SRB has also been linked with absence from school due to illness or following a holiday (Berg, 1996; Miller, 2008). Earlier studies have suggested that older children who show SRB tend to experience more severe psychiatric disorders and to have a worse prognosis (Elliott, 1999). Differences in SRB with respect to gender, race, socioeconomic status and academic ability have not emerged consistently from the research evidence (Baker & Bishop, 2015; Elliott, 1999; Pellegrini, 2007). However, the short- and long-term impact of SRB is less equivocal. Research has consistently linked SRB with substance use, poor academic performance and difficulties with family and peer relationships (Kearney & Bensaheb, 2006; King & Bernstein, 2001; Needham, Crosnoe, & Muller, 2004). Moreover, as a major risk factor for school-dropout (Alexander, Entwisle, & Kabbani, 2001; Jozefowicz-Simbeni, 2008), SRB potentially has adverse long-term consequences in multiple life domains, including education, employment, relationships and mental health. (Duchesne, Vitaro, Larose, & Tremblay, 2008; Flakierska-Prakin et al., 1997; Gresham et al., 2013; Kearney, 2008a). Fundamentally, children and young people with SRB are ‘missing-out’ on key challenges and opportunities that promote positive developmental outcomes (Berwick-Emms, 1987; Gresham et al., 2013).

### **Anxiety and SRB**

Theories of anxiety have developed from biological, cognitive and behavioural perspectives. Biological explanations posit individual differences in the physiological activation threshold and experience of anxiety. Cognitive perspectives emphasise the context in which anxiety is triggered and experienced, and specifically the roles of the individual's appraisal of heightened physiological arousal and their attributions relating to threat (e.g., Schachter & Singer, 1962; Beck, 1993). Biological and cognitive perspectives are drawn together in Spielberger's (1985) 'state-trait model' of anxiety, in which dispositional anxiety ('trait anxiety') is purported to interact with transitory anxiety associated with contextual stress ('state anxiety'). Behaviourally, anxiety has been conceptualised as a 'fundamental action tendency' which drives survival related behaviours (i.e. preparation, avoidance and escape) in the face of threat or danger (Barlow, 2002, p.54). Contemporary theories adopt an integrationist approach to understanding the onset mechanisms and experience of anxiety, which involves the assimilation of neurobiological, cognitive and behavioural subsystems, rather than the activation of any one of these subsystems in isolation (Craske et al., 2009).



## EXPLORING ANXIETY, SLEEP AND SENSE OF BELONGING IN SRB

Anxiety disorders are characterised by elevated fear and anxiety that are typically excessive in respect of a real or perceived future threat, and associated with avoidance behaviours (American Psychiatric Association, 2013). Across disorder avoidance is triggered by an anticipation of threat which activates negative beliefs and cognitions (e.g. worry, rumination), adverse affective responses (e.g. fearfulness, emotional distress, nervousness) and unpleasant bodily sensations associated with heightened physiological arousal or ‘stress reactivity’ (e.g. headaches, muscle tension) (Craske et al. 2009). Specific anxiety disorders are distinguished by the nature of the perceived threat, the content of associated cognitions and the type of situations and stimuli which are avoided (Rapee, 2015). The central features of specific anxiety disorders commonly associated with SRB are summarised in Table 1.

A proliferation of research into childhood anxiety over the past three decades has highlighted anxiety disorders to be the most commonly occurring disorders in children and adolescents; recent estimates suggest that 2.5% to 5% of children and adolescents fulfil the criteria for an anxiety disorder at any given timepoint (Rapee, Schniering & Hudson, 2009). Prevalence rates ranging from 10% to 21% have been reported previously (Bernstein, Bochart & Perwien, 1996; Costello, Mustillo, Erkanli, Keeler, & Angold, 2003). Left untreated, anxiety disorders are generally stable and chronic in their course (McLoone, Hudson, & Rapee, 2006; Rapee et al. 2009). They are associated with a range of intrapersonal, cognitive and social problems including negative affect, poor self-esteem, reduced attention and concentration, poor academic performance, reduced social competence and peer relationship problems (McLoone et al., 2006; La Greca & Moore, 2005; Strauss, Frame, & Forehand, 1987), all of which have the clear potential to impact detrimentally on attendance and functioning in school.

### **Theoretical Framework – Risk and Resilience**

The present review was embedded within a theoretical framework of risk and resilience. This framework can be seen to underpin the interdisciplinary model of problematic school absenteeism proposed by Kearney (2008a) illustrated in Figure 1. Within this model, anxiety as a potential ‘child’ risk factor for SRB is posited to interact with wider risk factors pertaining to the child’s parents, family, peers, school and/or community. ‘Risk’ and ‘resilience’ are conceptually based on the constructs of ‘adversity’ and ‘positive adaptation’ (Fletcher & Sarkar, 2013). While adversity continues to resist settled definition, for the purposes of the present review, it was regarded as ‘negative life circumstances that are known to be statistically associated with adjustment difficulties’ (Luthar & Cicchetti, 2000, p.858), where ‘negative life circumstances’ were broadly taken to include living with a debilitating condition or difficulty such as anxiety, and SRB was held to be indicative of

## EXPLORING ANXIETY, SLEEP AND SENSE OF BELONGING IN SRB

**Table 1.** Anxiety disorders associated with SRB: core features and average age of onset  
(Adapted from Rapee, 2015)

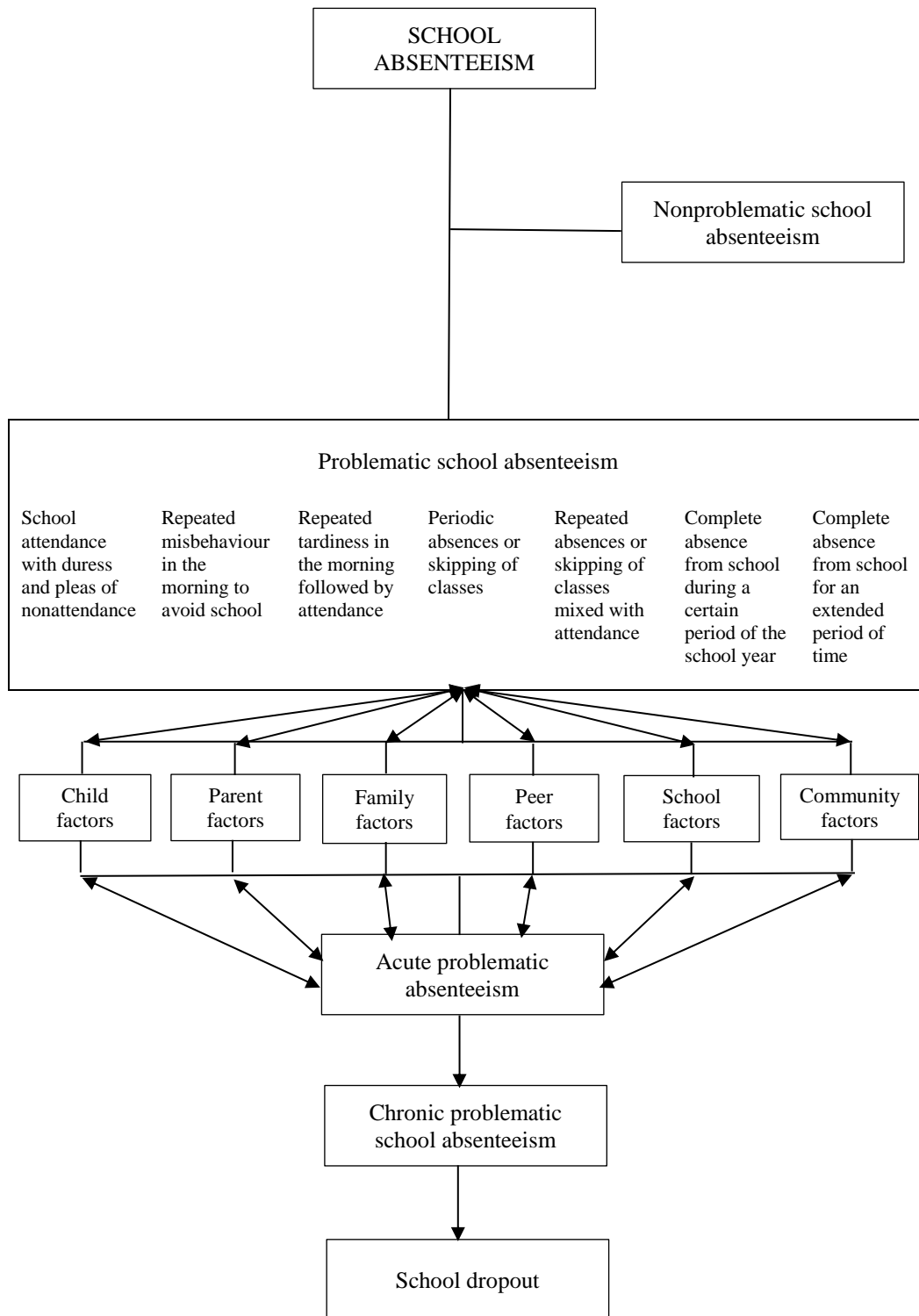
Disorder	Central Features	Approximate average age of onset <sup>a</sup>
Separation Anxiety Disorder	Fear revolving around separation from an attachment figure (typically a parent) connected with a core belief that something bad will happen to the child or the attachment figure when separated, resulting in avoidance of being separated from that person	6-7 years
Generalised Anxiety Disorder	A general and pervasive tendency to fear negative possibilities, underpinned by a core belief that something bad will happen	10-12 years
Social Anxiety Disorder <sup>b</sup>	Fear revolving around the possibility of being negatively judged by others resulting in avoidance of social interactions and/or social performance situations	11-13 years
Specific Phobia <sup>c</sup>	Fear and avoidance connected with specific situations, objects or cues underpinned by a core belief that the aversive stimulus will cause personal harm in some way	Variable <sup>d</sup>
Panic Disorder	Experience and fear of panic attacks, which typically involve a range of somatic symptoms including palpitations feeling dizzy, difficulty breathing, trembling and chest pain, together with fears of dying or going insane	22-24 years

*Note:* <sup>a</sup> In theory, age of onset for anxiety disorders is difficult to pinpoint; these figures provide estimates of average age of onset observed in practice. <sup>b</sup> Formerly social phobia. <sup>c</sup> Formerly simple phobia. <sup>d</sup> Average age of onset for animal phobias is around 6-7 years.

‘adjustment difficulties’. Based on this definition, the degree of adversity experienced by an individual may be defined by their degree of exposure to statistical risk factors associated with a particular negative outcome. Resilience is demonstrated by avoidance or mitigation of that outcome, through positive adaptation to the experience of adversity (Luthar, Cicchetti, & Becker, 2000).

### Aims and Scope of Systematic Literature Review

The objective of the review was to establish the extent to which research has highlighted anxiety as a risk factor for SRB, within clinical and community populations. The



**Figure 1.** Interdisciplinary model of school absenteeism (*Reproduced from Kearney, 2008a, p. 268*)

broader aim was to inform developments in assessment and intervention practices to support children and young people experiencing SRB.

In specific terms, the review posed the following questions:

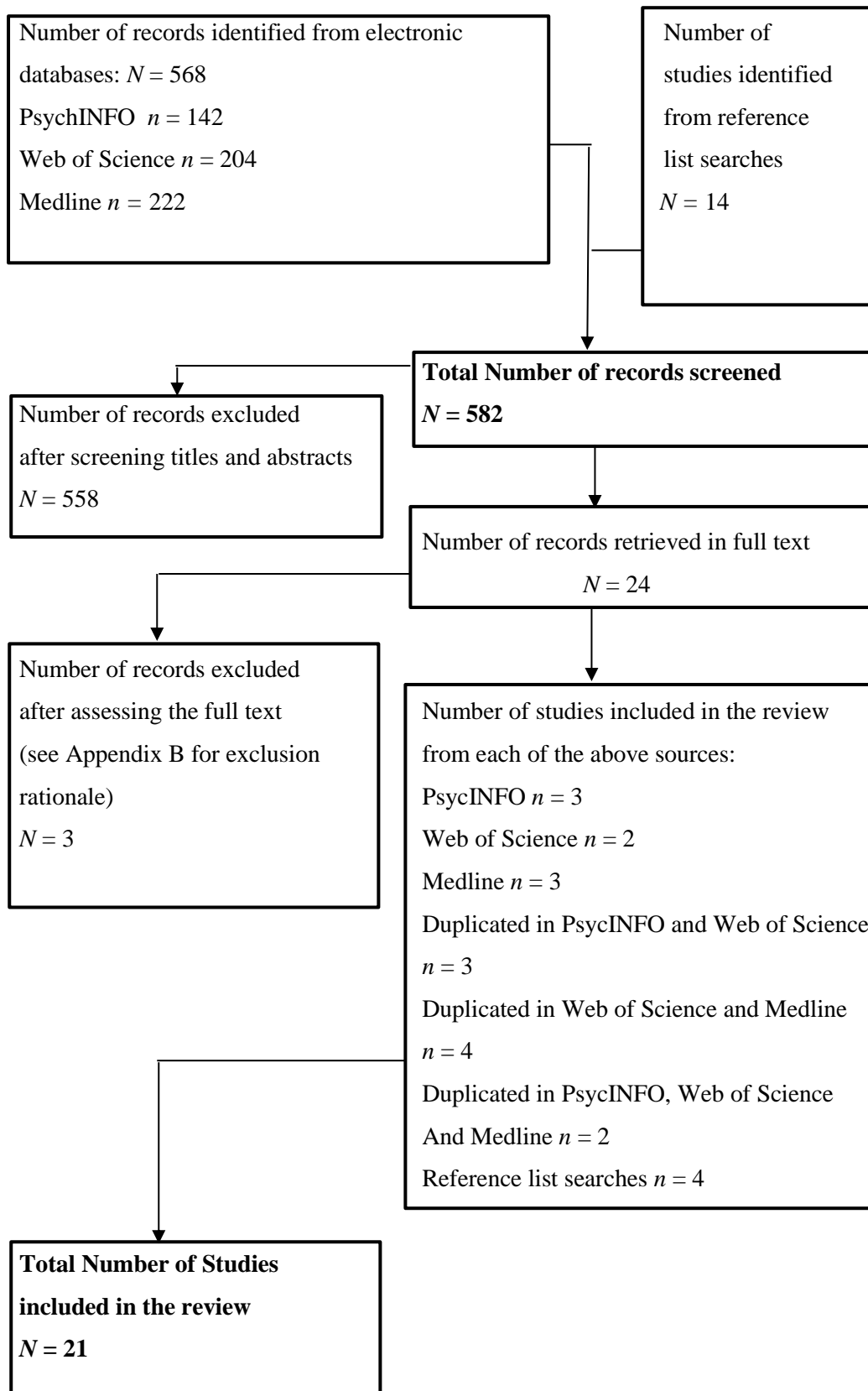
1. How prevalent are anxiety disorders in SRB populations and to what extent are reported symptoms of anxiety linked with absenteeism severity?
2. What is understood about cognitive factors in the interplay between anxiety and SRB?
3. How does anxiety interface with behavioural and functional classifications of children and young people with SRB?

### **Review Methodology**

The review was performed and reported with reference to the Preferred Reporting Items for Reporting Systematic Reviews and Meta-Analyses (PRISMA) statement, which was developed to ensure clarity and transparency of reports, permitting both replication and appraisal of the investigation (British Medical Journal, 2009).

### **Data Sources and Search Strategy**

A comprehensive search of the literature was conducted between February and April 2016 using three electronic databases: PsycINFO via EBSCO, Medline via EBSCO and Web of Science via Web of Knowledge. Searches combining the constructs of SRB and anxiety were conducted in each database. Search terms were initially generated by the researcher and further terms were obtained from each database thesaurus. This bank of terms was developed in an iterative process through the addition of key words identified from relevant papers accessed during the literature search. Search results were filtered as far as possible in accordance with the inclusion and exclusion criteria detailed below, prior to screening studies by titles and abstracts (see Appendix A for details of final search terms, and database specific search limiters and filters applied). Screened studies were either excluded at this point or retrieved in full text to assess eligibility for inclusion. Additional studies for screening were identified through searching the reference lists of studies deemed eligible for inclusion in the review. In total, 582 studies were screened; of these 24 studies were retrieved in full text, and of these, 21 met the criteria for inclusion in the review. Reasons for the exclusion of studies assessed in full-text are presented in Appendix B. A flow chart illustrating each step within the search and selection process is shown in Figure 2.



**Figure 2.** Flow chart illustrating selection of studies for systematic review

### Inclusion and Exclusion Criteria

**Participants.** In line with recent legislative changes extending the age of young people with whom Educational Psychologists work<sup>2</sup>, children and young people aged from 4 to 25 years, attending a mainstream or special school and from either community or clinical populations, were eligible for inclusion. Participants who were accessing alternative provision, defined as ‘education outside school’<sup>3</sup> (Ofsted, 2016, p. 9) were not included. Participants drawn from populations with specific developmental or physical disorders or conditions (e.g. ADHD, ASD, migraine sufferers) were also excluded. Follow-up studies of adults who had shown SRB as youths, were considered to be of wider value but not direct relevance to the present review. Included studies were conducted in the continents of North America, Europe and Australia on the basis of educational, cultural and societal similarity with the UK.

**Study Design.** Studies were required to present original primary research; the use of secondary data sources within primary research was permissible. The review sought to investigate statistical associations and group differences in respect of SRB and anxiety, hence the requirement for quantitative research methodology. No stipulations were made with regard to the inclusion or nature of control groups. Studies were required to report whether SRB or attendance/absence data was obtained via child/adolescent- and/or parent-report, school records, or a combination of these sources. In addition, where applicable, studies needed to report either quantitative inclusion criteria for SRB, or absence profiles of SRB samples. Case studies, evaluative studies of SRB interventions and studies primarily investigating the psychometric properties of SRB assessment instruments were also excluded.

**Research Foci and Measures.** Studies that investigated SRB, school attendance, or constructs subsumed under or synonymous with these (see Appendix A), were included; those which explored related but distinct constructs, including ‘school reluctance’ and ‘school dropout’ were excluded. Absence/attendance rates, behavioural SRB categories (e.g. ‘school refuser’, ‘truant’) or SRB function scores/profiles needed to be deployed as outcome or predictor measures, as did anxiety. No stipulations were made regarding the type (e.g.

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<sup>2</sup> Part 3 of the Children and Families Act 2014 extended statutory protections for children and young people with special educational needs or disabilities up to the age of 25 years (DfE, 2015b)

<sup>3</sup> Alternative provision includes pupil referral units, college placements, private sector and voluntary projects and elective home education)

## EXPLORING ANXIETY, SLEEP AND SENSE OF BELONGING IN SRB

social, trait), aspect (e.g. cognitive, physiological) or clinical status (disorder or reported symptoms) of anxiety measured.

**Publication Requirements.** Studies were included if they had been written in English and published in a peer-reviewed journal; book chapters, unpublished dissertations and conference papers were therefore excluded.

**Date.** The statutory school leaving age in the UK was raised to 16 in 1972 (Clark & Royer, 2013); this was deemed to be an appropriate starting point for the review therefore studies published before this date were not included.

**Data Extraction.** Data was extracted from included studies pertaining to main objectives, key constructs, study design, sample characteristics, SRB/attendance/absence criteria and operationalisation, data analyses, measures and key findings. This data has been tabulated in Appendix C.

### Systematic Review Results

Included studies were organised in ascending order by year of publication (see Table 2 below); this was to facilitate ease of reference within the main body of the review and to provide a chronological record of the studies within Appendix C, elucidating developments in the literature over the past three decades.

### Organisation of the Review

The review begins with a comprehensive profile of the reviewed literature with respect to SRB terminology, geographical location, and sample and design characteristics. Key findings from the studies are then organised with reference to the specific aims of the review as set out above, and critically appraised in the light of their respective strengths and limitations. The findings of the review are summarised and the collective merits and shortcomings of the research literature are critically discussed. Finally, conclusions are drawn and implications for practice and future avenues for research are proposed, setting the context for the empirical paper which follows.

### Profile of Reviewed Literature

**SRB terminology.** There was considerable variation across studies with regard to SRB terminology, as well as semantic inconsistencies between studies in the use of the same

**Table 2.** Included studies in the review

Study Number	Author Name(s)	Year of Publication
1	Bools, Foster, Brown, & Berg	1990
2	Last & Strauss	1990
3	Southworth	1992
4	Berg, Butler, Franklin, Hayes, Lucas, & Sims	1993
5	Hayward, Taylor, Blair-Greiner, Strachowski, Killen, Wilson, & Hammer	1995
6	Bernstein, Massie, Thuras, Perwien, Borchardt & Crosby	1997
7	Corville-Smith, Ryan, Adams, & Dalicandro	1998
8	Hansen, Sanders, Massaro, & Last	1998
9	Egger, Costello, & Angold	2003
10	Brandibas, Jeunier, Clanet, & Fourasté	2004
11	Kearney & Albano	2004
12	Kearney	2007
13	Dube & Orpinas	2009
14	Hunt & Hopko	2009
15	Hughes, Gullone, Dudley, & Tonge	2010
16	Richards & Hadwin	2011
17	Ingul, Klockner, Silverman, & Nordahl	2012
18	Maric, Heyne, de Heus, Widenfelt & Westenberg	2012
19	Wood, Lynne-Landsman, Langer, Wood, Clark, Eddy, & Ialongo	2012
20	Ingul & Nordahl	2013
21	Vaughn, Maynard, Salas-Wright, Perron & Abdon	2013

terminology. SRB samples and groups were referred to as ‘school refusers’ (1,2,4,6,8,9,10,15,18), ‘truants’ (1,4,9), ‘absentees’ (3,7), or ‘skippers’ (21), or as having ‘school refusal behaviour’ (11,12,13) or ‘high absence’ (17,20). In studies that deployed absence/attendance as an outcome variable, terms included ‘school refusal’ (5), ‘truancy’ (14), ‘absenteeism’ (19) and ‘school attendance/non-attendance’ (16).

Distinctions between school refusal and truancy pervaded the literature. However, the operationalisation of these terms lacked consistency between studies. Most notably, school refusal identities were contingent on the absence of conduct problems in some studies (1,6,15,18), but not in others (2,4,5,8,9,10). The exclusion of youths with conduct problems from school refusal samples has therefore persisted in the research despite strong challenges



## EXPLORING ANXIETY, SLEEP AND SENSE OF BELONGING IN SRB

to its rationale. Greater inconsistencies were noted in definitions of truancy. Early studies defined truancy simply as absence of which parents were unaware (1,4). A later study adopted a broader definition, encompassing unauthorised absence or premature departure from school, or resistance to attending school which necessitated parental escortment to ensure arrival, and being unrelated to anxiety about separation or school. In subsequent studies, truancy was reduced to unauthorised absence (14, 21). Inconsistencies abounded since unexcused absence is not necessarily absence of which parents are unaware; nor is it necessarily absence unrelated to anxiety about separation or school. Also, parental unawareness of absence is not compatible with absence averted through parental escortment.

**Geographical location.** Studies were fairly evenly distributed between Northern America (57%) and Europe (38%), with one study (5%) undertaken in Australia. Most studies were carried out in the US (52%: 2,5,6,8,9,11,12, 13,14,19,21), followed by the UK (19%: 1,3,4,16) and Norway (10%: 17,20). One study each was conducted in Canada (7), France (10), Australia (15) and The Netherlands (18).

### **Sample characteristics.**

**Clinical versus community.** A third of the studies (2,6,8,11,12,15,18), had samples drawn from clinical populations of youths with SRB, who had been referred to mental health services. Three of these studies (2,15,18) incorporated non-clinical control groups.

**Age.** The mean age of clinical samples was 11.6 to 14.7 years (range 5-17 years). The mean age of community samples was 11.8 to 18.0 years (range 6 years - 21 years). The age range of two community samples (17,20) and the mean age of a further community sample (10) were above compulsory school age.

**Gender.** The gender of clinical samples ranged from 38 to 61% female. Two community studies were gender specific: one study investigated panic attacks in girls (5) and another included only one girl representing 2% of the sample (10). The remaining community samples ranged from 41 to 70% female. Overall, both clinical and community samples were balanced fairly evenly in respect of gender, consistent with the research consensus that gender differences in SRB have not clearly emerged (Baker & Bishop, 2015; Pellegrini, 2007).

**Sample sizes.** Sample size ranged from 42 to 17,482. The largest sample sizes ( $\geq 865$ ) were restricted to community studies, and represented one quarter of reviewed studies. A third of studies had sample sizes between 100 and 199 (1,2,3,4,5,11,16). Three studies each had a sample size less than 50 (6,10,15), between 50 and 100 (7,8,13) and between 200 and 399 (12,14,18). Clinical studies had smaller samples overall, but in

common with community studies, varied widely in this regard. Sample sizes were broadly adequate for the statistical analyses conducted.

### ***Socio-demographic profiles.***

*Ethnicity.* Ethnicity data was not reported in over a third of studies (1,3,4,7,10,15,17,20). Where the ethnic composition of samples was reported, four-fifths were predominantly White (2,6,8,9,11,12,13,14,16,18,19: range 68 to 96%) with the majority  $\geq 88\%$ . The literature did include more ethnically diverse samples (5,21) but overall it had limited generalisability to non-White populations.

*Socioeconomic status (SES).* The SES composition of samples was not reported in 38% of studies (3,4,5,7,13,15,16,18). Dimensions of SES included classification by social class indices (1: Registrar General I to IV; 2,6,8: Hollingshead I to V), level of parental education (9,14,17,19), prevalence of parental unemployment (10,17,20) and family income (9,11,12,19,21). Between-study comparisons were complicated by the heterogeneity of dimensions used and categorisation systems adopted by individual studies. Generally, samples were normally distributed around socioeconomic strata or were skewed towards high levels of impoverishment, but a small number were characterised by high levels of family income and parental education.

### ***Absence profiles.***

*Reporting issues.* Of the studies that did not deploy absence/attendance as an outcome measure (all but 5,14,16,19), over half did not report the absence profiles of their samples or did so partially (2,3,7,9,10,15,17,18,21). Of the ten studies that incorporated SRB and control groups (2,3,4,7,9,15,17,18,20,21) half did not report the absence profiles of either/any group (3,7,15,17,21). Moreover, in two of these studies, the absence criteria for the control group was not quantified (7) or not reported at all (15). Three studies reported the absence profile of the SRB group(s), but not the control group (2,9,18). Only two studies reported the absence profiles of both the SRB and control groups (4,20).

*SRB samples/groups.* Where reported, the mean rate of absence in clinical SRB samples ranged from 37 to 76% (2,6,8,11,12,18) and from 25 to 56% in community samples (1,4,20). Ranges were sparsely reported across studies. Two clinical studies reported minimum absence rates of 20% (2) and 13% (8). One community study reported a relatively high minimum absence rate of 40% (4). Three clinical studies (6,8,18) and one community study (4) reported maximum absence rates of 100%, representing total absence from school. CYP who are unable to attend school might make up a qualitatively distinct group, compared with those who are able to sustain some degree of attendance. The review highlighted that severity of absence in SRB varied widely across both clinical and community samples, though higher rates of absence overall were noted in clinical samples. Between-study

## EXPLORING ANXIETY, SLEEP AND SENSE OF BELONGING IN SRB

comparisons of absence rates were complicated by different reference periods for absence, given in weeks (1,6,8,18), months (9), terms (4,20), or unspecified (2,11,12). Additional variations as to whether absence data included all absences (1,2,6,8,11,12,20) or unexcused/unexplained absences only (4,18), and whether it was obtained from school records (1,4,11,18,20), via CYP-/parent-report (2), or a combination of these sources (6,8,12), further hindered comparability.

*Control groups.* Of the two studies that reported absence profiles for control groups, mean absence rates were 12% (range 0 to 39) in the earlier study (4) and 4% (normal anxiety-low absence)/6% (high anxiety-low absence) in the later study (20). Both studies obtained absence data from school records across one term, but the earlier study incorporated unexcused absence while all categories of absence were included in the later study. Of note, the mean absence rate of controls reported in the former study (12%), was higher than the current UK threshold for persistent absence of >10% set by central government (DfE, 2016a). Moreover, the maximum absence rate for the control group in the same study (i.e. 39%) was problematic, given that it exceeded the mean absence rates in two clinical SRB samples (11: 37%; 12: 38.%). Furthermore, unlike the community study, these clinical absence rates included all absences. In a later community study (17), the predefined threshold for ‘normal absence’ (<15%) was at variance with contemporary attendance targets and notions of problematic absence held by local authorities and schools in the UK, which have become considerably more stringent (DfE, 2016a).

### **Design characteristics.**

*Data.* One study had a longitudinal design (19); all other studies derived cross-sectional data. The majority of reviewed studies (86%), including all clinical studies, used primary data sources. Three studies presented analyses of secondary data from community samples (9,13,19).

*Informants.* Almost two-fifths of the studies (38%: 5,7,10,14,16,17,20,21) used data from CYP only. Both parents and CYP were informants in a further two-fifths (43%: 2,4,6,8,9,11,12,15,18). The remaining studies gathered data from parents only (1), CYP and Year Heads (3), CYP and social workers (13), and CYP, parents and teachers (19). While multiple informants were noted in the latter study, this was essentially an amalgamation of three separate data sets, which did not individually exceed two informant types.

### **Measures.**

*Structured clinical interviews.* These were undertaken in over half of the studies (1,2,4,5,6,8,9,11,12,15,18) to determine the presence and classification of psychiatric

disorders and school non-attendance problems. The interviews were conducted, where specified, by child/adolescent psychiatrists/psychologists (1,2,6,11,12,15) and/or graduates in psychology (5,6,11,12,18), using validated measures outlined in Table 3. One study used a bespoke semi-structured interview schedule, for which no psychometric validation was reported (1). Inter-rater agreement data was reported in fewer than half of the applicable studies (1,2,4,5,8).

*Questionnaires.* Four-fifths of the studies used standardised questionnaires (all but 1,2,5,9), either alone or in combination with clinical interviews (4,6,8,9,11,12,15,18) as shown in Table 4. Internal consistency coefficients for questionnaires derived from study samples were reported in less than half (47%) of applicable studies (7,13,14,15,16,17,19,20: range .62 to .97). In three studies, the internal consistency data provided did not relate to the study sample, but rather had been previously reported elsewhere (8,11,12).

### ***Operationalisation of absence.***

*Absence data source.* Absence data was obtained from official school records in two-thirds of the reviewed studies (1,3 4,6,7,10,11,13,14,15,16,17,18,20). Two studies obtained absence data via CYP-report (5,21). One study initially obtained data via school records which was subsequently confirmed by parents (6). A combination of CYP- and parent-report was used in almost a quarter (24%) of the studies (2,6,8,9,12); this data was corroborated by school personnel in one study (8), and in another, school records were only consulted in the context of discrepant parent and CYP reports (12). One longitudinal study incorporated three secondary data sets, two of which comprised absence data obtained via official records and the other via CYP-report (19).

*Reference period for absence.* Where specified, reference periods over which absence was measured varied considerably between studies, ranging from 2 weeks to one full academic year as follows: 2 weeks (18), 4 weeks/30 days (6,15,21), 5 weeks (8), 3 months (9), one term (4,17,20), two terms (3), and one full academic year (7,14,19). The reference period was not clearly specified in over a quarter of the studies (2,5,10,11,12,16). Two further studies had a variable reference period, reported as a mean of 12 weeks in one study (1) and determined by the referral date to the school social worker in a later study (15).

*Nature of absence.* Almost three-quarters (71%) of the studies included all absences (1,2,3,5,6,8,9,11,12,13,15,16,17,19,20); the remainder excluded ‘legitimate’ or ‘excused’ absences (4,7,10,14,18,21). One study (8) was exceptionally prescriptive in defining absence as time spent away from scheduled classes. This encompassed ‘variant forms of school absenteeism’ including time spent in other legitimate areas of the school (e.g. in guidance counselling) and also time spent in class accompanied by a parent; these behaviours were argued to demonstrate difficulties with functioning normally and independently in school. This operationalisation of absence not only departed significantly

**Table 3.** Validated structured clinical interview schedules used in reviewed studies

Schedule	Study Number(s) (kappa coefficient range) <sup>a</sup>
Anxiety Disorders Interview Schedule for Children – Child and Parent Versions (ADIS-C/P/ADIS-IV)	11, 12, 15, 18
Child and Adolescent Psychiatric Assessment (CAPA)	4, 9
Diagnostic Interview Schedule for Children Version 2.3 Child Form and Parent Form (DISC-C/P)	6
NIMH Diagnostic Interview for Children and Adolescents Revised – Adolescent Version & Parent Version (DICA-R-A/P)	6
Schedule for Affective Disorders and Schizophrenia for School-Age Children (Kiddie-SADS) (modified version)	2 (.81-1.00) <sup>b</sup> 5 (.66-1.00) <sup>c</sup> 8 (.66- .83) <sup>d</sup>
Structured Clinical Interview for DSM-III-R	5 (.79) <sup>e</sup>

*Note:* <sup>a</sup> Inter-rater agreement coefficients reported for sample. <sup>b</sup> Anxiety-based school refusal: 1.00; SAD: .81; social phobia: 1.00; simple phobia: 1.00; panic disorder: .83; overanxious disorder: .88; avoidant disorder: 1.00; major depression: .83. <sup>c</sup> School refusal: 1.00; questions regarding agoraphobic avoidance: .90; other questions: .66-1.00. <sup>d</sup> Phobic disorder: .66; SAD: .83; panic disorder: .64; overanxious disorder: .77; avoidant disorder: .77. <sup>e</sup> Presence of panic attack: .79.

from other studies, but was also contentious in the context of inclusive educational practice, which promotes and normalises the effective inclusion of CYP with a range of special needs in mainstream settings.

### Key Findings from the Literature

***Prevalence and type of anxiety disorder in SRB.*** One of the most salient findings to emerge from this review was that substantial proportions of children and young people presented with SRB in the absence of any psychiatric disorder. The proportion of such youths was greater in community samples, which ranged from one half to three-quarters (1,4,9) versus clinical samples, which ranged from one quarter to one third (11,12). One community study (9) highlighted that three-quarters of both ‘pure anxious school refusers’ and ‘pure truants’ did not present with any disorder, while this applied to just one tenth of ‘mixed school refusers’ (who demonstrated elements of both subtypes). This suggested that

**Table 4.** Standardised questionnaires used in reviewed studies

Questionnaire: Construct (if not explicit in title)	Study Number(s) (Cronbach's alpha) <sup>a</sup>
Boxall Test of School Anxiety	3
Child Behaviour Checklist (CBCL) (Parent Report): internalising and externalising behaviour problems	6, 12, 19 ('above .70')
Children's Automatic Thoughts Scale – Negative/ Positive (CATS-N/P)	18
Children's Negative Cognitive Error Questionnaire- Revised (CNCEQ-R)	18
Emotional Regulation Questionnaire for Children and Adolescents (ERQ-CA): Emotional regulation strategy	15 (.73-.88) <sup>b</sup>
Fear Survey Schedule for Children – Revised/ School Related (FSSC-R/ FSSC-R-SI)	8, 12
Multidimensional Anxiety Scale for Children (MASC): Major dimensions of anxiety symptoms	18
Revised Children's Manifest Anxiety Scale (RCMAS)	6, 12, 15 (.83)
School Refusal Assessment Scale Child Version and Parent Version/Revised (SRAS-C/P)/SRAS-R): Child-motivated functions of SRB	10, 11, 12, 13 (.74-.78) <sup>c</sup> , 16 (.75-.83) <sup>d</sup>
Screen for Child Anxiety Related Emotional Disorders (SCARED)	17 & 20 (.62-.94) <sup>e</sup>
Separation Anxiety Symptom Inventory (SASI)	10
Social Anxiety Scale for Children – Revised (SASC-R)	12
State Trait Anxiety Inventory (STAI)	10
State-Trait Anxiety Inventory for Children, Modified (STAIC-M)	8
State Trait Anxiety Inventory for Children – Trait Subscale (STAIC-T): Trait anxiety	12, 16
Strengths and Difficulties Questionnaire (SDQ): Emotional and behavioural difficulties	13 (.70-.82) <sup>f</sup>
Symptom Checklist-90-Revised (SCL-90-R): Symptom dimensions of anxiety	6
Teacher Report Form (TRF): internalising and externalising problems	19
What I Think and Feel: Social anxiety	7 (.78-.97) <sup>g</sup>
Youth Self-Report (YSR): Internalising and externalising Behaviours (self-report adaptation of CBCL above)	14 (.71-.95)

*Note:* <sup>a</sup> Internal consistency coefficients reported for sample. <sup>b</sup> Cognitive reappraisal: .88; expressive suppression: .73. <sup>c</sup> Positive reinforcement: .74; negative reinforcement: .78. <sup>d</sup> Modified three-factor model: 'negative affect': .83; 'social avoidance': .80; 'attention-seeking': .75. <sup>e</sup> Panic/somatic syndrome scale: .87; generalised anxiety scale: .88; separation anxiety scale: .74; social phobia scale: .85; school avoidance scale: .62; total SCARED: .94. <sup>f</sup> Emotional and behavioural difficulties scale: .82; prosocial behaviours scale: .70. <sup>g</sup> Reported range for all scales in study.

difficulties associated with both SRB categories in combination were most linked to psychopathology.

Two early classification studies reported that 14% and 19% of adolescents in community SRB samples met the diagnostic criteria for emotional disorders and anxiety/mood disorders respectively (1,4). The prevalence rates of primary diagnoses of

## EXPLORING ANXIETY, SLEEP AND SENSE OF BELONGING IN SRB

specific anxiety disorders in the reviewed clinical samples are shown in Table 5. In four out of five studies, separation anxiety disorder (SAD) was the most common primary diagnosis affecting between one-fifth and two-fifths of participants. In three out of four studies, the second most common primary diagnosis was social anxiety disorder (range: 4-38%). The prevalence of generalised anxiety disorder (GAD) as a primary diagnosis varied widely, being unrepresented in one sample and most prevalent in another. Lower rates of GAD as a primary diagnosis in SRB may be linked to high comorbidity with other anxiety and depressive disorders, as noted in the general population (Noyes, 2001). The prevalence of specific phobia was relatively unclear, while panic disorder was uncommon and post-traumatic stress disorder (PTSD) rare as primary diagnoses within these clinical samples of youth with SRB. The prevalence of comorbid psychiatric diagnoses ranged between 49 and 81%, which was comparable with comorbidity estimates among CYP in general (Rapee et al. 2009).

***Anxiety and absenteeism severity.*** In the present review, associations found between specific anxiety disorders and SRB severity were restricted to three clinical studies. The earliest of these (2) noted that ‘phobic school refusers’<sup>4</sup> had significantly higher levels of absenteeism than those with SAD. Two subsequent studies found that youths with SRB diagnosed with SAD showed significantly better rates of attendance than those without this diagnosis (6,8). A later study investigating the correlates of truancy in a national US sample (21), found that ‘moderate skippers’ were two times more likely than ‘non-skippers’ to report a ‘lifetime history of anxiety’ disorder. For ‘high-skippers’, the odds increased to two and a half times that of a non-skipper<sup>5</sup>. The study did not, however, provide any insights into the types of anxiety disorder that moderate and high skippers experienced.

With regard to self-report anxiety symptoms, one community study found a significant negative association between trait anxiety and school attendance (16). A later community study found that a range of anxiety symptoms were significantly associated with absenteeism severity (17). Youths who reported more GAD, SAD and panic/somatic symptoms were significantly more likely to have ‘high’ versus ‘no’ absence<sup>6</sup>. However, there was no significant association between absence and SAD symptoms. This result was consistent with the findings described above indicating better attendance rates among youths with SRB presenting with SAD, relative to those with other anxiety disorders.

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<sup>4</sup> In this study, ‘phobic school refusers’ was adopted as an umbrella category to include those with a primary diagnosis of either social or simple phobia (now termed ‘social anxiety disorder’ and ‘specific phobia’ respectively)

<sup>5</sup> In this study, ‘high-skippers’ referred to youths who had missed school without permission for four or more days over a 30-day period; ‘moderate-skippers’ had missed one to three days and ‘non-skippers’ had missed no days

<sup>6</sup> In relation to absence over one term: No absence: <1.5 days’ absence; Normal absence: ≥1.5 days’ absence and <13.5 days’ absence; High absence: ≥13.5 days’ absence

**Table 5.** Prevalence of specific anxiety diagnoses reported as primary diagnoses in clinical samples of children and adolescents with SRB

Study No. (N/n)	Mean Age of Sample	Anxiety Disorder <sup>a</sup> (%)						Prevalence of Comorbidity <sup>b</sup> (%)
		SAD	Social Anxiety/ Phobia	Specific/ Simple Phobia	GAD/ OAD	PD	PTSD	
2 (63)	13.5	38	30	23	-	6	3	71
8 (76)	11.9 (girls) 12.6 (boys)	29		54 <sup>c</sup>	5	7	-	53
11 (143)	11.6	22	4	4	11	1	-	49
12 (222)	11.7	22	13	5	13	4	-	NR
15 <sup>d</sup> (21)	13.4	33	38	Excl <sup>d</sup>	43	-	Excl <sup>d</sup>	81

*Note:* SAD = separation anxiety disorder; GAD = generalized anxiety disorder; OAD = overanxious disorder (OAD was essentially subsumed under GAD in the DSM-IV); PD = panic disorder; PTSD = post-traumatic stress disorder. NR = not reported. <sup>a</sup> Primary diagnosis. <sup>b</sup> Presence of more than one psychiatric diagnosis. <sup>c</sup> Social anxiety disorder (formerly 'social phobia') and specific phobia (formerly 'simple phobia') amalgamated as 'phobic disorder' in this sample. <sup>d</sup> Inclusion in this SRB sample required SAD, social phobia, GAD or PD as a primary diagnosis.

Associations between anxiety symptoms and absenteeism severity were found in three further studies. One study found that a non-clinical group of young adolescent girls who experienced panic attacks showed significantly higher rates of 'school refusal' than panic-free controls (5). A key methodological strength of this study was the allocation of three controls to every participant experiencing panic attacks, matched by ethnicity and pubertal stage, in addition to age and sex. This increased the validity of the findings, given the known positive correlation between panic attacks and age, the increased frequency of panic attacks after puberty (particularly in girls) and the potential for effects of ethnicity on the relationship between panic attack frequency and school refusal severity (Hayward et al., 1992; Kendall, Hedtke, & Aschenbrand, 2006).

Of further relevance to the physiological experience of anxiety in SRB, another study (6) found that a range of autonomic somatic complaints (i.e. headaches, dizziness and sweating) in a clinical sample of 'anxious-depressed' school refusers were associated with absenteeism severity, while respiratory and cardiovascular complaints approached significance ( $p \leq .08$ ). Given that illness remains the most common reason for authorised absence in the UK (DfE, 2016a), a key strength of this study was the inclusion of all absences rather than unauthorised absences only, in the measurement of absenteeism.

In a subsequent study, a negative association was found between fear and severity of absenteeism (while controlling for age) in a clinical sample of youths with 'anxiety-based' school refusal, indicating that lower levels of fear were associated with higher rates of absence (8). The researchers speculated that SRB may reduce fear and anxiety through



## EXPLORING ANXIETY, SLEEP AND SENSE OF BELONGING IN SRB

decreased exposure to the school context. However, theoretical frameworks in anxiety emphasise the role of avoidance for immediate escape, but an intensification of anxiety over time due to reduced opportunities to cope with fears and increased isolation from others (Friedberg, McClure, & Garcia, 2009). The researchers also hypothesised that children and adolescents who report higher levels of fear may be more worried about the ramifications of missing school, resulting in lower absence rates. In this way, high levels of overall fearfulness may drive school attendance upwards rather than downwards in some anxiety-disordered children.

By contrast, several studies have shown no association between anxiety symptomology and absenteeism severity. In the above-mentioned clinical study where somatic complaints correlated positively with absence, no association was found however between absenteeism and anxiety as measured by the RCMAS (6). Parallels were noted with a large-scale community study into predictors of truancy, which found that an ‘anxious/depressed’ symptom pattern had no association with unexcused absence, in contrast with ‘withdrawn/depressed’ and ‘somatic complaint’ patterns, which were linked to absence (14). A further clinical study found that absenteeism severity was not associated with school related fears, trait anxiety, social anxiety or total anxiety<sup>7</sup> (12). This was consistent with the findings of two earlier community studies that good attenders did not differ from poor attenders on school anxiety (3) or social anxiety (7). A non-significant negative trend was however noted between social anxiety and attendance ( $p=.075$ ) in the latter study.

One large longitudinal study (19) explored psychopathology (including anxiety and depression) and school absenteeism as reciprocal risk factors, whereby the presence of one factor leads to the emergence or worsening of the other factor over time. The study involved secondary analysis of one nationally representative and two regionally representative datasets, which together covered elementary, middle and high school student populations. Structural cross-lagged regression analyses were used to investigate reciprocal causal relationships between absenteeism and psychopathology. Some evidence was found to support psychopathology and absenteeism as reciprocal risk factors, to a greater extent during adolescence than childhood. But overall, notwithstanding the conservative statistical analyses deployed by the study, this evidence was modest. Methodological shortcomings arising from the use of secondary data also posed challenges to the validity of findings and their value in the context of the present review. The largest, nationally representative data set did not include any measures of anxiety (only depression) and moreover was reliant on CYP-report for measurement of both psychopathology and absenteeism. The two regional

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<sup>7</sup> This refers to ‘total anxiety’ as measured by the Revised Children’s Manifest Anxiety Scale (RCMAS) which constitutes three subscales: physiological anxiety, worry/oversensitivity and concentration

datasets did include anxiety measures but these were amalgamated with depression, which was problematic for the purposes of the present review. Moreover, one of these datasets did not incorporate any CYP-report measures of anxiety and depression (only parent and teacher report). The study nonetheless provided a good analytical template on which to base future longitudinal investigations into SRB and anxiety.

*Factors differentiating anxious high attenders from anxious low attenders.* One recent study investigated factors that distinguish anxious high attenders from anxious low attenders (20). Key findings were that anxious low attenders reported higher levels of social anxiety and more symptoms of panic/somatic syndrome than anxious high attenders (generalised and separation anxiety were not significant). Psychiatric severity<sup>8</sup>, behavioural problems and frequent narcotic usage were also higher among anxious low attenders than anxious high attenders (cannabis or alcohol usage, personality difficulties or depressive symptomology were not significant). Similarly, anxious low attenders reported more psychosocial difficulties than anxious high attenders in some areas (i.e. having fewer close friendships and being more likely to perceive their health as bad), but they did not differ from anxious high attenders in other areas (including resilience, negative life events, chronic illness, parental employment, or family economy). Surprisingly, anxious high attenders were less likely to report feeling treated with respect in school and more likely to report being bullied. These findings give rise to concerns about the psychological cost that anxious youths may be incurring through sustaining regular attendance in school. Finally, multigroup discriminant analysis was conducted in order to assess whether the four groups<sup>9</sup> could be distinguished by different combinations of the measured risk factors. Three discriminant functions were yielded, accounting for 85% of the between-group variability. Anxious low attenders differed from anxious high attenders in reporting higher levels of psychiatric, relational and personality problems (function 1), increased behavioural difficulty and substance abuse problems (function 2), and lowered levels of resilience and participation in leisure and exercise activities (function 3).

The conclusion of this research was that anxious low attenders have a greater ‘total symptom burden’ than anxious high attenders (Ingul & Nordahl, 2013, p. 6). While this study made an important contribution to the research literature, the findings have yet to be replicated. In particular, given that the sample was above compulsory school age, the

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<sup>8</sup> Psychiatric severity was derived by obtaining the sum of scales for which participants scored above the cut-off for a range of symptoms including depression, behavioural difficulties, substance abuse, hyperactivity and personality problems

<sup>9</sup> The study incorporated four groups: anxiety (high, low) x absence (high, low); the central focus of the investigation was to compare the high anxiety (low vs. high absence) groups, however the multigroup discriminant analysis included all four groups

generalisability of findings to younger children and adolescents, whose parents are legally bound to ensure their regular attendance in school, merits investigation.

***SRB and cognitive components of anxiety.*** Two studies investigated differences between clinical SRB groups and controls on cognitive-emotional regulation strategies, automatic cognitions and cognitive errors. Emotional regulation (ER) refers to how individuals monitor, evaluate, maintain and modify emotional experiences (Hughes et al. 2010). ‘Cognitive reappraisal’ refers to an adaptive ER strategy that modifies emotions via re-thinking negative situations, while ‘expressive suppression’ involves concealment of negative emotions from others, that focuses on modifying the outward appearance rather than the inner experience of negative affect (Gross & John, 2003). One study found that ‘school refusers’ demonstrated fewer cognitive reappraisal strategies and more expressive suppression ER strategies than controls (15). In a subsequent study, ‘school refusers’ reported significantly more automatic negative thoughts around social threat and personal failure, fewer automatic positive thoughts and greater engagement in the cognitive error of ‘overgeneralising’, than controls (18).

While these studies made a valuable contribution to the literature, important methodological shortcomings were noted. In the first study (17), while controls were clinically screened for anxiety and depression, an equally rigorous selection process was not reported for school attendance. Notwithstanding the stipulation for ‘school refusers’ to have  $\geq 50\%$  absence over the 4 weeks prior to assessment, neither the absence criteria for controls, nor the actual absence profiles for either group were reported. The absence of quantitative criteria and absence data for controls was also noted in the second study (21). These issues raised fundamental challenges for the validity of findings.

***Anxiety and behavioural classifications of SRB.*** Three community studies investigated the prevalence of anxiety disorders and symptoms in different behavioural classifications of SRB. In the earliest study reviewed, emotional disorders were reported to be present in half of ‘school refusers’ and a fifth of ‘mixed school refusers’<sup>10</sup>, but absent in all ‘truants’ and all youths in the ‘neither’ category<sup>11</sup> (1). A subsequent study reported a rather different pattern: anxiety/mood disorders were present in a third of school refusers and a quarter of youths classified as ‘neither’, but negligible (<5%) among ‘truants’ and absent in all mixed school refusers (4). Both studies incorporated community samples of similar size and age, with reasonably similar absence profiles<sup>12</sup>, and furthermore used the same SRB

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<sup>10</sup> ‘Mixed-school refusers’ showed elements of both ‘school refusal’ and ‘truancy’

<sup>11</sup> Adolescents in this category were classified as neither ‘school refusers’ nor ‘truants’

<sup>12</sup> In study 1:  $N=100$ , mean age = 14.0 years, mean absence over mean period of 12 weeks = 44%; in study (4):  $n=80$ , mean age = 14.8 years, mean absence over one term = 56%

classification system. However, the two studies differed methodologically in respect of sample selection, interview method and disorder classification system (Berg et al., 1993). Of particular significance, the earlier study, confined diagnosis of emotional disorder to adolescents categorised as ‘school refusers’, therefore categorisation as a ‘truant’ or ‘neither’ precluded diagnosis with an emotional disorder (1). In the absence of this diagnostic restriction in the later study, the prevalence of anxiety/mood disorders did not differ markedly between ‘school refusers’ and youths in the ‘neither’ category (4). This suggested that not only do ‘school refusal’ and ‘truancy’ regularly occur in the absence of an anxiety/mood disorder, but conversely that anxiety/mood disorders are commonly experienced by youths with SRB outside the contexts of ‘school refusal’ and ‘truancy’.

In a larger community study, behavioural classifications were explored as predictors of specific psychiatric disorders and anxiety symptoms (9). The results showed that after controlling for the effects of comorbidity, only SAD was significantly predicted by ‘pure anxious school refusal’. ‘Pure truancy’ was not predictive of any anxiety disorders, while ‘mixed school refusal’ predicted panic disorder in addition to SAD. In addition, ‘pure anxious school refusal’ was associated with a range of separation and school related fears and worries and somatic complaints (stomach aches and headaches), while ‘pure truancy’ was not associated with these symptoms. ‘Mixed school refusal’ was predictive of fewer separation and school related fears and worries than ‘pure anxious school refusal’, however corresponding odds ratios were substantially higher for these youths, as was the case for somatic complaints. These findings suggested that there was limited scope for the prediction of specific anxiety disorders based on behavioural classifications of SRB. Another key finding was the emergence of ‘mixed school refusers’ as a particularly vulnerable group, who showed increased odds of psychiatric disorders and anxiety symptoms. More fundamentally, the findings cautioned against the diagnostic assumptions which pervade particular behavioural classifications of SRB. It emerged from the uncorrected analyses (not controlling for comorbidity) that every SRB category was predictive of depression, conduct disorder and ODD, highlighting the potential for both emotional disorder and oppositional behaviour among all youths affected by difficulties with attending school. However, a key limitation of the study was the collection of absence data via CYP- and parent-report rather than school records. Also, no interrater agreement data with respect to accuracy of diagnoses was reported.

***Anxiety and functional classifications of SRB.*** The limitations of behavioural classification systems gave rise to the development of a functional model of SRB that classified youths by the primary factors maintaining the behaviour. This model proposed four functions of SRB as measured by The School Refusal Assessment Scale (SRAS) (Kearney & Silverman, 1993). Negatively reinforced functions of SRB (i.e. ‘avoidance of

## EXPLORING ANXIETY, SLEEP AND SENSE OF BELONGING IN SRB

negative affectivity-provoking objects or situations related to a school setting' and 'escape from aversive social or evaluative situations') involve the anticipation of threat and associated avoidance behaviours that are core features of anxiety (Barlow, 2002; Craske et al., 2009; Rapee, 2015). The 'pursuit of attention from significant others', though positively reinforced, is also likely to reflect safety behaviours associated with underlying anxiety. However, as the originators of the model point out, 'positive tangible reinforcement outside of school' stands apart from the other functions, insofar as it may be regarded as school absence that is not motivated by fear or anxiety (Kearney & Silverman, 1993).

Within the reviewed literature, SRB maintained primarily by negatively reinforced functions was more prevalent among a clinical sample of CYP (11: 37%) than a community sample (13: 0%). Some disparity was noted between these studies in the functional profile classification system<sup>13</sup>, resulting in a slightly increased likelihood of a negative reinforcement profile in the clinical study than the community study. Notwithstanding this variation, the findings were strongly indicative of a reduction in anxiety through 'avoidance' and 'escape' as the central maintenance factor for SRB among a greater proportion of youths accessing mental health services than those who are not. Moreover, youths with the highest clinical severity ratings in the clinical sample were significantly more likely to miss school in order to 'avoid stimuli that provoke negative affectivity'; lower clinical severity ratings were associated with positive reinforcement functions of SRB. Further support for a link between the severity of anxiety and the prominence of negatively reinforced functions was gained in two other studies. One community study found that state- and trait-anxiety were positively correlated with 'avoidance of school-related stimuli that provoke negative affectivity' (10). A subsequent clinical study also reported strong positive associations between various measures of anxiety<sup>14</sup> and both negative functions of SRB, while none of these anxiety measures were associated with the function of 'positive tangible reinforcement' (12).

A less expected finding was the higher prevalence of positively reinforced functions as primary motivations for SRB across both clinical (11:62%) and community samples (13:61%). This would suggest that most SRB is positively, rather than negatively reinforced. More specifically, the prevalence of 'positive tangible reinforcement' as a primary function

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<sup>13</sup> A 'mixed' profile in the clinical sample indicated an equal mean score on negatively and positively reinforced functions, while the equivalent 'multiple profile' in the community sample indicated a difference in mean scores between negatively and positively reinforced items of  $\leq 0.5$ , therefore cases where mean scores for negatively reinforced items exceeded mean scores for positively reinforced items by up to 0.5, this would be assigned to the 'multiple' profile category in the community sample but to the 'negative reinforcement' profile in the clinical study. Note: 1% of the clinical sample had a 'mixed' profile while 17% of the community sample had a 'multiple' profile

<sup>14</sup> These included symptoms of anxiety as measured by the RCMAS, fear as measured by the FSSC-R, social anxiety as measured by the SASC-R and trait anxiety as measured by the STAIC (see Table 4)

of SRB in both clinical (11:34%) and community samples (10:91%) would suggest that anxiety does not, at least on a conscious or declarative level, play a central role in maintaining SRB for many youths within this population. It should however be noted that in the latter community study (10), the majority of the sample were above compulsory school age (mean age=18.0 years; range=14 to 21). Therefore, the saturation of ‘positive tangible reinforcement’, within this sample may be partly attributable to having the statutory freedom to forego school in preference for other activities. On a more general note, it is plausible that this particular SRB function is susceptible to social desirability effects, such that youths may more readily report a preference for activities outside school, than concede to behaviours that involve ‘avoidance’ and/or ‘escape’ from school-related stimuli or experiences (Brandibas et al., 2004). At the same time, this could account for the relatively low prevalence of negatively reinforced functions as primary motivations for SRB, particularly ‘escape from aversive social or evaluative situations’ which was just 6% in the above-mentioned clinical sample (11).

Two studies investigated functions of SRB as potential mediators of the relationship between anxiety and absenteeism severity. One clinical study (12) found that all four functions of SRB mediated the relationship between various forms of anxiety (see footnote 14) and absenteeism severity. These findings were reinforced in a subsequent community study, where the factor structure of the SRAS-R was assessed, yielding three factors, labelled ‘negative affect’, ‘social avoidance’ and ‘attention-seeking’ (16). Consistent with the findings of the clinical study, the relationship between trait anxiety and school attendance was mediated by ‘social avoidance’ and ‘attention-seeking’.

Associations between specific anxiety disorders and functions of SRB were explored in an earlier clinical study (11). Separation anxiety disorder was found to be significantly more prevalent in youths primarily in ‘pursuit of attention from significant others.’ This was the only specific anxiety disorder for which the distribution across SRB functions significantly differed. This finding suggested that in common with behavioural taxonomies, there was limited scope for the prediction of specific anxiety disorders by functional classifications of SRB.

## Discussion

### Summary of Review Findings

The purpose of the present review was to systemically appraise the research literature as to the extent to which anxiety has been established as a risk factor for SRB. The research consistently found that sizeable proportions of children and young people with SRB did not meet the criteria for any psychiatric diagnosis, suggesting that anxiety and other psychiatric disorders are associated, but not synonymous with difficulties attending school.

## EXPLORING ANXIETY, SLEEP AND SENSE OF BELONGING IN SRB

Emotional disorders were found to affect around one fifth of adolescents with SRB in two community studies. Diagnostic heterogeneity was noted within both clinical and community samples. Within the former, SAD, social anxiety disorder, GAD and specific phobia were most prevalent as primary diagnoses, while panic disorder and PTSD were uncommon and rare respectively. Specific anxiety disorders demonstrated very limited predictive power for absenteeism severity, beyond modest evidence linking SAD with better attendance than other anxiety disorders. Mixed findings emerged as to associations between reported anxiety symptoms and absenteeism severity. Somatic symptoms of anxiety consistently showed negative associations with school attendance. There were otherwise no clear patterns arising as to the types of anxiety or sample (i.e. clinical versus community) that would seem to make the presence or absence of an association more likely. Moreover, the direction of significant associations was not invariably positive; in one study, higher levels of fear were associated with lower levels of absence. Differences between clinical SRB samples and non-clinical controls on cognitive components of anxiety were more consistent with anxiety as a risk factor for SRB. The findings from these two studies together suggested that youths with SRB are more likely to experience negative automatic cognitions, to ‘overgeneralise’ in a negative manner, and to engage in emotional suppression as a maladaptive emotional regulation strategy. Evidence for reciprocal longitudinal influences between anxiety and absenteeism was found in one study. However, this hypothesis was only partially supported by the results and methodological shortcomings presented limitations for the validity and value of the findings in the context of the present review.

Behavioural classification of children with SRB as ‘truants’ or ‘school refusers’ was shown to be been largely unfruitful in terms of informing effective assessment and treatment strategies. The review indicated that there is limited scope for the prediction of specific anxiety disorders, or even more fundamentally, the absence or presence of psychopathology, from ‘school refuser’ or ‘truant’ identities. Arguably, the most valuable contribution of this line of research has been to illuminate ‘mixed school-refusers’, whose difficulties are compatible with both identities, to be particularly at-risk within SRB populations. The literature suggests that psychiatric disorders are highly prevalent within this group, offering support for anxiety as an important if not central risk factor for SRB in more complex cases.

The functional model of SRB facilitated explorations of the role played by anxiety in motivating and maintaining difficulties with attending school. Negative reinforcement profiles were found to be more prevalent in clinical than community SRB samples. This was in keeping with the expectation that SRB would be centrally motivated around reducing anxiety via avoidance and/or escape behaviours to a greater extent in youths whose level of difficulty had provoked mental health services involvement, than in youths drawn from the normal population. It would in fact seem reasonable to expect that the difficulties experienced within clinical samples would be almost synonymous with negatively reinforced

functions of SRB. This was at odds however with the findings of the present review, which suggested that the majority of SRB, within both clinical and community samples, is positively reinforced, predominantly through engagement in preferred activities outside of school. Overall, it would therefore seem that anxiety plays a limited functional role in SRB. However, this may be apparent rather than real. The potential for social desirability effects in CYP responses on the SRAS would seem to warrant further investigation. Alternatively, it could be that most youths with SRB have more conscious awareness of feeling ‘pulled’ towards something outside school, than ‘pushed’ away from something within school, notwithstanding the potential significance of underlying anxiety.

Not unexpectedly, a diagnosis of SAD was associated with the ‘pursuit of attention from significant others’ as a primary function of SRB. It was unclear however, why diagnoses of social or generalised anxiety disorder were not likewise associated with ‘escape from aversive social or evaluative situations’ nor specific phobia associated with ‘avoidance of stimuli provoking negative affectivity’. Reported inconsistencies in the factor structure of the SRAS (Richards & Hadwin, 2001), which was invariably used to measure functions of SRB, may have accounted for these anomalies to some extent. An important finding in later studies was that functions of SRB mediated the relationship between reported anxiety and absenteeism severity, suggesting that this relationship may be better understood with reference to the nature and strength of the motivations behind SRB.

An investigation into the factors which distinguished anxious youths with high and low absence, directly highlighted that experiencing anxiety does not invariably give rise to the development of SRB. With reference to the theoretical framework informing the present review, anxious youths who have not developed SRB may be construed as demonstrating resilience through positive adaptation, i.e. sustaining regular school attendance. Support was gained by this study for the notion of risk factors aggregating over time, such that SRB becomes more likely in the context of severe difficulties in multiple domains, much in keeping with the vulnerabilities of ‘mixed school refusers’ described earlier. However, the experiences of anxious youths with high absence were not invariably more negative than those with low absence. The unexpected finding that anxious high attenders reported feeling less respected and being bullied more frequently in school, would suggest that in some respects, sustaining regular attendance may not necessarily reflect positive adaptation, but may itself incur psychological costs that contribute to adversity, by increasing exposure to anxiety. This was a highly significant point of reflection that challenged initial assumptions about the nature of the interplay between anxiety and SRB.

### **Strengths and Limitations of the Literature**

The main strengths of the reviewed literature rested in the diversity of investigative approaches to exploring the interplay between anxiety and SRB and the conceptual



## EXPLORING ANXIETY, SLEEP AND SENSE OF BELONGING IN SRB

progression in understandings of SRB demonstrated over time. Included studies permitted explorations of cognitive, physiological and behavioural components of anxiety in the context of SRB. The literature considered a range of reported anxiety symptoms and disorders, in youths with SRB drawn from clinical and community populations. Conceptual advances in the research have been made over the past three decades, which have involved a shift from locating SRB ‘within the child’ and attempting to achieve neat classification of presenting difficulties, towards making broader considerations of contextual factors and embracing the complexities of this population. In particular, the development of a functional model of SRB marked a significant turning point in the literature, bringing the research focus closer to the personal constructs of the child in relation to SRB, and the interaction between individual motivations and wider environmental factors in the maintenance of SRB.

Notwithstanding these strengths, the reviewed literature was compromised by terminological inconsistencies, methodological shortcomings and reporting issues, bearing out the realities of poor comparability between studies investigating SRB, to which a number of commentators have recently referred (Ingul, Klockner, Silverman, & Nordahl, 2012; Kearney, 2008a; Pellegrini, 2007). Definitions of ‘truancy’ in particular varied widely, and in some instances, were incompatible as well as disparate. Tensions also persisted around the inclusion or exclusion of youths with behavioural difficulties from ‘school refusal’ samples.

Comparability between studies was further hampered by substantial inconsistencies in the operationalisation of absence. Firstly, absence data obtained via CYP-report rather than school records, was susceptible to inaccuracies of recall and social desirability effects, as was combined absence data from youths and parents, though arguably to a lesser extent. Secondly, absence reference periods were highly variable across studies. In addition to comparability issues, short reference periods reduced the validity of findings, given that the shorter the reference period, the less representative the data of participants’ typical attendance pattern. Thirdly, studies that incorporated unexcused/unauthorised absence were problematic, given both the inherent difficulties with achieving objective and meaningful differentiation between excused and unexcused absence (McCluskey, Bynum, & Patchin, 2004) and the reality that no such distinction is made in the educational, social and psychological impact of chronic absence on CYP (Bruner, Discher, & Chang, 2011). Quantitative demarcations between problematic and unproblematic levels of absence were also highly inconsistent between studies. This was reflected for example, by the observed overlap between levels of absenteeism seen in two clinical SRB samples, and ‘normal’ levels of absence observed in a control group elsewhere. Studies adopting relatively liberal parameters for ‘normal’ absence, ran the risk of underestimating or obscuring risk factors for SRB by statistically treating youths displaying SRB, as controls.

A significant proportion of the studies did not report the absence criteria and/or profiles of SRB and control groups. These were significant omissions which undermined

comparability between studies and confidence in findings by not making explicit in quantitative terms, the severity of absence in SRB samples and/or the degree to which SRB groups differed from control groups on this fundamental distinguishing variable. Confidence in the conclusions drawn from both studies that investigated cognitive components of anxiety in SRB was reduced by these reporting issues. Across the literature as a whole, additional reporting issues were noted in respect of interrater agreement data for clinical interviews and internal consistency data for questionnaire measures, thus further reducing the empirical weight of findings. Finally the ethnic and socioeconomic composition of samples was not reported in a large proportion of the studies, raising uncertainties as to the demographic generalisability of findings. Reported ethnic compositions indicated limited generalisability to non-White populations.

A further major limitation of the literature was that studies were almost entirely cross-sectional in their design. Therefore, in the strictest sense, evidence of anxiety as a risk factor for SRB in the present review was speculative, pending further longitudinal research to establish causal pathways. Finally, a potentially important gap in the reviewed literature related to the absence of any studies which incorporated physiological measures of anxiety. Despite a sizeable body of research that has investigated heart rate variability in anxiety disordered individuals (Chalmers, Quintana, Abbott, & Kemp, 2014), the reviewed studies were limited to the use of self-report measures. The inclusion of physiological measures of anxiety may offer valuable additional insights into how anxiety interfaces with SRB.

### **Conclusions and Implications for Practice and Future Research**

Informed by a theoretical framework of risk and resilience, some support was gained in the present review for anxiety as a risk factor for SRB. However, the review also presented some challenges to the conceptualisation of regular attendance as a positive adaptation to anxiety, and hence a demonstration of resilience. There was a suggestion that in some cases, fear and anxiety may motivate rather than frustrate regular attendance, but in ways that maintain and perpetuate anxiety rather than manage and alleviate it. This added a layer of complexity to the interplay between SRB and anxiety by highlighting that while anxiety is likely to impair emotional wellbeing and experiences in school, it may not invariably function as a risk factor for SRB, and in some cases, may even have the effect (though not the adaptive characteristics) of a protective factor in helping to sustain regular attendance. In acknowledgement of this complexity, it is important that the difficulties and needs of anxious students who sustain regular attendance in school are not overlooked due to intuitive assumptions that their high attendance level in school demonstrates positive adaptation and implies resilience.

Overall, anxiety emerged from the review as a significant risk factor for SRB in some cases, but not as an overall or central explanation for CYP experiencing difficulties

## EXPLORING ANXIETY, SLEEP AND SENSE OF BELONGING IN SRB

with attending school. Further research is required in this area to both consolidate and extend the existing literature. In addition to the growth of longitudinal designs, there is a need for future studies to investigate the importance of anxiety as a risk factor for SRB relative to other risk factors, and to explore how anxiety might interact with these factors, in order to develop integrated multifactorial modelling of risk in SRB. Moving forward, it is vital that future research works towards building greater comparability between studies and increasing the generalisability of findings by addressing the limitations of the literature highlighted by the present review. The inclusion of physiological measures of anxiety in study designs is also a potentially fruitful avenue for future research.

The present review has served to highlight the diagnostic, behavioural and functional complexities of SRB and the imprudence of attempting to define, assess and respond to this heterogeneous population with reference to any one of these classification systems in isolation. The principle of ‘equifinality’ within developmental psychopathology, which refers to a ‘diversity of pathways’, leading to the same outcome (Cicchetti & Rogosch, 1996, p.597), provides a valuable frame for understanding the aetiological complexities of SRB and rising to the challenges this presents for effective assessment and intervention. As Kearney (2007, p. 59) argued, it is important that CYP experiencing difficulties with attending school are taken through comprehensive assessment processes which consider motivational functions as well as behavioural forms of SRB, so that the quality and breadth of information gathered will support highly individualised and effective intervention plans. Behavioural ‘forms’ of SRB should be broadly interpreted to include cognitive, emotional and physiological processes impacting on attendance, which may or may not be anxiety-based. These individual factors should be considered in the context of wider influential factors within the CYP’s family, peers, school, and community, as per Kearney’s (2008a) model of school absenteeism (see Figure 1). Educational Psychologists are well placed to work with children, families, schools and other professionals at individual, systemic, research and policy levels to develop understandings of the needs of this population and to devise, evaluate and disseminate effective responses to SRB.

## **Chapter 2: Empirical Paper**

**A preliminary exploration of physiological arousal, sleep and sense of belonging in young adolescent girls who report elevated anxiety and show school refusal behaviour**

Word Count: 9,898



## Introduction

School refusal behaviour (SRB) refers to difficulties with attending or remaining in school for the full day (Kearney & Silverman, 1993). It is estimated to affect between 1 and 5% of school-aged children in the UK (Pellegrini, 2007). SRB is an umbrella term, drawing together constructs which have historically distinguished between the anxious ‘school refuser’ and the defiant or disinterested ‘truant’. (Kearney, 2003; Kearney, 2008a). While these constructs have continued to pervade the literature, the field has moved forward in recognising the emotional, behavioural, diagnostic and motivational heterogeneity of CYP who are classified in the same way. Moreover, it is increasingly acknowledged that chronic absence from school, whether deemed ‘legitimate’ or not, is detrimental to educational, social and psychological outcomes for CYP (Bruner et al., 2011; Kearney, 2008a; King & Bernstein, 2001). Established links between SRB and eventual school dropout render SRB a strong risk factor for negative outcomes in core life domains including educational achievement, employment, relationships and mental health (Alexander, Entwisle, & Kabbani, 2001; Gresham et al., 2013; Kogan, Luo, Murry, & Brody, 2005). Given its seriousness and prevalence, developments in the understanding, assessment and management of SRB remain key priorities for educational and clinical policy, research and practice.

## Risk and Resilience

Resilience is demonstrated by individuals through ‘positive adaptation’ in the face of ‘significant threat’ or ‘severe adversity’ (Luthar et al., 2000, p. 543). Resilience thus accounts for individual variations in functioning and adaptability in the context of exposure to risk factors for adverse outcomes (Fletcher & Sarkar, 2013). Risk and resilience offer a useful theoretical framework for exploring, interpreting and responding to adversity associated with SRB (i.e. risk factors). Kearney’s (2008a) interdisciplinary model of problematic absenteeism reflects the range and complexity of risk factors that have hitherto been associated with SRB in the literature which include child, parent, family, peer, school and community factors. This model has parallels with the complex interaction of individual and environmental layers purported to impact on child development more broadly in Bronfenbrenner’s Bioecological Systems Theory (Bronfenbrenner & Morris, 1998).

## Exploring Risk Factors for SRB

**The role of anxiety.** The empirical case for anxiety as a risk factor for SRB is well established; research has consistently shown that anxiety and broader psychopathology are more prevalent in children and adolescents who show SRB than those who do not (Egger et al., 2003; Ingul et al., 2012; Kearney, 2008a; McShane, Walter, & Rey, 2001; Wood et al., 2012). However, a number of studies have found that substantial proportions of youths

## EXPLORING ANXIETY, SLEEP AND SENSE OF BELONGING IN SRB

presenting with SRB, including up to three-quarters of those classified with ‘school refusal’, do not meet the criteria for any anxiety or psychiatric disorder (Berg, et al., 1993; Bools et al., 1990; Egger et al., 2003). Where psychopathology is present, substantial diagnostic heterogeneity has been observed among ‘school refusers’ and ‘truants’, with considerable overlap noted between the groups (Egger et al., 2003; Ingul et al., 2012; Kearney, 2007; Kearney, 2008a). Moreover research has shown that the presence of anxiety is not synonymous with the development of SRB, as many youths with elevated symptoms of anxiety or an anxiety disorder, maintain regular school attendance (Egger et al., 2003; Ingul et al., 2012; Ingul & Nordahl, 2013). In support, research into links between anxiety and absenteeism has yielded mixed findings, with significant associations found in some studies (e.g. Ingul et al., 2012; Richards & Hadwin, 2011; Vaughn et al., 2013) but not in others (e.g. Corville-Smith et al., 1998; Kearney, 2007; Southworth, 1992). Furthermore, significant associations between anxiety and absenteeism have not been invariably positive: among a sample of clinical children with ‘anxiety-based school refusal’, lower levels of fear (as assessed by the FSSC-R) were associated with higher levels of absenteeism (Hansen et al., 1998). Overall, while anxiety holds a central role in historical and current conceptualisations of school refusal, it has not consistently emerged from the literature as a primary risk factor for SRB as an inclusive construct that refers to difficulties with attending school.

Further examination of the interplay between anxiety and SRB requires exploration of factors which distinguish anxious youths with SRB from anxious youths who sustain regular school attendance. To date, only one Norwegian study has compared these populations (i.e. Ingul & Nordahl, 2013). The sample in this study was evenly balanced by gender but past compulsory school age, ranging from 16 to 21 years. The main conclusion drawn from this research was that anxious high attenders have more severe difficulties in multiple domains, than anxious low attenders. Specifically, they reported significantly more severe social anxiety and symptoms of panic/somatic syndrome, had greater psychiatric complexity and severity, and experienced significantly more psychosocial problems, including having fewer close friendships and holding poorer perceptions of their own health. Interestingly, however, anxious high attenders reported not feeling respected in school and being bullied with significantly greater frequency than anxious low attenders, indicating that the experiences of anxious high attenders were not unanimously more positive. Overall however, these findings suggested that the adversity experienced by anxious low attenders, associated with both anxiety and wider environmental factors is of greater severity and complexity than the adversity to which anxious high attenders are exposed. This possibility implies that the difference between the groups may essentially lie in the degree of adversity to which they are exposed, rather than the extent to which they demonstrate resilience through their respective attendance rates. The present study sought in part, to explore whether these findings could be replicated in a UK sample of young adolescent girls.

**Potential roles for sleep and sense of belonging.** Sleep and sense of belonging in school were secondary foci in the present study. They were included in order to extend explorations of potential differences in the nature and severity of adversity experienced by anxious youths presenting with SRB compared with those maintaining high attendance.

***Sleep.*** Sleep is a fundamental physiological human need, and sleep disturbance is known to impact detrimentally on cognitive, behavioural, affective and social functioning, as well as general physical and mental health and wellbeing (Astill, van der Heijden, van Ijzendoorn, & van Someren, 2012; Chorney et al., 2008; Delaney, 2016). Research has highlighted a significant degree of comorbidity between anxiety and sleep disorders in children (Chorney, Detweiler, Morris, & Kuhn, 2008; Iwadare et al., 2015). Despite strong links with anxiety and functioning, sleep has been sparsely investigated as a risk factor for SRB. In a large community study, all purported categories of SRB under investigation, namely ‘pure anxious school refusal’, ‘pure truancy’ and ‘mixed school refusal’ (a combination of both school refusal and truancy), were associated with significantly higher rates of sleep difficulties, relative to ‘non-school refusers’ (Egger et al., 2003). Subsequent studies have yielded mixed findings with respect to relationships between specific sleep parameters and school attendance (Hysing, Haugland, Stormark, Boe, & Sivertsen, 2015; Pasch, Laska, Lytle, & Moe, 2010). Reported gender differences in the relationships between sleep patterns and absence have indicated that sleep may be more strongly associated with school absenteeism in boys (Pasch et al., 2010; Sivertsen et al., 2013). Current empirical support for an association between sleep and SRB is therefore particularly limited for girls and warranted further investigation in the present study.

***Sense of belonging.*** Sense of belonging or ‘connectedness’ is a multidimensional construct which is broader than perceptions of being liked; it also refers to the extent to which an individual feels accepted and respected for who they are, as well as included and supported by others in their social sphere (Baumeister & Leary, 1995; Goodenow, 1993; Osterman, 2000; Sari, 2015). Like sleep disturbance, poor sense of belonging in school has been linked with higher levels of negative affect including anxious symptomatology (Shochet, Smith, Furlong, & Homel, 2011). It has also been associated with reduced motivation and achievement in school (Anderman & Freeman, 2004). Despite strong theoretical and empirical grounds for exploring school belonging as a risk factor for SRB, so far research has been limited to examining related constructs such as social acceptance, popularity and school perceptions (Corville-Smith et al. 1998; Schwartz, Gorman, Nakamoto, & McKay, 2006) or has tapped unidimensional aspects of belongingness such as participation in extra-curricular school activities, using brief, unvalidated measures (Henry & Huizinga, 2007; Hunt & Hopko, 2009; Ingul et al., 2012; Ingul & Nordahl, 2013; Vaughn et



al., 2013). The present study sought to explore school belonging in adolescents with SRB, using a validated instrument to measure the construct directly and in its entirety.

### **Physiological measurement of anxiety and sleep**

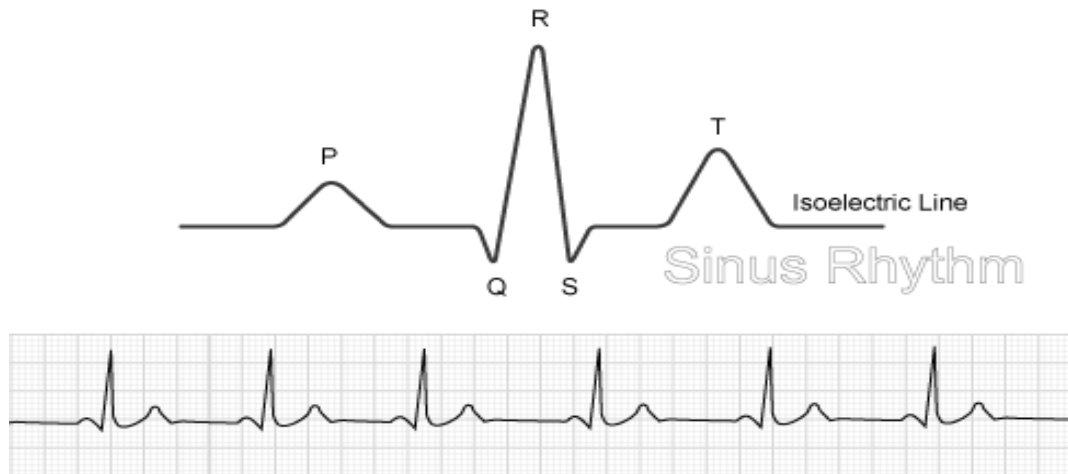
Empirical explorations of anxiety and sleep in SRB populations have invariably deployed self-report measures (i.e. questionnaires and structured interviews). The present study aimed to make a novel contribution to the literature by assessing these constructs using objective physiological measures in conjunction with self-report measures as follows:

*Physiological arousal as a proxy for psychological stress.* Human emotions are associated with varying levels of physiological arousal (Levensen, 2003). Heart rate variability (HRV) refers to the variation in time intervals between heart beats, and is an index of physiological arousal mediated by the autonomic nervous system (ANS) (Kemp, Quintana, Felmingham, Matthews, & Jelinek, 2012). HRV has become widely established as a psychophysiological indicator of mental and physical health and wellbeing (Chalmers et al., 2014), and has been emerging more specifically as a marker of emotional regulation capacity, linked with autonomic responsiveness to changes in the environment (Appelhans & Luecken, 2006; Thayer, Ahs, Fredrikson, Sollers III, & Wager, 2012). Changes in HRV are understood to reflect alterations in the balance between autonomic activity in the two branches of the ANS: the sympathetic nervous system (SNS) and the parasympathetic nervous system (PSNS: see Appendix D). Reductions in HRV ensue from either decreased activity in the PSNS or increased activity in the SNS, associated with increased physical or psychological stress. In a healthy system, the ANS maintains homeostasis by balancing the autonomic activity within each branch, resulting in high HRV overall. Reduced resting-state HRV, understood to reflect relative autonomic rigidity and reduction in vagal nerve activity, has been consistently observed in adults with anxiety disorders (Chalmers et al., 2014), and has also been linked with chronic worry (Brosschot, van Dijk, & Thayer, 2007; Thayer, Friedman, & Borkovec, 1996).

Indices of HRV are derived from analysis of continued heart rate, commonly detected using electrocardiogram (ECG: see Figure 3 and Appendix D). Both ‘time-domain’ and ‘frequency domain’ measures of HRV quantify the variation in R-R intervals.<sup>15</sup> High frequency (HF) power is understood to reflect PSNS activity, while low frequency (LF) power is understood to reflect both PSNS and SNS activity, but is more controversially

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<sup>15</sup> Time-domain measures are based on the time interval between successive normal complexes, while frequency-domain measures partition the variance (power) of R-R intervals into frequency components;



**Figure 3.** ECG trace showing normal heart rhythm (sinus rhythm)

*Note:* The heart consists of two upper chambers (atria) and two lower chambers (ventricles); contraction of the atria is associated with the 'P' wave; subsequent depolarisation of the ventricles is represented by the 'QRS' complex; the 'T' wave is associated with repolarisation of ventricular mass, i.e. return to resting electrical state (Hampton, 2008).

purported to reflect sympathetic autonomic dominance; the LF/HF ratio is therefore a debated measure of sympatho-vagal balance (Billman, 2013; Herbert & Gaudiano, 2001).

***Estimation of sleep/wake rhythms using actigraphy.*** Actigraphy determines wake and sleep rhythms based on motor activity, and is regarded as a convenient, cost-effective physiological measure of sleep quality and quantity (Ancoli-Israel et al., 2003). Though not as accurate as polysomnography, research has shown actigraphy to be more reliable than sleep logs, and to have particular benefits in child research studies due to the facility to record multiple nights continuously (Ancoli-Israel et al., 2003; Astill et al., 2012). Actigraphy is described as a well validated instrument for estimating total sleep time, sleep percentage (efficiency) and 'wake after sleep onset', but reported to be less effective in the estimation of sleep onset latency (Martin & Hakim, 2011).

### **Aims of the Study**

Couched in a theoretical framework of risk and resilience, the central aim of the present study was to extend the research undertaken by Ingul & Nordahl (2013) by exploring factors that differentiate anxious adolescent girls with SRB from those with high attendance levels. A secondary aim was to enhance assessment of anxiety, other psychopathological symptoms, sleep and sense of belonging via self-report measures, with objective physiological measurement of arousal and sleep. Clinical and lifestyle covariates of physiological arousal and sleep are known to include body mass index, pubertal development stage, levels of physical activity, consumption of coffee and alcohol and cigarette smoking, in addition to age and sex (Astill et al., 2012; Singh et al., 1999). These characteristics were measured in order to flag any group differences that may have potentially impacted the

## EXPLORING ANXIETY, SLEEP AND SENSE OF BELONGING IN SRB

group comparison analyses on physiological measures. This explorative pilot study advanced the following hypotheses:

- 1) Anxious adolescent girls with SRB would report significantly higher levels of psychopathological symptoms and poorer sleep, than anxious adolescent girls with high attendance.
- 2) The SRB group would report a stronger sense of belonging in school than the control group<sup>16</sup>
- 3) Any group differences observed in physiological measures of stress and sleep, would favour the high attendance group, i.e. the SRB group would exhibit poorer sleep, and reduced HRV.
- 4) Any within-participant effects of weekday on physiological measures of stress and sleep would indicate reduced HRV on Monday versus Friday and poorer sleep on Sunday night versus Thursday night; a main effect of weekday would be observed either across the sample or in the SRB group only.

### Method

#### Design

A cross-sectional design was used to explore physiological arousal, sleep, psychopathology and sense of belonging in a small community sample of young adolescent girls attending mainstream secondary school and reporting elevated anxiety. Further to an initial screening process, all data for the main study was collected over a period of one academic term. All outcome measures were analysed between-participants by group (students showing SRB versus controls sustaining regular school attendance); sleep actigraphy and physiological arousal measures were also analysed within-participants by weekday (Sunday night versus Thursday night and Monday versus Friday respectively). Power calculations were precluded by the absence of comparable research on which to base expected effect sizes. The likelihood of reduced power, given the small sample size within this preliminary pilot study, was however acknowledged.

#### Participants

**Screening sample.** Initial screening for eligibility to participate in the main study was undertaken using the generalised anxiety (GA) subscale of the Spence Children's Anxiety Scale (see Measures). Seventy-eight percent (139 out of 178) of girls registered in

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<sup>16</sup> This hypothesis was based on the finding of Ingul & Nordahl (2013) that anxious high attenders were more likely than anxious low attenders to report not being treated with respect in school

Years 8 and 9 of an average-sized secondary academy in the South East of England, participated in screening. Of these, 64% (89) were in Year 8 and 36% (50) were in Year 9. Due to an administrative error, one Year 9 tutor group comprising 10 girls, did not take part in screening. Other students who did not proceed, either (in unknown quantities), declined to do so, did not have parental consent, or were absent from school on the day that screening was conducted. The attendance rates of the screening sample did not differ significantly from those students who did not take part in screening.

**Participant recruitment to main study.** Eligibility to participate in the main study was met in the first instance by elevated anxiety levels, indicated by a score of 9 or above on the GA subscale of the SCAS-C during screening. On this basis, a total of 53 students (28 Year 8s and 25 Year 9s) were invited to participate in the main study. As expected, invited students reported significantly higher levels of generalised anxiety than uninvited students but there was no significant difference in their respective attendance rates. Two students in Year 8 who were invited to participate in the main study, had transferred to new schools since the screening, reducing the pool of eligible participants to 51. Students were divided into two groups according to their attendance rates across the term prior to screening: students with attendance below 95% were eligible for inclusion in the ‘SRB’ group, and students with attendance of 95% or above, for inclusion as controls. The attendance cut-off for eligibility in the SRB group was higher than the planned cut-off of 90% (as the nationally re-defined threshold for persistent absenteeism) owing to the relatively low absenteeism rates observed in the school overall. Across both year groups, only 9 screened students who reported elevated anxiety had attendance below 90%, necessitating an increase to a cut-off of 95% in order to recruit sufficient participants to make the study viable. This higher threshold still had merit, in differentiating between students whose attendance was above and below the national average.<sup>17</sup> Exclusionary criteria for both groups incorporated a diagnosis of any diabetic, cardiac or developmental condition or medication usage for symptoms associated with these conditions.

Consent to participate in the study was obtained from the families of 7 girls (5 Year 8s and 2 Year 9s) who met the inclusion criteria for the SRB group, and 18 girls (9 Year 8s and 9 Year 9s) for the control group. This represented a response rate of 53.8% for the SRB group, 47.4% for the control group and 49.0% overall. Recruitment of controls was restricted to one per SRB participant due to resource and time limitations. Controls were frequency

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<sup>17</sup> The national average for attendance in state funded secondary schools in the corresponding academic year (i.e. 2014-2015) was 94.7% (DfE, 2016a)

## EXPLORING ANXIETY, SLEEP AND SENSE OF BELONGING IN SRB

matched with SRB participants by year group and average score on KS2 SATs<sup>18</sup> (to within one whole point, i.e. 3.9 – 4.9 versus 5.0 – 6.0); this data was unavailable for one Year 8 SRB participant, to whom (for matching purposes only) the mean score of the SRB group (4.7) was assigned. Controls were then selected in descending order of attendance rate in order to maximise the attendance differential between the groups. Subsequently, one Year 8 SRB participant was excluded due to having type I diabetes, and one Year 8 control participant was withdrawn from the study by her parent following the initial home-visit. It was possible to recruit a replacement with the same frequency matching criteria to the control group, but not to the SRB group.

**Main sample.** The final sample comprised 13 girls, including six in the SRB group (4 Year 8s and 2 Year 9s) and seven in the control group (5 Year 8s and 2 Year 9s). The mean age of participants was 13.20 years ( $SD = 0.53$ , range 12.67 – 14.33) and all but one participant of Filipino ethnicity, were White. The final sample did not significantly differ from eligible students who did not participate, on rates of attendance, levels of reported anxiety during screening or levels of KS2 attainment.

## Measures

### Data obtained from school records.

**Attendance.** Attendance data was obtained for registered female students in Year 8 and Year 9 for the school term prior to screening, i.e. Summer 2015. Attendance rates referred to the number of half-days attended as a percentage of the possible half-day attendances over this 61-day term, and did not differentiate between authorised and unauthorised absences.

**KS2 SATs attainment.** In the UK education system, KS2 SATs are undertaken towards the end of Year 6, i.e. the final year of primary schooling. These statutory tests<sup>19</sup> assess children's academic attainment against a national standard. Participants in the present study, were assessed in 2013 or 2014, at which time the scores obtained were converted to normative levels of attainment in the national curriculum ranging from level 3 to level 6, whereby level 4 represented expected attainment by the end of Year 6. A single score was obtained from the school for each student invited to participate in the study, reflecting the mean level of attainment demonstrated in English and Maths.

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<sup>18</sup> Average scores on Key Stage Two (KS2) Standard Assessment Tests (SATs) in English and Maths were used as a measure of academic performance; KS2 spans from Year 2 to Year 6, during which students are aged 7 to 11 years

<sup>19</sup> SATs are optional for independent schools

**Data gathered during introductory home-visit.**

**Sociodemographic characteristics.** Data gathered from participating families during the introductory home-visit (see Procedure) included participants' date of birth and ethnicity. Enquires were also made as to the highest parental qualification held within the household, which was deployed as a proxy measure of the socioeconomic status (SES) of the family. The parental qualification given was assigned a level of difficulty from zero (entry-level) to eight (doctorate-level) in accordance with the Regulated Qualifications Framework and Framework for Higher Education Qualifications, effective in England, Wales and Northern Ireland (see Appendix E).

**Body mass index.** Participants' height and weight measurements were obtained in order to derive body mass index (BMI) percentiles using the online NHS BMI calculator<sup>20</sup>. Height and weight data were measured either directly during the home-visit, or by self-report where there was consensus between the participant and her parent.

**Questionnaires.**

**Anxiety.** The 44-item child version and 38-item parent version of the Spence Children's Anxiety Scale (SCAS-C/P: Spence, 1998) yield a total score and six subscale scores including generalised anxiety, separation anxiety, social phobia, panic/agoraphobia, fear of physical injury and obsessive-compulsive symptoms.

**Screening sample.** The generalised anxiety (GA) subscale of the SCAS-C was deployed as a screening tool to identify eligible participants for the main study, as those students who reported elevated levels of anxiety. A score  $\geq 9$ , representing a *T*-score  $\geq 60$  is deemed to be indicative of elevated or subclinical levels of anxiety, while a score  $\geq 12$ , representing a *T*-score  $\geq 65$  is held to be consistent with clinical status (Spence, n.d.). The GA subscale of the SCAS-C has demonstrated good internal consistency (Muris, Schmidt, & Merckelbach, 2000; Muris, Merckelbach, Ollendick, King, & Bogie, 2002; Spence, 1998; Spence, Barrett, & Turner, 2003) and acceptable test-retest reliability (Spence et al., 2003). Use of the GA subscale of the SCAS-C for screening also served as *time 1* in the 6-month test-retest reliability analysis of this instrument in the main sample.

**Main sample.** Total scores for the SCAS-C/P were derived by summing the responses on each of the 38 anxiety items. The SCAS-C has shown excellent internal consistency (Essau, Muris & Ederer, 2012; Muris et al., 2002; Muris et al., 2000; Spence, 1998; Spence et al., 2003), adequate test-retest reliability (Spence, 1998; Spence et al., 2003), good convergent validity with other measures of youth anxiety, and good divergent validity as a measure of anxious rather than depressive symptomatology (Muris et al., 2002;

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<sup>20</sup> This calculator is accessible from <http://www.nhs.uk/Tools/Pages/Healthyweightcalculator.aspx>.

Spence et al, 2003). The psychometric properties of the SCAS-P, though examined less extensively, have also demonstrated good internal consistency and convergent and divergent validity (Nauta et al., 2004).

***Internalising and externalising problems.*** Child and parent-report versions of the Strengths and Difficulties Questionnaire (SDQ: Goodman, 1997) were used to measure internalising and externalising behaviours. The SDQ is a 25-item screening tool for parent- and teacher-report in relation to CYP aged 4 to 17 years, and as a self-report measure for CYP aged 11 to 17 years. It comprises five subscales: emotional problems, peer problems, hyperactivity, conduct problems and prosocial behaviour. Scores for internalising problems and externalising problems were derived by summing the scores of the emotional problems and peer problems subscales, and the hyperactivity and conduct problems subscales respectively. A total difficulties score was derived from the sum of externalising and internalising scores. The SDQ has demonstrated satisfactory psychometric properties in large samples both nationally (e.g. Goodman, 2001) and internationally (e.g. Bourdon, Goodman, Rae, Simpson, & Kovetz, 2005; Hawes & Dadds, 2004; Muris, Meesters, & van den Berg, 2003).

***Depression.*** The short version of the Children's Depression Inventory 2 self-rated scale (CDI2-SR[S]: Kovacs, 2011) was used to measure symptoms of depression. This 12-item scale was developed from the 28-item full length scale, primarily for use as a screening instrument for youths aged 7 to 17 years. In view of its purpose, the CDI2-SR[S] yields a total score only. This has been found to correlate very strongly with the total score of the full-length scale ( $r = .95, p < .001$ ), indicating a high degree of construct similarity (Bae, 2012). The CDI2-SR[S] has also demonstrated good internal consistency, test-retest reliability, and discriminant validity as a screening tool (Kovacs, 2011).

***Sense of belonging.*** The Psychological Sense of School Membership (PSSM: Goodenow, 1993) questionnaire was used to measure sense of belonging in school. The PSSM is an 18-item self-report scale, for use with CYP aged 12-18 years. The scale yields a total score which was divided by 18 to compute a mean score. The PSSM has demonstrated adequate to good internal consistency (Goodenow, 1993; McMahon, Parnes, Keys, & Viola, 2008; Nichols, 2008; Stevens, Hamman, & Olivarez, 2007) in addition to good construct, divergent and discriminant validity (Goodenow, 1993).

***Sleep habits, pubertal development and health behaviours.*** The Adolescent Sleep Habits Survey (ASHS: Girl's Self Report) developed by Owens in 2006, was designed primarily as an information-gathering tool for clinicians (Shahid, Wilkinson, Marcu, &

Shapiro, 2012). This unpublished measure was used to gather basic data pertaining to participants' sleep habits, daytime functioning and health behaviours.<sup>21</sup> Specifically, information was elicited with respect to a) usual sleep duration and sleep onset latency on school nights and weekends b) extent of difficulties with daytime sleepiness c) consumption of coffee and caffeinated drinks in the past month, and d) use of tobacco products. The survey also incorporates the Self-Rating Scale for Pubertal Development developed by (Carskadon & Acebo, 1993), for use with CYP aged 10 to 16 years. Puberty Category Scores were derived using the criteria of Crockett et al. (1988, unpublished) cited by Carskadon & Acebo (1993); these scores, together with the onset (or not) of menstruation was used to determine pubertal stage, ranging from 1 ('prepubertal') to 5 ('postpubertal')<sup>22</sup>. This scale has demonstrated adequate to good psychometric properties (Carskadon & Acebo, 1993).

**Research Diary.** Participants were required to make entries into a specially designed diary on every morning and evening of their designated data collection week; a checklist of daily tasks to be completed was included on the back page (see Appendix F). The diary was designed to take no more than 5 minutes to complete per day as follows:

***Sleep.*** Every morning, participants were required to record what time they went to bed the previous night and what time they got up. They were also asked to indicate whether they had fallen asleep 'easily', 'after some time' or 'with difficulty (scored 0, 1 and 2 respectively).

***Caffeine consumption, physical activity and mood.*** Participants were required to record every evening, within one hour of going to bed, how many caffeinated drinks they had consumed and how many physically energetic activities (sufficiently intense to cause sweating and/or heavy breathing), they had undertaken, across the entire day, broken down by morning, afternoon and evening. Finally, participants were asked to rate on a scale of 1 ('very bad mood') to 5 ('very good mood'), what kind of mood they had experienced across their day.

**SOMNOWatch<sup>TM</sup> plus.** This actigraph (SOMNOmedics, Randersacker, Germany) is a portable multi-channel recording device, to which additional sensors may be connected via an external signal input, for the recording of electrocardiogram (ECG) and other bio-signals. The device has high data storage capacity (8 MB) and a button to mark events; both

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<sup>21</sup> The Adolescent Sleep Habits Survey was administered from items 9 to 61, but only the data analysed in the present study is described in this paper

<sup>22</sup> Prepubertal: 2 and no menarche; early puberty: 3 and no menarche; midpubertal: >3 and no menarche; late puberty: ≤7 and menarche; postpubertal: 8 and menarche



## EXPLORING ANXIETY, SLEEP AND SENSE OF BELONGING IN SRB

were important features for the purposes of the present study. All recordings were initialised to commence automatically at preset times, and subsequently analysed, using DOMINO Light software (Version 1.4.0, SOMNOmedics).

***Electrocardiogram (ECG).*** For single-channel ECG, the SOMNOWatch™ plus was attached to a body belt and fitted to the participants' thorax, then connected to electrodes placed on the upper body as illustrated in Appendix G. ECG data was sampled at a rate of 256 Hz, applying a 50Hz notch filter. ECG recordings were manually edited by a Research Assistant (third year medical student) under the guidance of a Consultant in Paediatric Medicine; both were blind to the participant group status of recordings. Manual editing involved visual inspection of the ECG signal and removal of artefact and abnormal heartbeats to ensure correct classification of QRS complexes for reliable analysis of HRV (Task Force of the European Society of Cardiology and The North American Society of Pacing and Electrophysiology [Task Force], 1996). Six participants had a double Physical Education (PE) lesson during ECG data collection on either a Monday ( $n = 4$ : SRB group = 2, controls = 2) or Friday ( $n = 2$ : both controls). All PE lessons took place during Periods 3 and 4 (i.e. 11.05h and 12.45h); affected recordings were marked as artefact between these times. Automatic artefact detection by the software, further manual artefact detection by the Research Assistant and total artefact detection were quantified as a percentage of each 5-hour ECG recording. The following mean values across the recording (with artefact filtered out) were then extracted: heart rate (bpm), activity (mg), and three frequency domain measures of HRV: high frequency (HF) power, low frequency (LF) power and LF/HF ratio. Analyses of time domain measures of HRV were not deemed appropriate due to heterogeneity in the duration of recordings, resulting from wide variation in proportions of artefact (Task Force, 1996). Mean values obtained for each recording separately and combined across both Monday and Friday recordings were included in the statistical analysis.

***Sleep actigraphy.*** The SOMNOWatch™ plus was worn overnight (approximately one hour from bedtime through to rising in the morning) on the non-dominant wrist for estimation of sleep/wake rhythms. The software distinguished between periods of sleep and wake on the basis of motor activity, which was sampled at a rate of 8 Hz, applying a 0.2 Hz high pass filter (separate activity in the X, Y and Z axes was sampled at a rate of 32 HZ). The parameters for determination of sleep/wake periods adopted by the software were as follows: 'average activity threshold': 28 units, 'number of epochs before/after': 4 epochs and 'extension of wake phase': 2 epochs, minimum epoch number (sleep): 15 and minimum epoch number (wake): 3.<sup>23</sup> Participants were required to press the 'marker button' on the

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<sup>23</sup> For each epoch, the average activity value is calculated with reference to the actual epoch and the 'epochs before and after'; if the average value is higher than the 'activity threshold' the epoch is

SOMNOWatch™ when going to bed and once again upon getting up; these markers were manually converted into ‘lights off’ and ‘lights on’ markers respectively in the actigraphy data. In the event that participants had not remembered to press the marker button, these markers were based on the bedtime and/or wake-time reported by participants in their research diaries. Reports generated by the software for each night included the following measures for analysis: a) ‘total sleep time’ (TST): the time between the ‘lights off’ and ‘lights on’ markers, and excluding all wake stages; b) ‘sleep efficiency’ (SE): the total sleep time as a percentage of time in bed (i.e. period between the lights on and lights off markers), and c) ‘sleep onset latency’ (SOL): time between ‘lights off’ marker and the beginning of the first NREM sleep stage. Mean TST, SE and SOL values for the seven consecutive nights of the data collection week, together with weekday to weekend difference in TST (mean TST for Friday night and Saturday night minus mean TST for Sunday night through to Thursday night) were computed for inferential analyses.<sup>24</sup>

### Procedure

Approval for the study was granted by the School of Psychology Ethics Committee and Research Governance Office of the University of Southampton (see Appendix H). Written consent was obtained from the Headteacher of the school in which the study was conducted (see Appendices I and J). Opt-out parental consent for initial screening was obtained by letter via the School Office (see Appendix K). Screening questionnaires were administered to students by form tutors after morning registration (see Appendix L). The names of any students for whom parental consent for screening had not been given, were communicated to form tutors prior to administration to ensure that these students did not take part. Following screening, information about the study was sent via students who were eligible for inclusion, to respective parents (see Appendix M). Informed written parental consent and student assent were both required from participating families (see Appendices N and O).

Exclusionary criteria were discussed with parents during initial telephone contact. If participation could proceed, an introductory home-visit was scheduled and a data collection week was negotiated with the families; these were staggered such that no more than two

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scored ‘wake’, and otherwise scored ‘sleep’; ‘extension of wake phase’ refers to the number of epochs that will be scored as wake directly following an epoch scored as wake; coherent sleep epochs lower than or equal in number to the ‘minimum epoch number (sleep)’ value will be scored as wake, and vice versa for the ‘minimum epoch number (wake)’

<sup>24</sup> Sleep values for a given day referred to the sleep experienced on the night of the previous day through to the morning of that day, e.g. Friday sleep referred to the sleep experienced on Thursday night through to Friday morning

## EXPLORING ANXIETY, SLEEP AND SENSE OF BELONGING IN SRB

families were engaged in data collection at any one time<sup>25</sup>. Participation in the study involved one parental element and four student elements, with all but the final student element undertaken during the designated data collection week as follows: a) parents were required to complete both parent-report questionnaires<sup>26</sup>; b) students were required to i) undergo 5-hour ECGs during school on Monday and Friday, ii) have their sleep monitored using wrist actigraphy for seven consecutive nights, and iii) make brief entries into the research diary for seven consecutive mornings and evenings. In order to control for order effects in the collection of ECG and sleep actigraphy data, designated data collection weeks were equally balanced between Monday and Friday start days in both groups. In addition, given that the data collection phase spanned one full term, general fluctuations in work-related demands and pressures within the school environment across this period were controlled for to some extent by weekly alternation of data collection between SRB and control group participants.

Introductory home-visits were undertaken with participants and their mothers approximately one week prior to their designated data collection week; main objectives were to take families through the participation requirements, collect sociodemographic and BMI data, and gather logistical information in order to coordinate data collection (see Appendix P for home-visit interview schedule). ECG, sleep actigraphy, parent questionnaire and student diary data collection were coordinated on Mondays and Fridays across the Spring term of 2016, as presented in Figure 4.

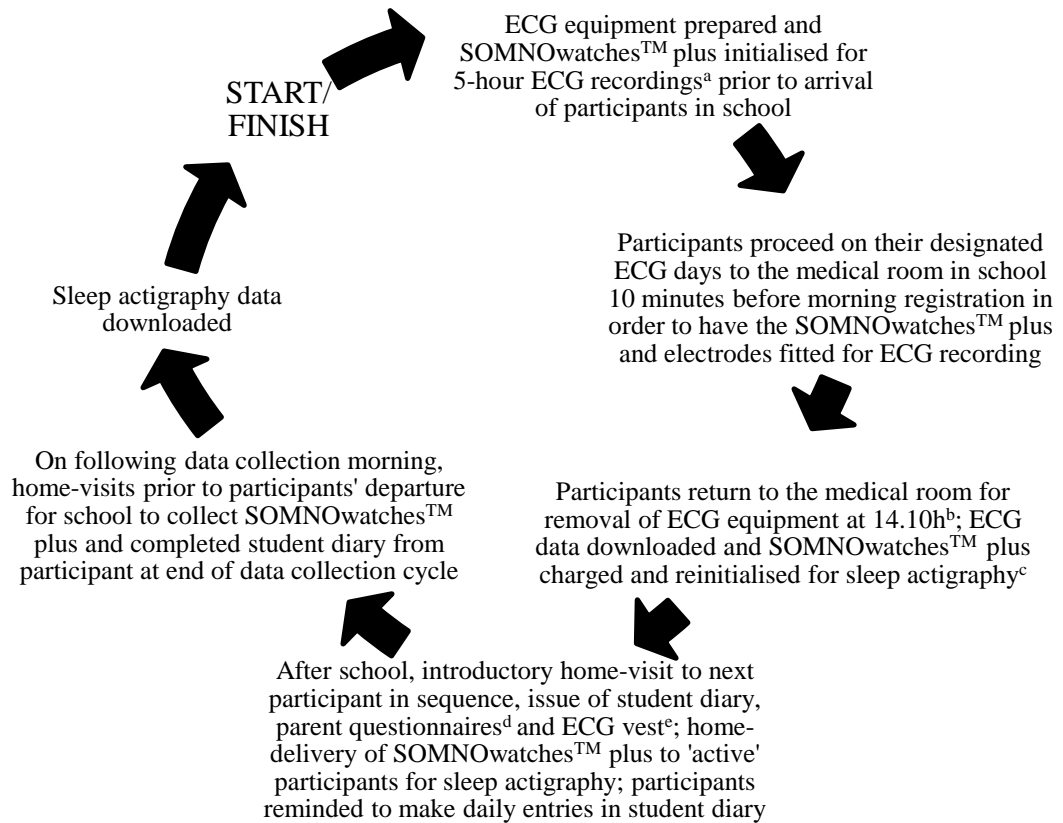
The final student element of the study involved completion of the five child-report questionnaire measures during school hours; this was undertaken after all participants had progressed through their designated data collection week. All participants attended a morning ( $n=11$ ) or afternoon session ( $n=2$ ) held on the same day, supervised by the researcher in a classroom reserved within the school<sup>27</sup>. The sessions were one lesson period in duration. KS2 attainment scores across the sample broadly indicated that all participants had acquired a reading age sufficient to access all child-report questionnaires. Participants were therefore instructed to read and complete the questionnaires independently but were able and encouraged to seek help whenever required. Finally, participants were debriefed

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<sup>25</sup> Two SOMNOWatch™ devices were available, constraining ECG and sleep actigraphy data collection to two participants at any one time

<sup>26</sup> All parent-report questionnaires were completed by participants' mothers

<sup>27</sup> Account was taken in the scheduling of these sessions, of both parental and student preferences (noted during the introductory home-visit) as to which lessons should be avoided if possible; both student and parental preferences were accommodated for all participants in this regard



**Figure 4.** Electrocardiogram, sleep actigraphy and student diary data collection cycle

*Note* <sup>a</sup> Time-frame of ECG recording covered Period 1 through to Period 5. <sup>b</sup> ECG equipment removed prior to final lesson (i.e. Period 6). <sup>c</sup> SOMNOWatches™ plus initialised for sleep actigraphy from 18.00h to 12.00h for nights preceding non-data collection days and from 18.00h to 08.00h for nights preceding data collection days. <sup>d</sup> Collection of completed parent questionnaires undertaken at any point in the cycle at parents' convenience. <sup>e</sup> Vests were issued to be worn by participants when undergoing ECGs to promote participant comfort and reduce interference with ECG leads/electrodes

(see Appendix Q for Debriefing Form) and received high-street vouchers of their choice to the value of £35 to thank them for their participation in the study.

## Data Analysis

**Analytic strategy.** All data analyses were performed using IBM Statistical Package for Social Sciences (SPSS) Version 22, and all tests were two-tailed, adopting an alpha-level of  $p \leq .05$ . Due to both the small size of the main sample and the non-normal distributions of data in both the main and screening samples<sup>28</sup>, non-parametric analyses were conducted throughout. Pearson's Chi-square tests were used to assess whether Year 8 and Year 9 students differed in the frequency of reporting subclinical and clinical levels of anxiety

<sup>28</sup> Normality of data was assessed visually by inspecting histograms and Q-Q plots and statistically using Kolmogorov-Smirnov tests

## EXPLORING ANXIETY, SLEEP AND SENSE OF BELONGING IN SRB

during screening, and Spearman's rho correlation coefficients were computed to assess for associations between levels of reported anxiety and rates of attendance in the screening sample. For the main study, independent samples Mann-Whitney tests were used to determine whether there were group differences relating to sample characteristics and key variables under investigation. Wilcoxon signed rank tests were used to assess whether there were within-participant differences across the sample on ECG, sleep actigraphy and research diary variables on different days of the week. Due to the exploratory nature of the study, the avoidance of a type II error was prioritised in the absence of any imperative to avoid a type I error. In view, also of the small sample size, Bonferroni correction in respect of multiple testing was not applied in the present study (Armstrong, 2014).

**Missing data.** Sleep actigraphy, research diary and parent-report questionnaire data was missing for one Year 8 participant in the SRB group due to non-engagement with these elements of the study. ECG data was missing for one Year 9 control participant, due to poor signal across one recording (Friday). A further two Year 8 participants (one from each group) who had poor signal quality across one recording, were able to repeat the ECG exactly six weeks (on a Monday) and one-week later (on a Friday) respectively. It should be noted that for these participants, while the substituted ECG data was obtained on the same weekday as the original ECG, it was not temporally synchronised with the sleep actigraphy and diary data obtained during their respective designated data collection weeks. Missing data was otherwise minimal<sup>29</sup> and therefore handled using pairwise deletion in preference to listwise deletion where possible.

## Results

### Sample characteristics

**Screening sample.** The characteristics of the screening sample with respect to attendance rates and reported levels of generalised anxiety are summarised in Table 6. A Cronbach's alpha of .86 was obtained for the screening instrument (GA subscale of the SCAS), indicating good internal consistency. Attendance rates for the whole sample and for both year groups were well above the national average of 94.7% for state funded secondary

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<sup>29</sup> Missing data outside of these cases totalled 21 data points across the main participant data set as follows: Monday bedtime ( $n=4$ ), Monday wake-time ( $n=4$ ) and Monday quality of sleep onset ( $n=3$ ) by diary report, Tuesday TST, SE, SOL ( $n=1$ ), Friday TST, SE, SOL ( $n=3$ ), Sunday TST, SE, SOL ( $n=1$ ), KS2 SATs average score ( $n=1$ ); there were no missing data points within the screening sample data set

**Table 6.** Attendance and anxiety characteristics of screening sample

	Total Sample	Year 8	Year 9
<i>N</i>	139	89	50
Attendance rate <sup>a</sup> (%), <i>Mdn</i>	98.40	98.40	98.40
range	83.60 – 100.00	83.60 – 100.00	84.40 – 100.00
<i>M (SD)</i>	97.10 (3.73)	97.10 (3.89)	97.01 (3.44)
GA subscale score <sup>b</sup> , <i>Mdn</i>	7.00	6.00	8.50
range	0.00 – 18.00	1.00 – 17.00	0.00 – 18.00
<i>M (SD)</i>	7.52 (4.11)	6.76 (4.01)	8.86 (3.99)
Elevated anxiety levels <sup>c</sup> , <i>n (%)</i>	53 (38.13)	28 (31.46)	25 (50.00)
Clinical anxiety levels <sup>d</sup> , <i>n (%)</i>	27 (19.42)	13 (14.61)	14 (28.00)

*Note* <sup>a</sup> Half days attended out of possible attendances across summer term 2015 (61 school days).

<sup>b</sup> Total score on generalised anxiety subscale of the Spence Children's Anxiety Scale – possible range 0 – 18. <sup>c</sup> Total score on GA subscale score  $\geq 9$ , indicative of elevated anxiety. <sup>d</sup> Total score on GA subscale score  $\geq 12$ , consistent with clinical levels of anxiety.

schools in the corresponding academic year (DfE, 2016a). However, two-fifths of the sample reported elevated anxiety and one-fifth reported anxiety consistent with clinical levels. Attendance rates did not differ significantly between students in Year 8 and Year 9,  $U = 2061.50$ ,  $z = 0.74$ ,  $p = .460$ . However, Year 9 students reported significantly higher levels of anxiety than Year 8 students,  $U = 2911.60$ ,  $z = 3.02$ ,  $p = .003$ ,  $r = .06$ , and were significantly more likely to report elevated anxiety than Year 8 students,  $X^2(1) = 4.66$ ,  $p = .045$ ,  $r = .18^{30}$ . Year 9 students also showed a non-significant tendency to report clinical levels of anxiety with greater frequency than Year 8 students,  $X^2(1) = 3.67$ ,  $p = .074$ ,  $r = .16$ . There was no significant correlation between attendance rates and reported anxiety for the whole sample ( $r_s = -.13$ ,  $p = .139$ ), or for either year group (year 8:  $r_s = -.11$ ,  $p = .294$ ; year 9:  $r_s = -.10$ ,  $p = .512$ ).

**Main sample.** The characteristics of the main sample with respect to school, sociodemographic and physical development and lifestyle factors known to have an association with levels of physiological arousal and sleep quantity and quality, are presented in Table 7. In keeping with the participant selection strategy, attendance rates were confirmed to be significantly lower in the SRB group than the control group ( $U = 42.00$ ,  $z = 3.11$ ,  $p = .001$ ,  $r = .86^{31}$ ). Over a 61-day term, absences in the SRB group ranged from eight

<sup>30</sup> Equation for calculation of  $r$  for Chi-square tests with one degree of freedom:  $r = \sqrt{\frac{X^2}{N}}$

<sup>31</sup> Equation for conversion of  $z$ -score to effect-size estimate:  $r = \frac{z}{\sqrt{N}}$  (Field, 2013, p. 227)

# EXPLORING ANXIETY, SLEEP AND SENSE OF BELONGING IN SRB

**Table 7.** Educational, sociodemographic, physical development and lifestyle characteristics of adolescent girls with elevated anxiety

	Total Sample	SRB Group	Control Group
<i>N</i>	13	6	7
School factors:			
Attendance rate <sup>a</sup> (%), <i>Mdn</i>	98.40	93.00	100.00
range	90.20 – 100.0	90.20 – 93.4	98.40 – 100.0
<i>M (SD)</i>	96.22 (4.03)	92.20 (1.58)	99.66 (0.63)
Average KS2 SATs score <sup>b</sup> , <i>Mdn</i>	5.05	5.10	5.00
range	4.30 – 5.80	4.40 – 5.30	4.30 – 5.80
<i>M (SD)</i>	5.01 (0.44)	4.94 (0.35)	5.06 (0.52)
Sociodemographic factors:			
Age (years), <i>Mdn</i>	12.92	13.00	12.83
range	12.67 – 14.33	12.75 – 14.33	12.67 – 13.75
<i>M (SD)</i>	13.20 (0.53)	13.28 (0.63)	13.13 (0.47)
Ethnicity			
White, <i>n</i> (%)	12 (92.31)	6 (100.00)	6 (85.71)
Asian, <i>n</i> (%)	1 (7.69)	0 (0.00)	1 (14.29)
Highest qualification level in household <sup>c</sup> , <i>Mdn</i>	5.00	4.50	5.00
range	2.00 – 8.00	2.00 – 8.00	3.00 – 6.00
<i>M (SD)</i>	4.69 (1.89)	4.50 (2.51)	4.86 (1.35)
Physical development factors:			
Pubertal developmental stage <sup>d</sup> , <i>Mdn</i>	4.00	4.00	3.00
range	3.00 – 4.00	3.00 – 4.00	3.00 – 4.00
<i>M (SD)</i>	3.62 (0.51)	3.83 (0.41)	3.43 (0.53)
Body mass index <sup>e</sup> (percentile), <i>Mdn</i>	50.00	49.50	51.00
range	0.00 – 97.00	0.00 – 97.00	2.00 – 84.00
<i>M (SD)</i>	47.00 (32.74)	49.33 (33.19)	45.00 (34.88)
Lifestyle factors:			
Coffee consumption <sup>f</sup> , <i>Mdn</i>	0.00	0.00	0.00
range	0.00 – 2.00	0.00 – 2.00	0.00 – 1.00
<i>M (SD)</i>	0.23 (0.60)	0.33 (0.82)	0.14 (0.38)
Caffeinated soda consumption <sup>f</sup> , <i>Mdn</i>	1.00	1.00	1.00
range	0.00 – 2.00	0.00 – 2.00	0.00 – 2.00
<i>M (SD)</i>	0.85 (0.69)	1.00 (0.63)	0.71 (0.76)
Caffeine consumption (DCW) <sup>g</sup> , <i>Mdn</i>	0.14	0.14	0.14
range	0.00 – 1.57	0.00 – 1.57	0.00 – 0.29
<i>M (SD)</i>	0.31 (0.53)	0.60 (0.63)	0.10 (0.11)
Physical activities (DCW) <sup>h</sup> , <i>Mdn</i>	0.57	0.43	0.57
range	0.14 – 1.14	0.14 – 0.86	0.43 – 1.14
<i>M (SD)</i>	0.61 (0.27)	0.54 (0.31)	0.65 (0.26)

Note <sup>a</sup> Half days attended out of possible attendances across summer term 2015 (61 school days). <sup>b</sup>

Average Key Stage Two Standard Assessment Test scores for English and Maths, at age 11 years.

<sup>c</sup> Proxy for socioeconomic status; possible range: 0.00 (entry level) to 8.00 (doctorate level). <sup>d</sup> Based on computation of Puberty Category Scores using criteria of Crockett et al. 1988 cited by Carskadon & Acebo (1993): 3=‘Midpubertal’, 4=‘Late Puberty’. <sup>e</sup> Based on computation at

<http://www.nhs.uk/Tools/Pages/Healthyweightcalculator.aspx> using height, weight, date of birth & gender data. <sup>f</sup> During the last month: 0=‘None’, 1= ‘Less than one glass per day’, 2= ‘Between 1 and 3 glasses per day’. <sup>g</sup> Average number of caffeinated drinks per day during ‘designated data-collection week’. <sup>h</sup> Average number of ‘physically energetic’ activities per day during ‘designated data-collection week’

to twelve half-days, while absences in the control group did not exceed two half-days across the same period. No differences were found between the groups on any of the other school, sociodemographic, physical development or lifestyle characteristics measured. Therefore, prior to the main analyses, the only distinguishing characteristic observed between the groups was school attendance, with a notably large effect size computed (Cohen, 1992).

### Main Descriptive and Inferential Analyses

**Child- and parent-report questionnaires.** Descriptive and inferential statistics in respect of all questionnaire measures are detailed in Table 8. Cronbach's alphas for standardised scales ranged from .72 to .85 indicating acceptable to good internal consistency. A Kendall's tau test-retest reliability coefficient of .46 was obtained for the GA subscale of the SCAS for the main sample over a six-month interval (between screening and questionnaire completion in the main study). This was comparable to the six-month test-retest coefficient of .56 obtained by Spence (1998), based on parametric correlation with a notably larger sample ( $N=344$ ). The GA subscale scores of two participants (both Year 8 students in the SRB group) fell below the threshold for elevated anxiety at Time 2, and their total scores on the full SCAS scale also fell within normal range anxiety levels ( $T$ -scores of 50 and 52). However, in view of support obtained for emotional vulnerability and adjustment difficulties from other measures in both cases<sup>32</sup>, and the prioritisation, in view of the small sample size, of preserving statistical power, these participants were retained for all further analyses.

Based on SCAS total scores, 84.6% of the main sample reported at least elevated anxiety levels ( $n = 11$ : SRB = 4; controls = 7) and 69.3% reported anxiety levels consistent with clinical status ( $n = 9$ : SRB group = 3; controls = 6). In addition, scores on the CDI2: SR[S] indicated that 84.6% of the sample ( $n = 11$ : SRB group = 4; controls = 7) reported 'very elevated' levels of depressive symptomatology. Total scores on the SDQ indicated at least 'raised' emotional and behavioural difficulties in 53.8% of the sample ( $n = 7$ : SRB group = 3; controls = 4), with 7.7% ( $n = 1$ : control) and 30.8% ( $n = 4$ : SRB group = 2; controls = 2) reporting difficulties at a 'high' and 'very high' level respectively. Mean and median total difficulties scores were also notably higher in the present sample compared with a nationally representative sample of girls aged 11 to 15 years ( $M = 10.00$ ,  $SD = 5.3$ )

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<sup>32</sup> Both participants reported 'raised' conduct and hyperactivity problems on the SDQ, and reduced sense of belonging (2.94) compared with the means of both groups in the present sample and normative samples; in addition, one participant reported 'very elevated' depressive symptomatology on the CDI2 SR[S], and the other had the highest SDQ parent-report score for internalising difficulties across the sample



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**Table 8.** Descriptive and inferential statistics for child- and parent-report questionnaires by group

Questionnaire	$\alpha^a$	SRB group ( $N=6$ )			Control group ( $N=7$ )			$U$	$z$	$p$
		$M$ ( $SD$ )	$Mdn$	Range	$M$ ( $SD$ )	$Mdn$	Range			
Child-report										
SCAS (anxiety)	.85	49.67 (20.16)	53.00	25.00 – 77.00	56.43 (5.56)	58.00	48.00 -63.00	25.00	0.57	.628
SDQ (strengths & difficulties):										
Total difficulties	.77	16.67 (5.16)	15.00	11.00 – 23.00	16.29 (5.91)	15.00	9.00 – 25.00	19.00	-0.29	.836
Internalising problems	.72	8.5 (3.83)	8.50	3.00 – 13.00	8.43 (3.10)	9.00	5.00 – 14.00	19.50	-0.22	.836
Externalising problems	.76	8.17 (3.97)	10.00	1.00 – 11.00	7.86 (3.29)	7.00	4.00 – 13.00	18.50	-0.36	.731
CDI2 (depression)	.76	10.83 (4.96)	11.00	4.00 – 16.00	10.57 (2.07)	10.00	8.00 – 13.00	20.00	-0.15	.945
PSSM (belonging)	.85	2.99 (0.72)	2.94	1.89 – 4.00	3.08 (0.53)	2.89	2.39 – 3.72	20.50	-0.07	.945
Adolescent Sleep Habits Survey:										
Usual sleep duration: school days <sup>b</sup>	-	472.50 (49.98)	480.00	390.00 – 540.00	488.57 (115.82)	510.00	270.00 – 660.00	27.50	0.94	.366
Usual sleep duration: weekends <sup>b</sup>	-	621.67 (80.10)	615.00	510.00 – 730.00	535.71 (121.77)	570.00	300.00 – 660.00	12.00	-1.29	.234
Usual sleep onset latency: school days <sup>b</sup>	-	50.00 (22.58)	60.00	15.00 – 75.00	51.43 (41.40)	40.00	10.00 – 120.00	19.00	0.77	.836
Usual sleep onset latency: weekends <sup>b</sup>	-	71.00 (29.87)	65.00	45.00 – 120.00	39.29 (25.93)	40.00	12.50 – 90.00	5.00	-2.04	<b>.048</b>
Daytime sleepiness <sup>c</sup>	-	2.67 (1.21)	2.50	1.00 – 4.00	2.43 (0.79)	2.00	2.00 – 4.00	18.50	0.39	.731
Parent-report										
SCAS (anxiety)	.83	22.40 (11.17)	21.00	9.00 – 39.00	21.57 (8.94)	23.00	10.00 – 37.00	17.50	0.00	1.000
SDQ (strengths & difficulties):										
Total difficulties	.83	11.60 (6.15)	11.00	3.00 – 18.00	7.14 (6.20)	5.00	0.00 – 19.00	11.50	-0.98	.343
Internalising problems	.75	7.20 (4.09)	6.00	3.00 – 14.00	4.00 (3.37)	4.00	0.00 – 9.00	10.00	-1.23	.268
Externalising problems	.83	4.40 (4.10)	3.00	0.00 – 11.00	3.14 (3.63)	4.00	0.00 – 10.00	14.50	-0.50	.343

Note <sup>a</sup> Cronbach's alpha coefficients for internal consistency of scale. <sup>b</sup> Measurement in minutes. <sup>c</sup> Single item on a five-point scale ranging from 1 ('no problem at all') to 5 ('a very big problem')

## EXPLORING ANXIETY, SLEEP AND SENSE OF BELONGING IN SRB

(Meltzer, Gatward, Goodman & Ford, 2000; Youth in Mind, 2001). Finally, the mean scores for sense of belonging within both groups in the present sample were lower than the US normative sample for urban ( $M = 3.11$ ,  $SD = 0.70$ ) and suburban students ( $M = 3.86$ ,  $SD = 0.72$ ) aged between 12 and 16 years (Goodenow, 1993).<sup>33</sup>

The groups did not significantly differ on any of the constructs assessed using validated measures, either by child- or parent-report. Data gathered using the Adolescent Sleep Habits Survey indicated that the SRB group reported significantly longer sleep onset latency than controls on weekend nights, with a large effect size observed ( $r = -.57$ ). The groups did not differ on reported sleep onset latency on school nights, sleep duration on school nights or weekends, or general daytime sleepiness.

**ECG data.** Across the 5-hour ECG recordings, the mean percentage of output identified as artefact by Domino Light software was 19.59 ( $SD = 25.25$ , range = 0.30 to 81.07). Following manual editing (see Procedure) the mean percentage of artefact was 41.21 ( $SD = 28.65$ , range = 1.94 to 98.05); the duration of ‘cleaned’ recordings therefore ranged from 6 minutes to 4 hours, 54 minutes. The percentage of artefact detected in the recordings did not significantly differ between the SRB ( $Mdn = 29.71$ ) and control group ( $Mdn = 34.92$ ),  $U = 2061.50$ ,  $z = 0.74$ ,  $p = .460$ .

Descriptive and inferential statistics for all measured ECG variables are presented in Table 9. None of the between-group comparisons were significant. Non-significant trends ( $p = .093$ ) were observed on two indices of HRV on Friday recordings: the control group exhibited lower HF power and a higher LF/HF ratio than the SRB group, indicating decreased parasympathetic autonomic activity, and reduced sympatho-vagal balance respectively. Both are understood to precipitate reductions in HRV. Wilcoxon Signed Rank related-samples tests showed significant differences across the sample by weekday on two ECG variables: heart rate was significantly higher on Friday ( $Mdn = 98.00$ ) than Monday ( $Mdn = 95.00$ ),  $T = 55.00$ ,  $z = 1.96$ ,  $p = .050$ ,  $r = .40$ , and LF power was significantly lower on Friday ( $Mdn = 416.50$ ) than Monday ( $Mdn = 471.23$ ),  $T = 11.00$ ,  $z = 2.20$ ,  $p = .028$ ,  $r = .45$ . When collapsed by group, a marginally non-significant trend was observed for higher heart rate on Friday ( $Mdn = 99.00$ ) than Monday ( $Mdn = 95.00$ ) for the control group,  $T = 19.50$ ,  $z = 1.89$ ,  $p = .058$ , but no significant difference in heart rate by weekday was observed in the SRB group,  $T = 11.00$ ,  $z = 0.94$ ,  $p = .345$ . LF power was significantly lower on Friday ( $Mdn = 377.83$ ) than Monday ( $Mdn = 453.29$ ) for the control group,  $T = 1.00$ ,  $z = -1.99$ ,  $p = .046$ ,  $r = -.57$ , but as with heart rate, no significant effect of weekday was found on this

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<sup>33</sup> Parametric comparisons with these normative samples using means and standard deviations were precluded by the small sample size and non-normal distribution of this variable in the present study.

**Table 9.** Descriptive and inferential statistics for ECG variables by group

ECG variable	SRB group ( <i>N</i> =6)			Control group ( <i>N</i> =7)			<i>U</i>	<i>z</i>	<i>p</i>
	<i>M</i> ( <i>SD</i> )	<i>Mdn</i>	Range	<i>M</i> ( <i>SD</i> )	<i>Mdn</i>	Range			
Heart rate (BPM)									
Mean across both recordings	94.42 (2.48)	94.50	90.50 – 98.00	97.86 (14.80)	96.50	77.00 – 119.00	23.00	0.29	.836
Monday	93.33 (3.27)	93.50	89.00 – 98.00	94.14 (13.11)	95.00	75.00 – 115.00	20.50	-0.07	.945
Friday	95.50 (4.93)	97.00	86.00 – 99.00	99.33 (18.59)	99.00	79.00 – 133.00	22.00	0.65	.589
HRV – HF power (ms x 0.1 RMS)									
Mean across both recordings	265.00 (52.79)	280.00	181.00 – 313.00	204.29 (68.03)	203.50	127.50 – 341.50	9.00	-1.71	.101
Monday	266.67 (66.77)	267.00	157.00 – 340.00	235.29 (79.16)	231.00	158.00 – 371.00	16.00	-0.71	.534
Friday	263.33 (63.12)	249.50	205.00 – 347.00	175.50 (83.54)	143.50	97.00 – 312.00	7.00	-1.76	.093
HRV – LF power (ms x 0.1 RMS)									
Mean across both recordings	474.42 (112.41)	510.25	332.50 – 601.00	417.93 (108.46)	411.00	271.00 – 590.00	16.00	-0.71	.534
Monday	492.17 (136.40)	507.00	320.00 – 683.00	453.29 (115.17)	411.00	344.00 – 614.00	19.00	-0.29	.836
Friday	456.67 (96.56)	510.00	321.00 – 528.00	377.83 (125.54)	385.00	198.00 – 569.00	12.00	-0.96	.394
HRV – LF/HF ratio (ms x 0.1 RMS)									
Mean across both recordings	1.81 (0.25)	1.77	1.52 – 2.25	2.16 (0.34)	2.11	1.74 – 2.66	33.00	1.71	.101
Monday	1.85 (0.22)	1.90	1.49 – 2.08	1.99 (0.34)	2.05	1.61 – 2.57	26.00	0.71	.534
Friday	1.76 (0.35)	1.66	1.44 – 2.43	2.29 (0.58)	2.22	1.66 – 3.25	29.00	1.76	.093
Activity (mg)									
Mean across both recordings	17.17 (3.93)	17.50	10.50 – 22.50	17.43 (4.82)	18.00	10.50 – 26.00	20.50	-0.07	.945
Monday	16.83 (4.79)	17.00	9.00 – 23.00	15.43 (4.47)	16.00	8.00 – 21.00	17.00	-0.57	.628
Friday	17.50 (3.94)	17.00	12.00 – 22.00	19.67 (7.39)	18.00	13.00 – 33.00	19.00	0.16	1.000

*Note* BPM = beats per minute; HRV = heart rate variability; HF = high frequency; LF = low frequency; RMS = root mean square.

## EXPLORING ANXIETY, SLEEP AND SENSE OF BELONGING IN SRB

index for the SRB group. Of note, concurrent levels of physical activity as measured by the SOMNOWatch™ plus device, did not significantly differ for any of these analyses. This increased confidence that both between-participant and within-participant differences in HRV primarily reflected differences in psychological, as opposed to physical stress.

***Sleep actigraphy and diary data.*** As intended, the diary-report bed-times and wake-times provided a useful contingency measure in the event of participants forgetting to press the marker button on the actigraph device. The mean number of occasions on which diary data was used to determine ‘lights-on’ and ‘lights-off’ times for the estimation of sleep parameters was 1.58 ( $SD = 1.73$ , range 0 to 6) out of 14 possible occasions (7 bed-times and 7 wake-times) over the data collection week. Participants therefore showed good adherence to this aspect of the actigraphy protocol. There was no significant difference in reliance on diary-report bedtimes and wake-times between the SRB group ( $Mdn = 1.00$ ) and the control group ( $Mdn = 1.00$ ),  $U = 23.50$ ,  $z = 1.02$ ,  $p = .343$ .

Descriptive and inferential statistics for sleep actigraphy and diary variables are detailed by group in Table 10. The groups did not differ significantly on any indices of sleep quantity or quality, either across the full week, or on individual nights of interest which included Sunday, Thursday and Friday. The difference between sleep duration on weekend nights and school nights during the data collection week also did not differentiate between the groups, nor did the diary-report measures of mood and quality of sleep onset across the data collection week. Wilcoxon Signed Rank related-samples tests showed no significant differences on any sleep index or diary measure between Monday and Friday across the whole sample. When collapsed by group, this held true for both, however the results in respect of sleep efficiency ( $T = 2.00$ ,  $z = -1.48$ ,  $p = .138$ ) and sleep onset latency ( $T = 13.00$ ,  $z = 1.48$ ,  $p = .138$ ) for the control group were notably closer to statistical significance than the corresponding results for sleep efficiency ( $T = 6.00$ ,  $z = 0.37$ ,  $p = .715$ ) and sleep onset latency ( $T = 4.00$ ,  $z = -0.37$ ,  $p = .715$ ) for the SRB group. These findings showed trends towards lower sleep efficiency and higher sleep onset latency on Thursday night than Sunday night for controls. The reverse was true for sleep duration, which was much notably closer to the alpha level for the SRB group ( $T = 9.00$ ,  $z = 1.46$ ,  $p = .144$ ) than the control group ( $T = 8.00$ ,  $z = 0.14$ ,  $p = .893$ ); this reflected a trend towards shorter sleep duration on Sunday night than Thursday night in the SRB group, which was not apparent in controls.

It should be noted that the non-significant trends observed in the control group of lower sleep efficiency and longer sleep onset latency on Thursday night than Sunday night, were temporally synchronised with the significant differences and non-significant trends ( $p < .10$ ) observed in controls with respect to physiological arousal on Friday. To reiterate, these included lower HF power and higher LF/HF ratio in the control group than the SRB group on Friday (but not on Monday) and higher heart rate and lower LF power on Friday

**Table 10.** Descriptive and inferential statistics for sleep actigraphy and diary variables by group

Sleep actigraphy/diary variable	SRB group ( <i>N</i> =5)			Control group ( <i>N</i> =7)			<i>U</i>	<i>z</i>	<i>p</i>
	<i>M</i> ( <i>SD</i> )	<i>Mdn</i>	Range	<i>M</i> ( <i>SD</i> )	<i>Mdn</i>	Range			
Sleep duration (minutes)									
Mean across DCW	508.53 (38.31)	518.57	444.67 – 540.00	507.67 (63.14)	513.57	378.14 – 572.17	19.00	0.24	.876
Monday (Sunday night)	479.80 (44.00)	477.00	434.00 – 536.00	504.14 (110.46)	505.00	300.00 – 659.00	22.00	0.73	.530
Friday (Thursday night)	500.25 (55.85)	505.50	437.00 – 553.00	493.00 (41.47)	498.00	435.00 – 551.00	9.00	-0.25	.905
Saturday (Friday night)	561.00 (98.32)	549.00	410.00 – 660.00	550.43 (92.37)	589.00	376.00 – 632.00	14.00	-0.57	.639
Sleep efficiency (%)									
Mean across DCW	97.01 (1.97)	97.43	94.81 – 99.30	95.03 (3.42)	95.73	88.60 – 98.92	11.00	-1.06	.343
Monday (Sunday night)	97.26 (2.43)	97.80	93.90 – 100.00	97.10 (2.46)	97.00	93.10 – 100.00	17.50	0.00	1.000
Friday (Thursday night)	96.70 (4.36)	98.00	90.80 – 100.00	93.80 (4.31)	94.50	86.80 – 98.50	5.00	-1.23	.286
Saturday (Friday night)	96.90 (4.53)	98.90	88.80 – 99.10	95.07 (4.18)	95.70	87.30 – 100.00	11.00	-1.06	.343
Sleep onset latency (minutes)									
Mean across DCW	8.39 (1.97)	9.94	1.76 – 16.84	13.79 (19.86)	9.16	0.30 – 57.58	15.00	-0.41	.755
Monday (Sunday night)	6.38 (7.78)	4.30	0.00 – 20.00	5.26 (5.87)	3.50	0.00 – 16.00	15.00	-0.41	.755
Friday (Thursday night)	8.92 (13.17)	3.90	0.00 – 28.00	23.88 (25.61)	17.90	2.00 – 66.00	15.00	1.23	.286
Saturday (Friday night)	11.88 (19.2)	3.40	1.00 – 46.00	14.76 (28.42)	3.90	0.00 – 78.00	17.50	0.00	1.000
Weekday to weekend difference in sleep duration (minutes) <sup>a</sup>	46.66 (126.19)	13.70	-78.50 – 258.40	10.92 (87.64)	43.00	-133.25 – 88.90	18.00	0.08	1.000
Research diary									
Mood rating <sup>b</sup> across DCW	2.83 (0.67)	2.57	2.00 – 3.71	3.49 (0.75)	3.43	2.43 – 4.86	25.00	1.23	.268
Quality of sleep onset <sup>c</sup> across DCW	1.04 (0.63)	1.14	0.43 – 2.00	0.63 (0.41)	0.67	0.14 – 1.14	10.00	1.24	.268

*Note* DCW = Data collection week. <sup>a</sup> Computed as: mean sleep duration (Friday, Saturday night) – mean sleep duration (Sunday, Monday, Tuesday, Wednesday, Thursday night): positive value indicates longer average sleep duration on weekend nights than school nights. <sup>b</sup> Rated on scale from 1 ('very bad mood') to 5 ('very good mood'). <sup>c</sup> Rated on a scale from [falling asleep] 'easily', 'after some time' or 'with difficulty' (scored 0, 1 and 2 respectively).

## EXPLORING ANXIETY, SLEEP AND SENSE OF BELONGING IN SRB

**Table 11.** Kendall's tau correlation coefficients for HRV and sleep actigraphy variables on Friday

Variable	1	2	3	4
1. Friday mean HF power HRV	-			
2. Friday mean LF/HF ratio HRV	<b>-.52</b>	-		
3. Friday (Thursday night) sleep efficiency	<b>.59</b>	<b>-.70</b>	-	
4. Friday (Thursday night) sleep onset latency	<i>-.48</i>	<b>.70</b>	<b>-.77</b>	-

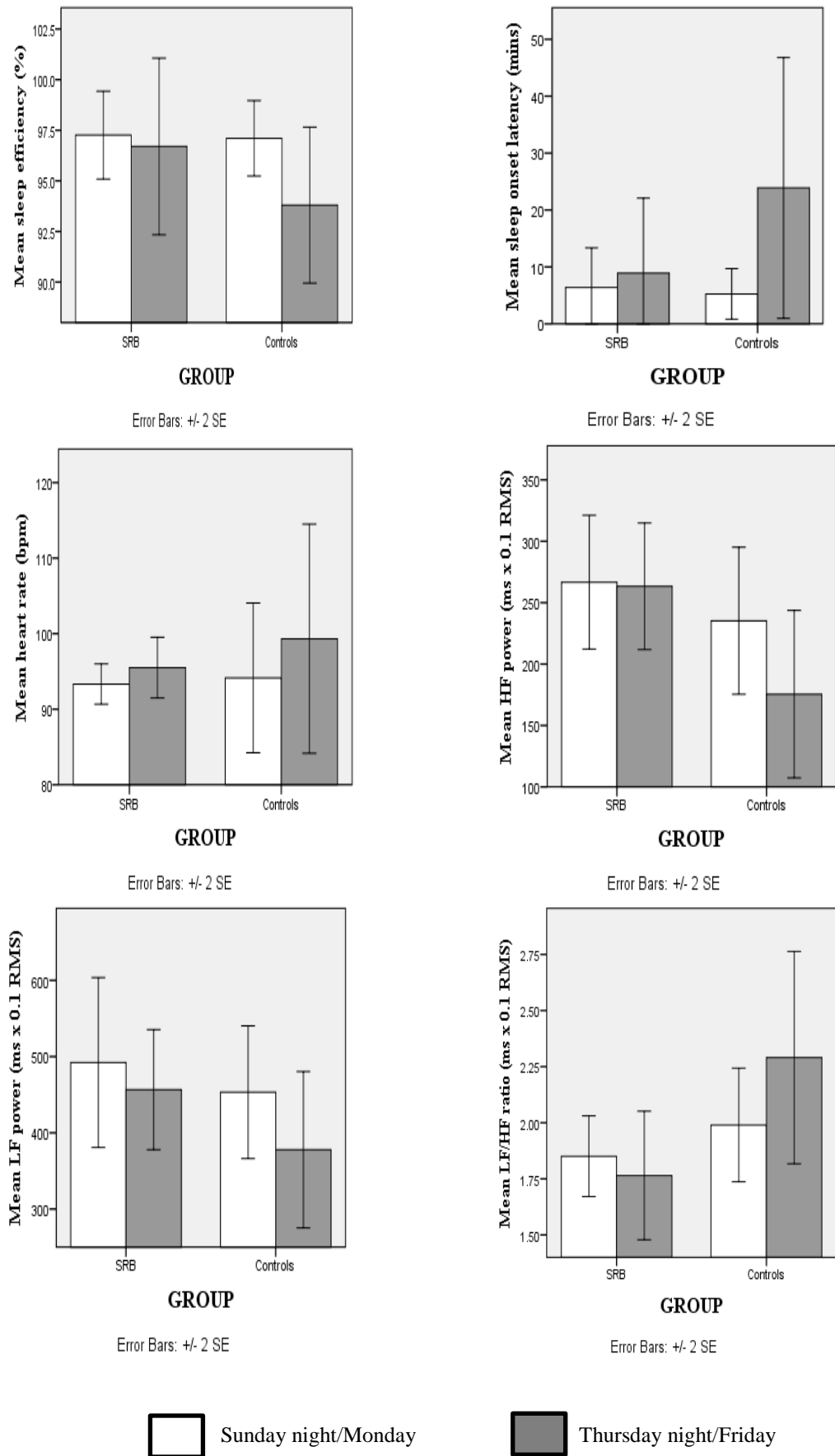
*Note:* HRV = heart rate variability; HF = high frequency. Values significant at  $p < .05$  in bold typeface; values indicating non-significant trends at  $p < .10$  in italicised typeface

than Monday in the control group (but not in the SRB group). Potential links between physiological indices of sleep on Thursday night and HRV on Friday were investigated using correlational analyses. Results showed strong significant associations among sleep efficiency and sleep onset latency on Thursday night, and HF power and LF/HF ratio on Friday, as presented in Table 11. The direction of associations was theoretically plausible, with HRV indices that are understood to reflect decreases in parasympathetic autonomic activity and sympatho-vagal balance (i.e. decreasing HF power and increasing LF/HF ratio) significantly associated with decreases in sleep efficiency and increases in sleep onset latency. Correlations between sleep variables on Sunday night and ECG variables on Monday were all non-significant. Of further interest, correlations between Friday ECG variables and sleep variables on Friday night were also non-significant, though a marginally non-significant correlation was noted between Friday LF/HF ratio and Friday night sleep onset latency ( $\tau = .44, p = .061$ ). Therefore, HF power and LF/HF ratio measured during school on Friday were significantly associated with sleep variables on the night directly preceding, but not directly following measurement. Figure 5 illustrates the effect of weekday on indices of physiological arousal and sleep observed in controls, contrasted with the relative stability of these variables between the beginning and end of the school week observed in the SRB group.

### Discussion

This pilot study explored anxiety, sleep and sense and belonging as factors that may differentiate between young adolescent girls who report elevated anxiety and show SRB from those who maintain high attendance. To the author's knowledge, no previous studies have investigated anxiety or sleep in youths with SRB using objective physiological measures, either exclusively or in conjunction with self-report measures. The present findings demonstrated some of the potential benefits of this methodology.

## EXPLORING ANXIETY, SLEEP AND SENSE OF BELONGING IN SRB



**Figure 5.** Sleep actigraphy and ECG variables on Monday and Friday by group

*Note:* All bar charts scaled to data. HRV = heart rate variability; HF = high frequency; LF = low frequency; ms = milliseconds; RMS = root mean square



### **Key Findings**

None of the research hypotheses were supported by the findings. However, support was gained for alternative ways of understanding how anxious high attenders may differ from anxious low attenders. Contrary to the findings of Ingul and Nordahl (2013), the present findings did not indicate that anxious youths with SRB had more overall problems than anxious youths with high attendance. With the exception of usual onset sleep latency at weekends (which was longer for the SRB group), the groups did not differ on any of the self-report psychopathological or sleep measures, including diary measures of mood and quality of sleep onset across the ECG/actigraphy data collection week. Nor did the groups differ on sense of belonging in school or on any parent-report measures of psychopathology. For both groups, in addition to the inclusion criterion of elevated anxiety, raised levels of internalising and externalising difficulties, and ‘very elevated’ levels of depressive symptomatology were also reported. A broad range of psychological difficulties were therefore observed across the whole sample. Based on self-report measures alone, the groups were virtually indistinguishable.

However, potentially important group differences were observed based on physiological measures of sleep and arousal. The findings indicated that quality of sleep, in terms of both the percentage of time in bed spent sleeping, and the time taken to fall asleep, showed non-significant trends towards being poorer on Thursday night than Sunday night for the control group, but not for the SRB group. Temporally associated with this, physiological arousal, reflected by increased heart rate and reduced HRV also showed non-significant trends towards being higher on Friday than Monday for the control group, but not for the SRB group. This was contrary to the hypothesised effects of both weekday and group, in that physiological indicators of poorer sleep and higher psychological stress levels were observed on Thursday night/Friday rather than Sunday night/Monday, and this was observed in the control group only. However, it could be argued that the unpredicted effect of ‘day’ was in keeping with the unpredicted effect of ‘group’. The hypothesis that the SRB group would fare worse physiologically on Sunday night/Monday than Thursday night/Friday, was underpinned by the tentative prediction that the beginning of the school week would be more onerous for the SRB group and that they would experience a relatively stronger sense of release at the end of the week. However, the observed pattern of poorer sleep and higher psychological stress at the end of the week can perhaps be more easily accounted for in the control group than the SRB group, as it is consistent with an accumulation of psychological stress across the week. It is possible that for controls, the daily impact of ‘pushing past’ their anxiety in order to sustain high attendance in school, may leave them in a relatively heightened state of arousal by Friday, associated with poorer sleep quality on Thursday night. For the SRB group, it is possible that their periodic absences represent a maladaptive way of regulating their anxiety across the week, such that both the day-to-day psychological

pressure to attend school and the cumulative impact of sustaining daily attendance in an anxiety-provoking environment, is reduced relative to controls. The relative parity in physiological indicators of sleep and stress observed between the groups on Sunday night/Monday, provides support for such group differences in the psychological impact of the school week. In contrast to predictions for the SRB group in particular, that anxiety would intensify over the weekend as the school week approached, the findings offered tentative support for weekends as a psychologically restorative period for the control group. The strong correlations observed between sleep quality on Thursday night and HRV on Friday, in contrast with the absence of associations between sleep quality on Sunday night and HRV on Monday was potentially of further importance. This suggested that the relationship between HRV during the school day and sleep quality on the preceding night, may be moderated by the extent to which psychological stress has been accumulating.

Interpreted within a framework of risk and resilience, the results of this study challenge the assumption that anxious high-attenders are demonstrating resilience by sustaining high levels of attendance. By not succumbing to SRB, this group demonstrates resilience if ‘positive adaptation’ is defined as ‘behaviourally manifested social competence, or success at meeting stage-salient developmental tasks (Luthar & Cicchetti, 2000, p. 858). However, if positive adaptation is defined in psychological rather than behavioural terms as “symptoms related to internal well-being” (Masten & Obradovic, 2006, p. 15), then the demonstration of resilience in this group is questionable based on the present findings, which suggests that they may be faring worse psychologically in school than anxious low-attenders. In contrast, while anxious low-attenders would appear to be sustaining relatively stable levels of psychological stress across the school week, it may be that this is achieved, to some extent, through the maladaptive strategy of engaging in SRB.

## Limitations

A number of limitations should be noted. First and foremost, constraints on time and resources resulted in a very small sample size, precluding the use of parametric analyses, thus reducing statistical power further. In addition to the likelihood of having insufficient power to detect potentially important effects, confidence in the generalisability of the present findings is inevitably compromised by this limitation. On the same note, it is acknowledged that key findings from the present study are based on non-significant trends, thereby reducing their empirical value. However, as an exploratory pilot study, the main purpose was to develop lines of enquiry for a larger study, which the observed trends have arguably provided. A second limitation is that while HF power has become well-established as an index of parasympathetic autonomic activity (Billman, 2013; Chalmers et al., 2014), there is growing controversy surrounding the physiological interpretation of the LF component of HRV. Consensus is increasing that the LF component of HRV reflects a complex

## EXPLORING ANXIETY, SLEEP AND SENSE OF BELONGING IN SRB

combination of sympathetic and parasympathetic autonomic activity, primarily representing the latter rather than the former as previously believed (Billman, 2013; Reyes Del Paso, Langewitz, Mulder, Roon, & Duschek, 2013). This also places the utility of the LF/HF ratio as an index of sympatho-vagal balance in some doubt (Billman, 2013; Chalmers et al, 2014). However, in defence of key conclusions drawn from the present findings, they are supported with isolated reference to the HF power component of HRV, and hence their validity is not materially impacted by these controversies. A third limitation was the highly variable duration of ECG recordings across the sample. The extent of this variability created inconsistencies in the phases of the school day that were covered by recordings, thus potentially confounding differences observed in HRV between and within participants. Finally, the attendance differential between the groups was smaller than planned due to high overall levels of attendance in the research school. It is possible that lower levels of absence in the SRB group would have resulted in more similar findings to Ingul and Nordahl (2012) with regard to group differences in reported psychopathology, which were not found in the present study.

### **Conclusions and Implications for Practice and Future Research**

The present study demonstrated the benefits of supplementing self-report assessment of anxiety and sleep with objective physiological measures. In the absence of such data in the present study, potentially important trends towards group differences in the psychophysiological experiences of anxious high- and low-attenders across the school week, would not have come to light. In this regard, the findings made a tentative challenge to assumptions that anxious adolescents who sustain regular attendance in school are necessarily demonstrating resilience. Crucially, it has been highlighted that ‘psychological resilience’ cannot be inferred from ‘behavioural resilience’. Equally the findings raised concerns that anxious low-attenders may be using school avoidance strategies to regulate their levels of anxiety across the school week, thus reinforcing SRB and potentially worsening its course.

Further research is required on a larger scale to assess the extent to which the findings of the present study can be replicated. It may be for example, that the present findings are specific to young adolescent girls who report very elevated levels of depression, in addition to elevated anxiety. The absence profiles of the groups (i.e. the exemplary attendance of the control group, the relatively low absence rates of the SRB group and/or the relatively small absence differential between the groups) may also bear significantly on the present findings. Subsequent research should investigate the generalisability of the present findings to samples drawn from other populations. For example, it may be that greater differences in reported psychopathology, sleep patterns and sense of belonging are observed between anxious high-attenders and low-attenders in older adolescence, in boys and/or in

youths of certain ethnicities. Psychophysiological differences across the school week between anxious high- and low-attenders may also be moderated by these demographic factors.

Examination of the role of wider contextual risk-factors for SRB and how they interact with child factors, such as anxiety, sleep and sense of belonging, should be a broader focus of future research in this field. These explorations would be usefully guided by Kearney's (2008a) interdisciplinary model of absenteeism which promotes identification of potentially influential factors within the child's family, peers, school and community, and consideration of the interplay between these factors in the onset and maintenance of SRB. It would be helpful to embed future research comparing anxious high- and low-attenders within a risk and resilience framework. This would inform explorations of factors that contribute to the adversity facing each group, and the extent to which regular attendance in anxious youths moves beyond 'positive adaptation' at the behavioural level, to the internal development of psychological resilience.

The present findings raise several important implications for Educational Psychology practice. It is of central importance that the psychological and functional difficulties experienced by anxious CYP of school age, whether they are maintaining high attendance, or showing SRB, are given due attention through effective early identification, assessment and intervention practices. Arguably, the experiences and needs of anxious high-attenders are particularly susceptible to being overlooked. Schools hold statutory duties in relation to safeguarding children from abuse and neglect (Dfe, 2016b) and have been historically regarded as 'safe havens' (Watson & Watson, 2002). As such, regular school attendance acts as a key mechanism for safeguarding children's welfare as well as promoting positive developmental outcomes. Regarded in this protective light, regular attendance is perhaps difficult to reconcile with significant psychological costs, but this may be the complex reality for many anxious high-attenders. It is important that EPs have awareness of these complexities and are able to communicate them effectively to key stakeholders in order to support early identification of CYP who may be experiencing significant levels of anxiety in school, while maintaining exemplary attendance records. EPs are equipped with skills to develop an integrated conceptualisation of key influential factors affecting the experiences of CYP impacted by anxiety, whether they are sustaining regular attendance or displaying SRB. In both cases, it is essential that interventions are informed by comprehensive assessment and endorsed by a substantive evidence base that holds up to critical evaluation. Wherever possible, school-based interventions are recommended to help anxious CYP build more positive associations with the school environment and develop psychologically healthier responses to sustaining regular attendance in school. Educational Psychologists are well placed to work with families, schools and other professionals on multiple levels to drive these key messages forward.



## **Appendices**

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## Appendix A: Search terms, database specific search limiters and filters applied in the systematic review

**PsycINFO via EBSCO: Limiters/Expanders:** References Available; Publication Year: 1972-2016; Published Date: 19720101 20161231; Peer Reviewed; Publication Status: fully published; Publication Type; Peer Review Journal; Language: English; Age Groups: School Age (6-12 years), Adolescence (13-17 yrs); Document type: Journal Article; Exclude Dissertations

**Medline via EBSCO: Limiters/Expanders:** Date of Publication: 19720101-20161231; Abstract Available; Human; Age Related: Child: 6-12 years, Adolescent: 13-18 years; Publication Type: Journal Article; Language: English

**Web of Science via Web of Knowledge: Filters:** Language: English; Document Type: Article; Timespan: 1972-2016; **Refined by [excluding]:** *Web of Science Categories:* Public Environmental Occupational Health; Medicine Research Experimental; Tropical Medicine; Mathematics Interdisciplinary Applications; Substance Abuse; Immunology; Social Sciences Mathematical Methods; Food Science Technology; Respiratory System; Economics; Criminology Penology; Allergy; Philosophy; Rehabilitation; Nutrition Dietetics; Health Care Sciences Services; Endocrinology Metabolism; Otorhinolaryngology; Emergency Medicine; Legal Medicine; Rheumatology; Environmental Sciences Ecology; Dentistry Oral Surgery Medicine; Pharmacology Pharmacy; Oncology; Anaesthesiology; Area Studies; Gastroenterology Hepatology; Engineering Industrial; Parasitology; Ergonomics; Surgery; Health; Health Policy Services **Countries/Territories:** Sierra Leone; Israel; Qatar; Nigeria; Japan; India; Brazil; Taiwan; Egypt; South Africa; Iran; Emirates; Trinidad & Tobago; South Korea; Pakistan

### School refusal behaviour/Attendance

School refusal behaviour *or*  
 School refusal *or*  
 Anxious school refusal *or*  
 School absenteeism *or*  
 School absence *or*  
 School avoidance *or*  
 School phobia *or*  
 Extended absence *or*  
 Persistent absence *or*  
 School truancy *or*  
 Truancy *or*  
 School attendance *or*  
 Attendance *or*  
 School non-attendance *or*  
 Non-attendance

AND

### Anxiety

Anxiety *or* emotional states *or* stress *or* apprehension *or* worry *or*  
 anxiousness *or* angst *or* anxiety disorder



**Appendix B: Rationale for studies excluded from the systematic review after assessment of full text**

Reference	Study Objective	Reason for Exclusion
Foreman, D. M., Dover, S. J., Hill, A. B. (1997). Emotional and Semantic Priming as a Measure of Information Processing in Young People with School Refusal: A Research Note. <i>Journal of Child Psychology and Psychiatry</i> , 38(7), 855-860	To examine information processing in adolescents with school refusal with reference to emotional and semantic priming	Operationalisation of school attendance and attendance/absence profiles of sample not reported
Henry, K. L. (2007). Who's Skipping School: Characteristics of Truants in 8 <sup>th</sup> and 10 <sup>th</sup> Grade. <i>Journal of School Health</i> , 77(1), 29-35	To explore the prevalence of truancy and its associations with demographic, family, and school factors	Predictor variables did not include anxiety
McShane, G., Walter, G., & Rey, J. M. (2001) Characteristic of adolescents with school refusal. <i>Australian and New Zealand Journal of Psychiatry</i> , 35, 822-826	To explore characteristics of CYP with SRB presenting to child and adolescent psychiatric unit and to compare differences between those admitted for inpatient treatment with those who were not	Quantitative attendance/absence criteria for inclusion or quantitative attendance/absence profile of sample not reported

**Appendix C: Data extraction table for studies included in the systematic review**

Study Reference (Paper Number)/ Location/Key Constructs	Key Objective(s)/ Design/Data Analysis	Sample Characteristics	Operationalisation of SRB/attendance /absence	Other Key Outcome/ Predictor Measures	Key Findings
<p>Bools, Foster, Brown, &amp; Berg (1990) (1)</p> <p><b>Location:</b> UK</p> <p><b>Key Constructs:</b> Anxiety (within category of psychiatric disturbance); school refusal, truancy, 'mixed pattern'</p>	<p><b>Objectives:</b> To examine the features of a sample of children from a non-clinical population, presenting with severe school attendance difficulties; specifically, to group the children empirically (by cluster analysis), by categories of school attendance problems, and by psychiatric diagnosis</p> <p><b>Design:</b> Cross-sectional community study (participants recruited from children referred to an attendance committee of a local authority)</p>	<p>100 children (41% girls) mean age 14.0 years (<math>SD=1.3</math>; range criteria 10 to 15 years); mean % absence over mean period of 12 weeks 44%.</p> <p><i>Socioeconomic composition: (Registrar General, 1960)</i> Class I (none), class II (3%), classes III or IV (75%), remainder not accounted for</p> <p><i>Family composition:</i> Living with both biological parents (46%); living with single, divorced, separated or widowed mother (38%); living in step-families (16%)</p>	<p><b>Criteria for severe school attendance problem:</b> (a) family known to Education Welfare Service due to problematic absence from school; and (b) family referred to attendance committee with education department of local authority due to persisting non-attendance, i.e. "final step prior to the instituting of juvenile court proceedings" (p. 171)</p> <p><b>Operationalisation of school non-attendance categories (p. 180)</b></p> <p><b>School refusal:</b> 1. "When faced with</p>	<p><b>Informants:</b> Parents</p> <p><b>SRB and anxiety measures:</b> (<i>parent semi-structured clinical interviews</i>) Semi-structured interview schedule designed for the purposes of the study to elicit information regarding the school attendance problem, family characteristics and psychological adjustment of the child; school non-attendance category and presence of ICD-9 disorder determined by one or both psychiatrists, based on criteria detailed in Appendices of paper</p> <p><b>Categories of school non-attendance:</b> Truant School refuser Mixed pattern</p>	<p><b>Classification of school non-attendance categories:</b></p> <p>53% truants (of these 25% girls) 24% school refusers (of these 62% girls) 9% mixed, i.e. truants and school refusers (of these 69% girls) 14% neither, i.e. truants nor school refusers (of these 50% girls)</p> <p>No significant differences found between above groups by age, social class or family "intactness" (p.174)</p> <p>Significantly more school refusers were girls; significantly more truants were boys</p> <p><b>Classification of ICD-9 psychiatric disorder categories:</b> 53% of children (of these 36% girls) assessed to have ICD-9 disorder of relevance to study:</p> <p>14% of children (of these 86% girls) and 50% of school refusers assessed to have emotional disorder</p> <p>Of those with an emotional disorder, <b>86%</b> diagnosed with <b>anxiety and fearfulness</b> and 14% diagnosed with misery and unhappiness</p> <p>31% of children (of these 13% girls) and 49% of truants assessed to have a conduct disorder.</p>

## EXPLORING ANXIETY, SLEEP AND SENSE OF BELONGING IN SRB

	<p>education department)</p> <p><b>Key Data Analyses:</b> Principal component and cluster analyses</p>	<p><i>Exclusion criteria:</i> siblings of children already recruited to the study</p>	<p>prospect of going to school with reasonable parental pressure, either (a) severe emotional upset <b>or</b> (b) complaints of physical illness thought to have emotional basis</p> <p>2. Child usually at home with parents, or other family member</p> <p>3. Absence of conduct disorder</p> <p><b>Truancy:</b> “Parents unaware that child is absent from school”</p> <p><b>Mixed pattern</b> “Some features of both school refusal and of truancy: 1. school refusal pattern but with conduct disorder <b>or</b> 2. variable pattern from day to day</p> <p><b>Neither pattern</b> “Neither features of school refusal or truancy”</p>	<p>Neither pattern</p> <p><b>Categories of ICD-9 psychiatric disorder</b> Conduct Emotional Mixed conduct and emotional No disorder</p>	<p>8% of children (of these 38% girls) assessed to have mixed conduct and emotional disorder 47% of children (of these 47% girls) and 47% of truants assessed to have no disorder</p> <p>Significantly more children with emotional disorders were girls; significantly more children with conduct disorder were boys</p> <p><b>Outcomes of Principal Components Analysis (on 18 items from interviews with parents):</b></p> <p>Largest 3 components derived from PCA (together accounting for 45% of the variance in item scores):</p> <p><b>Morning symptoms</b> (17% of variance) <b>Antisocial behaviour</b> (15% of variance) <b>General neurotic disturbance</b> (13% of variance)</p> <p><b>Outcomes of Cluster Analysis</b></p> <p><b>Cluster 1:</b> ‘non-clinical’: 68% of sample, of whom 41% were girls, 65% were classified as truants; 62% deemed to have no psychiatric disorder</p> <p><b>Cluster 2:</b> ‘refusal’: 21% of sample, of whom 57% were girls, 81% were classified as school refusers; 48% deemed to have an emotional disorder; <b>significantly higher mean score on general neurotic disturbance component than clusters 1 and 3</b></p> <p><b>Cluster 3:</b> ‘truancy’: 11% of sample, of whom 9% were girls, 82% were classified as truants; 100% deemed to have conduct disorders; <b>significantly higher mean score on antisocial behaviour component than clusters 1 and 2</b></p>
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<p>Last &amp; Strauss (1990) (2)</p> <p><b>Location:</b> US</p> <p><b>Key Constructs:</b> Anxiety; school refusal</p>	<p><b>Objective:</b> To examine the characteristics of anxiety-based school refusal in anxiety disordered children and adolescents; specifically, to examine the diagnostic composition of the sample and additional characteristics relating to sociodemographic, personality and family variables</p> <p><b>Design:</b> Cross-sectional clinical study (sample comprised children and adolescents presenting with anxiety based school refusal, who had been referred as outpatients to an anxiety disorder clinic and comparison group)</p> <p><b>Key Data Analyses:</b> Analyses of variance and Chi-squares</p>	<p><b>School refusal group:</b></p> <p>63 children (59% girls) mean age 13.5 years (<math>SD=2.4</math>, range 7 to 17 years)</p> <p>Age of onset 2 years before referral on average</p> <p><i>Distribution of school refusal severity for sample:</i> (p.32)</p> <p><b>Mild</b> (“misses 1 day in 2 weeks”) 23%; <b>moderate</b> (“misses 1 day per week”) 22%; <b>severe</b> (“misses several days per week”) 17%; <b>extreme/pervasive</b> (“missed weeks of school”) 38%</p> <p>60% of sample postpubertal</p> <p><i>Ethnic composition:</i> 89% Caucasian</p> <p><i>Socioeconomic composition:</i> 53% from families of lower</p>	<p><b>Criteria for school refusal status</b></p> <p>Kiddie-SADS ratings of 3 or greater on school refusal item</p> <p><b>Criteria for controls</b></p> <p>Not reported; attendance profile of control group also not reported in descriptive statistics</p>	<p><b>Informants:</b> children/adolescents and mothers</p> <p><b>SRB and anxiety measures:</b> (<i>child/adolescent and mothers: structured interviews conducted by a clinical psychologist</i>)</p> <p>Modified version of Schedule for Affective Disorders and Schizophrenia in School-Age Children (Kiddie-SADS)</p> <p>Diagnosis of <b>anxiety based school refusal</b>, presence of <b>school refusal in maternal childhood*</b> and <b>anxiety disorders and major depression</b> using DSM-III-R criteria based on information obtained from above clinical interviews</p> <p>Accuracy of diagnoses and presence of anxiety based school refusal supported using consensus procedure:</p>	<p><b>Classification of DSM-III-R anxiety disorders in school refusal group*:</b></p> <p>38% separation anxiety disorder 30% social phobia 22% simple phobia 6% panic disorder 3% post-traumatic stress disorder</p> <p>*Note: with the exception of 3 cases, the <b>primary anxiety diagnosis</b> (i.e. that which was most impairing and initially targeted for intervention) was the <b>diagnosis associated with school refusal</b></p> <p><b>ANOVA and Chi-Square comparisons between three most common anxiety groups</b> (SAD, social phobia, simple phobia)</p> <p>Children with <b>separation anxiety disorder</b> had <b>significantly younger age at intake</b> (11.7 years) and <b>onset</b> (8.7 years) than those with social phobia (14.8 years and 12.4 years) and those with simple phobia (14.2 years and 12.9 years) respectively</p> <p><b>Phobic school refusers</b> (i.e. children with social phobia and simple phobia) had significantly <b>more severe school refusal</b> than separation anxious school refusers</p> <p>The mothers of <b>separation anxious school refusers</b> were significantly more likely than those of phobic school refusers to have experienced <b>anxiety based school refusal in their own childhood</b>.</p> <p>No significant differences found between above groups on <b>sex, ethnicity, marital status of parent</b> or <b>socioeconomic</b> status of family</p>
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# EXPLORING ANXIETY, SLEEP AND SENSE OF BELONGING IN SRB

		<p>socioeconomic class (Hollingshead ratings IV or V)</p> <p><i>Family composition:</i> 51% from single-parent families</p> <p><b>Control group*</b> * Note: <i>serving as comparison group within analyses of rates of anxiety based school refusal in mothers' childhoods</i></p> <p>63 children, never psychiatrically ill, matched by <b>age</b> (i.e. within one year) and <b>gender</b> to children in school refusal group</p> <p><i>Exclusion criteria:</i> Potential controls excluded if they (a) currently or historically met the criteria for any DSM-III-R psychiatric disorder, (b) had a history of contact with mental health services</p>		<p>(a) information obtained in each interview verbally presented to a second psychologist; additional interviewing held where necessary until consensus reached</p> <p>(b) inter-rater reliability assessed by scoring of a third of interview recordings by a second clinician; presence of anxiety-based school refusal (100%); DSM-III-R anxiety diagnoses and depression (range 81 to 100%)</p> <p>*Note: Interviews with mothers relating to experiences of psychopathology in their own childhood, conducted by clinician <b>blind</b> to children's diagnoses</p>	
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<p>Southworth (1992) (3)</p> <p><b>Location:</b> UK</p> <p><b>Key Constructs:</b> School anxiety; persistent absence</p>	<p><b>Objective:</b> (a) To explore the extent to which ‘Traditional’, ‘Institutional’, ‘Psychological’ and ‘Generic’ categories of absenteeism are valid and meaningful, (b) to explore differences between these groups on psychological and social characteristics</p> <p><b>Design:</b> Cross-sectional community study (sample comprised adolescents from eight comprehensive secondary schools)</p> <p><b>Key Data Analyses:</b> Pearson’s correlations; ANOVAs</p>	<p><b>Whole sample:</b> 147 adolescents (46% girls) in the 3<sup>rd</sup> and 4<sup>th</sup> year of secondary school (equivalent of Years 9 and 10); 122 adolescents in <b>poor attenders group</b>; 25 adolescents in <b>good attenders</b> comparison group</p> <p>Use of stratified sampling reported to facilitate recruitment of representative sample across balance of schools in rural and urban areas</p> <p>Age and absence profiles of final sample (either as a whole or broken down by group) and gender profile broken down by group not reported in descriptive analyses or elsewhere;</p> <p><i>Exclusion criteria:</i> (for potential</p>	<p><b>Criteria for poor attenders:</b></p> <p>Less than 85% attendance over previous two terms</p> <p><b>Criteria for good attenders:</b> <i>n</i>=25</p> <p>Greater than 98% attendance over above period</p> <p>No distinction made between ‘excused’ and ‘unexcused’ absence in operationalisation of persistent absence</p> <p><b>Classification of poor attenders (p.367):</b></p> <p><b>Traditional:</b> <i>n</i>=12 “pleasant when spoken to”, “from an unsupportive background”, and “aware of their own social and educational limitations”</p> <p><b>Institutional:</b> <i>n</i>=32 “miss school purely</p>	<p><b>Informants:</b> adolescents, Year Heads</p> <p><b>Anxiety measures:</b> (<i>adolescent self-report</i>) Boxall Test of School Anxiety</p> <p><b>SRB measure:</b> (<i>Year Head interview</i>) Questionnaire designed by researcher in order to elicit information relating to the reasons for absence, to inform which category of absence participant should be placed in</p> <p>No further information reported about this key questionnaire</p>	<p><b>Classification of poor attenders:</b></p> <p>10% (12/122) traditional absentees 26% (32/122) institutional absentees 21% (25/122) psychological absentees 43% (53/122) generic absentees</p> <p>Gender distributions in each group not reported</p> <p><b>Outcomes of correlational analyses*:</b></p> <p>*Note: category of attendance dichotomised into poor attender (1)/good attender (2)</p> <p><b>School anxiety</b> was not significantly associated with category of attendance</p> <p><b>Outcomes of one-way Analyses of variance between five attendance groups (4 categories of poor attenders + good attenders) on psychological and social characteristics ***:</b></p> <p>***Note: 12 cases from each of the four poor attender groups were selected at random in order to equalise sample size across the groups</p> <p><b>Psychological</b> absentees scored significantly higher on <b>neuroticism</b> than all other groups</p> <p><b>Psychological</b> absentees reported significantly <b>higher school anxiety</b> than <b>institutional</b> absentees and <b>good attenders</b>, but did <b>not differ</b> on this variable with <b>traditional</b> and <b>generic</b> absentees</p>
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# EXPLORING ANXIETY, SLEEP AND SENSE OF BELONGING IN SRB

		<p>participants in both groups) Students with score greater than 12 on the 'Lie-scale' of the Junior Eysenck Personality Questionnaire (JEPQ), indicating a predisposition to give socially expected responses</p>	<p>for educational reasons”</p> <p><b>Psychological:</b> <i>n</i>=25 “miss school mainly for psychological or psychological-related factors, e.g. a fear of attending school, fear of teachers, temperamental disadvantages or tantrums etc.”</p> <p><b>Generic:</b> <i>n</i>=53 “miss school for two or three different reasons either at the same time or over a longer period”</p>		
<p>Berg, Butler, Franklin, Hayes, Lucas, &amp; Sims (1993) (4)</p> <p><b>Location:</b> UK</p> <p><b>Key Constructs:</b> Anxiety; school attendance, school refusal, truancy</p>	<p><b>Objective:</b> To clarify the nature of school attendance problems in the normal school population, in relation to anxiety disorders and social factors</p> <p><b>Design:</b> Cross-sectional community study</p>	<p><b>Severe school attendance problems group:</b> 80 adolescents (65% girls) in 3<sup>rd</sup> and 4<sup>th</sup> year (equivalent of Years 9 and 10), mean age 14.8 years (range 13.5 – 15.8), mean % absence over autumn term 56.2</p>	<p><b>Criteria for severe school attendance problem group:</b> Inspection of attendance registers in Autumn term of 1989 for 3<sup>rd</sup> and 4<sup>th</sup> years for children (a) who had absence rate of 40% or more and (b) for whom <b>no satisfactory excuse</b></p>	<p><b>Informants:</b> Parents and adolescents</p> <p><b>SRB and anxiety measures:</b> (<i>parent and child structured interviews</i>) Child and Adolescent Psychiatric Assessment Scale (CAPA) interviews*</p>	<p><b>Group Comparisons</b> Mean scores on SRS (school refusal) were significantly higher in attendance problems group than controls (50% vs. 7%); mean scores on TS (truancy) were significantly higher in attendance problems group than controls (50% vs. 10%)</p> <p>Prevalence of DSM-III-R disorders significantly higher in attendance problems group than controls (half versus one tenth)</p> <p><b>Classification of DSM-III-R diagnoses in severe school attendance problems group*:</b></p>

	<p>(participants recruited from four secondary schools)</p> <p><b>Key Data</b>  <b>Analyses:</b> Analyses of variance and covariance/Chi-squares</p>	<p>(<i>SD</i>=17.2, range 40-100)</p> <p><b>Control group:</b> 30 children (57% girls) in 3<sup>rd</sup> and 4<sup>th</sup> year (equivalent of Years 9 and 10), mean age 15.0 years (range 14.0 to 16.0 years), mean % absence over autumn term 12.1 (<i>SD</i>= 7.8, range 0-39)</p>	<p><b>of absence</b> had been recorded</p> <p><b>Criteria for control group:</b> Random selection by “sticking a pin in the attendance registers used for the study” (p. 1188)</p> <p><b>Categorisation of school attendance problems</b></p> <p>Application of criteria used by Bools et al. (1990) see study (1) above</p>	<p>* Note: 2 interview recordings were too poor in sound quality to use, therefore data analyses involving psychiatric diagnoses were based on <b>78</b> adolescents in severe problem attendance group</p> <p><b>Additional SRB measures:</b>  <i>(parents)</i>                      School Refusal Subscale (SRS) and Truancy Subscale (TS) of School Attendance Checklist (devised by first and second author)</p> <p><b>Categories of School attendance problem:</b>                      School refusal                      Truancy                      Neither of the above</p> <p><b>Categories of DSM-III-R Disorder:</b>  <i>Anxiety:</i>                      anxiety/mood disorder  <i>Conduct:</i> disruptive behaviour disorder                      Neither of the above</p>	<p>*Note: <b>conduct disorder, separation anxiety disorder and phobias</b> were prioritised, such that any co-existing disorders were disregarded</p> <p>Half (40/78) assessed to have <b>no DSM-III-R diagnosis</b></p> <p>A third (25/78) assessed to have <b>disruptive disorder</b></p> <p>A fifth (13/78) assessed to have <b>anxiety/mood disorder</b> (child CAPA = 6; parent CAPA = 3, both = 4)</p> <p>Of those assessed to have an anxiety/mood disorder, over half (7/13) diagnosed with <b>separation anxiety disorder</b></p> <p><b>Classification of school attendance problems and DSM-III-R disorders among severe school attendance problems group:</b></p> <p>30% with truancy but no disorder                      27% with truancy and conduct disorder                      1% with truancy and anxiety disorder                      15% with school refusal but no disorder                      1% with school refusal and conduct disorder                      18% with school refusal and anxiety disorder                      18% with neither school refusal nor truancy</p>
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# EXPLORING ANXIETY, SLEEP AND SENSE OF BELONGING IN SRB

<p>Hayward, Taylor, Blair-Greiner, Strachowski, Killen, Wilson, &amp; Hammer (1995) (5)</p> <p><b>Location:</b> US</p> <p><b>Key Constructs:</b> Anxiety (in the context of panic attacks); school refusal</p>	<p><b>Objective:</b> (a) To determine whether adolescent girls with panic attacks from a community sample who have sought treatment, share the symptomatology experienced by patients with panic symptoms drawn from clinical populations, (b) to explore the relationship between panic attacks (as distinct from panic disorder) and school refusal</p> <p><b>Design:</b> Cross-sectional community study (participants recruited from schools in two suburban, ethnically diverse school districts)</p> <p><b>Key Data Analyses:</b> matched-pair <i>t</i>-tests (to assess differences between mean of panic group and</p>	<p><b>Panic attacks group</b> (p. 333) 40 sixth- and seventh- grade girls (equivalent of Years 7 to 8) who had reported experiencing at least one “four-symptom panic attack in their lifetime”; mean age 11.8 years (<i>SD</i>=0.7); pubertal status as measured by Sexual Maturity Index (SMI) rating 4.0 (<i>SD</i>=0.6)</p> <p><i>Ethnic composition:</i> White (42.5%), Asian-American (12.5%), Hispanic (45.0%)</p> <p><b>Matched Comparison Group</b> 120 matched controls: each girl in panic attacks group matched with 3 panic-free girls on <b>age, pubertal status</b> and <b>ethnicity</b></p>	<p><b>Operationalisation of school refusal:</b></p> <p>Kiddie-SADS classification (see Key measures):</p> <p>None/not at all Slight Mild Moderate Severe Extreme</p> <p>Criteria for each level of severity not transparent; reliance on criteria used by Last &amp; Strauss (2) undermined by inconsistency in ‘<b>Mild</b>’ criterion – <i>in present study:</i> “resists going to school but can be persuaded” (arguably <i>school reluctance</i> rather than <i>school refusal</i>) <i>In Last &amp; Strauss:</i> Mild: “misses 1 day in 2 weeks”</p> <p>School refusal did not include: (a) school refusal associated with wanting to stay</p>	<p><b>Informants:</b> adolescents</p> <p><b>Anxiety (panic attack), agoraphobic avoidance and SRB measures:</b> (<i>adolescent: structured interviews conducted by one of ten graduate psychology students</i>)</p> <p><i>Panic attacks:</i> Structured Clinical Interview for DSM-III-R Non-Patient Version (SCID-NP)</p> <p><i>Agoraphobic avoidance and SRB:</i> Modified version of Schedule for Affective Disorders and Schizophrenia in School-Age Children (Kiddie-SADS)</p> <p>Inter-rater reliability assessed by observation and scoring of 40 random interview recordings by a second interviewer; mean inter-rater reliability for questions across interview ranged</p>	<p><b>Distribution of school refusal severity: (p. 334)</b></p> <p><b><i>Panic attacks group:</i></b> <b>None or Slight</b> 82.5%; <b>Mild</b> (“resists going to school but can be persuaded”) 10.0% <b>Moderate</b> (“refuses to go to school at least one day per week”) 7.5%</p> <p><b><i>Matched comparisons group:</i></b> <b>None or Slight</b> 98.3%; <b>Mild</b> (“resists going to school but can be persuaded”) 1.7% <b>Moderate</b> (“refuses to go to school at least one day per week”) 0.0%</p> <p><b>Outcomes of matched-pairs <i>t</i>-tests analyses</b></p> <p><b>Panic attack group</b> had significantly <b>higher rates of school refusal</b> than matched controls</p> <p>Panic attack and matched controls <b>did not differ</b> on measures of <b>agoraphobic avoidance</b></p>
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	mean of 'triad'* in comparison group on selected variables)  *Note: see sample characteristics for matching procedure		with a family member at home, i.e. <b>school refusal related to separation anxiety</b> <b>(b) truancy</b> (operationalisation of truancy not reported)	from 66 to 100% (presence of panic attacks: 79%; school refusal*:100%; questions re agoraphobic avoidance: 90%) * Note: whether this pertains to presence or ratings of school refusal is not reported	
Bernstein, Massie, Thuras, Perwien, Borchard, & Crosby (1997) (6)  <b>Location:</b> US  <b>Key Constructs:</b> Anxiety (somatic symptoms); 'anxious-depressed school refusers'	<b>Objectives:</b> To explore most common somatic symptoms in outpatient adolescent anxious-depressed school refusers; to determine whether there is a greater likelihood of somatic symptoms with high anxiety vs. high depression  <b>Design:</b> Cross-sectional clinical study (outpatient sample)  <b>Key Data Analyses:</b> Analyses of variance, Chi-squares, Pearson correlations,	44 outpatient adolescents (61% girls) mean age 14.7 years (range criteria 12 to 18), mean % absence at baseline 71.8% ( <i>SD</i> =27.6). All participants of postpubertal status and diagnosed with at least one anxiety disorder and major depression. <i>Ethnic composition:</i> Caucasian (89%), African-American (9%), Hispanic (2%); SES composition: class I (2.3%), class II (13.6%), class III (43.2%), class IV (38.6%), class V (2.3%)	<b>School refusal criteria:</b> at least 20% (i.e. 4 days) absence from school in the 4 weeks prior to initial assessment for the study  Attendance data obtained from school attendance records and confirmed by parents  Absence based on full and partial days missed (partial = more than 50% of day missed)	<b>Informants:</b> Parents, adolescents  <b>Anxiety, somatisation measures:</b> ( <i>parent and child structured interviews</i> )  Diagnostic Interview for Children and Adolescents-Revised-Adolescent Version & Parent Version (DICA-R-A & DICA-R-P);  NIMH Diagnostic Interview Schedule for Children Version 2.3 Child Form & Parent Form (DISC-C & DISC-P);	Based on the ARC-R (clinician rating), most common somatic symptomatology among sample was <b>autonomic</b> (including having headaches, feeling dizzy and becoming sweaty), <b>gastrointestinal</b> and <b>muscular</b> ; symptoms rated by clinician as moderate or severe as follows: <b>Autonomic:</b> 45.4% <b>Gastrointestinal:</b> 34.1% <b>Muscular:</b> 27.3%  31.8% of adolescents were assessed to have at least 5 somatic symptoms on DICA-R-A; most common symptoms on this measure were faintness, light-headedness, dizziness, nausea, and back pain.  Few differences in somatic symptoms by age or gender: Participants with moderate or severe <b>muscular symptoms significantly older</b> than participants with mild or no muscular symptoms; participants <b>with separation anxiety disorder</b> were <b>significantly younger</b> than those without  Anxiety (by RCMAS) significantly predicted severity of somatic symptoms (on ARC-R); depression (by Beck Depression Inventory) added no further predictive value

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	multiple/logistic regression	<p><i>Inclusion criteria:</i> See school refusal criteria in respect of absence right. Score of <math>\geq 5</math> on ARC-R (anxiety) and of <math>\geq 35</math> on CDRS-R (depression); diagnosis of at least one anxiety disorder on DICA-R-A and/or DICA-R-P <u>or</u> on NIMH DISC-C and/or DISC-P; diagnosis of major depression on DICA-R-A and/or DICA-R-P; Pubertal stage between Tanner stage 3 to 5, i.e. postpubertal</p> <p><i>Exclusion criteria:</i> major medical diagnosis, drug/alcohol abuse, 'mental retardation', ADHD, bipolar disorder, eating disorder, conduct disorder, history of bipolar disorder in immediate relatives, current usage of psychotropic medication</p>		<p>Anxiety Rating for Children-Revised (ARC-R)</p> <p>(child self-report)</p> <p>Revised Children's Manifest Anxiety Scale (RCMAS)</p> <p>Symptom Checklist-90-Revised (SCL-90-R)</p> <p>(parent report)</p> <p>Child Behavior Checklist (CBCL)</p>	<p>after controlling for anxiety. <b>The inverse also applied</b> – i.e. depression significantly predicted severity of somatic symptoms; anxiety added no further predictive value after controlling for depression: <b>both anxiety and depression appear to play a significant role in somatic symptoms; relative direct influence of each difficult to ascertain</b></p> <p><b>Autonomic symptoms</b> (by ARC-R) significantly correlated with <b>absence</b>.</p> <p>Correlations <b>between respiratory and cardiovascular items and absence</b> were also approaching significance. Self-reported and clinician rated <b>anxiety and depression</b> were not significantly correlated with absence rates</p> <p>Participants with <b>separation anxiety disorder</b> had <b>significantly better attendance rates</b> than those without</p>
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<p>Corville-Smith, Ryan, Adams, &amp; Dalicandro (1998) (7)</p> <p><b>Location:</b> Canada</p> <p><b>Key Constructs:</b> Social anxiety; school attendance</p>	<p><b>Objectives:</b> To determine whether students with problematic school absence can be distinguished from students with regular school attendance by a combination of personal, family and school variables</p> <p><b>Design:</b> Cross-sectional community study (participants recruited from two high schools in a small city)</p> <p><b>Key Data Analyses:</b> Independent-samples <i>t</i>-tests; stepwise discriminant function analysis</p>	<p><b>Absentee group:</b> 27 adolescents (70% girls) age range 15 to 19 years who met criteria for inclusion as ‘absentee’ – see right for criteria</p> <p><b>Regular attenders group:</b> 27 adolescents (70% girls) age range 15 to 19 years with good attendance</p> <p>Absentee students matched with regular attenders by school, grade (year group) and sex</p>	<p><b>Criteria for inclusion as ‘absentee’ student:</b> at least 15 or more classes missed in any one course over the ‘Fall semester’ or 10 or more classes missed in any one course by the mid-point of the Winter semester. <i>Exclusion criteria</i> (for absentee group): Students whose absence was deemed to be legitimate through illness or injury</p> <p><b>Criteria for inclusion as ‘regular attendee’:</b> “good attendance record” (p. 632) over the full academic year.</p> <p>Attendance data obtained from school attendance records over academic year 1993/94.</p>	<p><b>Informants:</b> Adolescents</p> <p><b>Social anxiety measure:</b> (<i>adolescent self-report</i>) What I Think and Feel (Reynolds &amp; Richmond, 1978)</p>	<p><b>Independent-samples <i>t</i>-test outcomes:</b></p> <p><b>No significant difference</b> between absentees and regular attenders on reported <b>social anxiety</b>, however trend noted approaching statistical significance, i.e. absentees reported higher social anxiety than regular attenders (<math>p = .075</math>)</p> <p><b>Social anxiety</b> was the only measure (out of 11 within child, family and school domains) on which the absentees and regular attenders did not differ on univariate analysis</p> <p><b>Stepwise discriminant analysis outcomes:</b></p> <p>Six variables: school perceptions, parents’ discipline, parents’ control, self-concept, family conflict and social competence, emerged as statistically significant predictors in a discriminant function distinguishing between absentees and regular attenders; <b>social anxiety</b> did not feature within the discriminant function</p> <p>The predictor variables included within the discriminant function support <b>multifactorial influences</b> on absenteeism from three domains of <b>child, family and school</b></p> <p>The discriminant function correctly classified 89% of absentees and 93% of regular attenders</p>
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<p>Hansen, Sanders, Massaro, &amp; Last (1998) (8)</p> <p><b>Location:</b> US</p> <p><b>Key Constructs:</b> Anxiety; severity of absenteeism; school refusal</p>	<p><b>Objectives:</b> To investigate factors associated with the severity of school absenteeism in children with anxiety-based school refusal</p> <p><b>Design:</b> Cross-sectional clinical study (participants were children and adolescents with an anxiety disorder, referred to a clinic for treatment)</p> <p><b>Key Data Analyses:</b> Pearson's correlations; stepwise multiple regression</p>	<p>76 children clinic-referred and adolescents (53% girls), age range 6 to 17 years</p> <p><b>Girls:</b> mean age 11.9 years (<math>SD=2.8</math>) mean age at onset of school refusal 10.5 years (<math>SD=3.2</math>) mean duration of school refusal 48.4 weeks (<math>SD=65.3</math>), mean % absenteeism in 5 weeks prior to assessment 58.4 (attendance 41.6) (<math>SD=28.0</math>)</p> <p><b>Ethnic composition:</b> Caucasian (88%), African-American (7%), Hispanic (5%); <b>Parental marital status:</b> parents married/living together (70%), single/separated/divorced (30%); <b>Socio-economic status:</b> (Hollingshead classes) I (10%), II (12%), III (45%), IV (30%), V (3%)</p>	<p><b>School refusal criteria: (p.248)</b></p> <p>(a) "anxiety-based school refusal due to a DSM-III-R anxiety disorder"</p> <p>(b) "at least 10% absenteeism from classes for a minimum of 1 month prior to intake [to clinic]"</p> <p>Absenteeism data initially obtained from child/adolescent and/or parent; subsequently corroborated by school personnel</p> <p>Reference period for school absenteeism: 5 weeks prior to assessment for study</p> <p>Percentage absence calculated in <b>hours</b></p> <p>Absenteeism strictly defined as <b>time spent out of class</b> including time</p>	<p><b>Informants:</b> children/adolescents and parents (83% mothers)</p> <p><b>Anxiety measures:</b> (child/adolescent and parents: structured interviews conducted by trained clinicians) Modified version of Schedule for Affective Disorders and Schizophrenia in School-Age Children (Kiddie-SADS)</p> <p>DSM-III-R anxiety diagnoses based on combined information drawn from parent and child structured clinical interviews</p> <p>Inter-rater reliability assessed by independent review of interview recordings by a second clinician for 53% of interviews; mean inter-rater reliability range 64% to 83% (panic disorder 64%, phobic disorder 66%, overanxious and</p>	<p><b>Characteristics of absenteeism across sample*</b></p> <p>*Note: based on analysis of absenteeism during the week immediately prior to the study assessment interview</p> <p>91% Absence due to <b>time spent away from school</b> premises 9% Absence due to time spent within <b>other areas of school</b></p> <p><b>Distribution of absence across sample</b></p> <p>Range 13% to 100%: One third <math>\geq 90\%</math> One third 50 to 90% One third 13% to 50%</p> <p>Range of current school refusal episode 2 to 260 weeks; range of age of onset for current school refusal episode 4 to 16 years</p> <p><b>Classification of DSM-III-R Disorders associated with school refusal:</b></p> <p>54% Phobic disorder 29% Separation anxiety disorder 7% Panic disorder 5% Overanxious disorder 4% Avoidant disorder 1% Anxiety disorder not otherwise specified</p> <p>53% of sample received more than one anxiety diagnosis; but <b>comorbidity</b> not significantly associated with severity of absenteeism</p> <p>11% comorbid diagnosis of <b>oppositional defiant disorder</b> (did not differ by gender)</p>
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<p>Egger, Costello, &amp; Angold (2003) (9)</p> <p><b>Location:</b> US</p> <p><b>Key Constructs:</b> Anxiety, school refusal, truancy</p>	<p><b>Objectives:</b> (a) To explore relationships between school refusal and psychiatric disorders using definitions of school refusal which are free of etiological and psychopathological assumptions (b) To explore the relationships between school refusal specific school worries and fears, and somatic symptoms</p> <p><b>Design:</b> Cross-sectional community study (participants recruited from sample of children recruited through a Student Information Management System of public school systems within the US)</p> <p><b>Key Data Analyses:</b> Logistic regression (using univariable and</p>	<p>Sample of 1,422 children from ‘The Great Smoky Mountains Study’ (GSMS) – an ongoing longitudinal study into the progression of psychiatric disorders in youths living in a US state</p> <p>GSMS sample drawn from a regionally representative sample of 4,500 children, aged 9, 11 and 13 years, screened for behavioural problems (those scoring above pre-set threshold and 1/10 random sample of remainder were recruited)</p> <p>Data analysed from 8 annual waves of GSMS, incorporating structured psychiatric interviews with children/adolescents aged</p>	<p><b>Criteria for school refusal status</b></p> <p>Based on combined information drawn from parent and child interviews; specifically, 2 sections of the CAPA: (a) “school/work performance and behaviour” to assess truancy (b) “worry/anxiety over school attendance and separation anxiety” to assess anxious SRB</p> <p><b>Operationalisation of anxious school refusers:</b></p> <p>At least half a day absence due to worry/anxiety; staying at home on school mornings; failing to reach school or returning home due to anxiety <b>and/or</b> having to be taken to be accompanied to school due to anxiety</p>	<p><b>Informants:</b></p> <p>Children/adolescents, parent/primary carers</p> <p><b>Anxiety, somatic symptoms and SRB measures:</b></p> <p>(parent and child/adolescent structured clinical interviews)</p> <p>Child and Adolescent Psychiatric Assessment Scale (CAPA) interviews; reference period: 3 months prior to interview</p> <p>All diagnoses (DSM-IV disorders) based on combined information drawn from parent and child interviews, except for ADHD which was based solely on parent interview</p>	<p><b>Prevalence of subtypes of school refusal:</b></p> <p>1.6 % ‘Pure anxious school refuser’ 5.8% ‘Pure truant’ 0.5% ‘Mixed school refuser’</p> <p><b>Relationships between subtypes of school refusal and psychiatric disorders</b></p> <p>All 3 school refusal subtypes significantly associated with psychiatric disorders: Rate of having at least one psychiatric disorder in non-school refusers was 6.8% compared with:</p> <p>24.5% ‘Pure anxious school refuser’ 25.4% ‘Pure truant’ 88.2% ‘Mixed school refuser’</p> <p>Conversely, three-quarters of pure anxious school refusers and pure truants did not meet the criteria for any psychiatric disorder, thus <b>‘pure’ school refusal subtypes associated with but not synonymous with psychopathology</b></p> <p><b>Mixed school refusal subtype</b> synonymous with psychopathology</p> <p><b>Logistic regression outcomes: prediction of specific psychiatric disorders by different school attendance problem subtypes</b> (models corrected for comorbidity of psychiatric disorders)</p> <p><b>Anxious school refusal</b> significantly associated with separation anxiety disorder (<math>OR=8.7</math>) and depression (<math>OR=13.0</math>); significant association between depression and anxious school refusal not due to comorbidity between depression and anxiety disorders; non-</p>
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	<p>multivariable models); controlling for comorbidity of psychiatric disorders enabled primary (independent) relationships between school-refusal subtypes and specific disorders to be examined</p>	<p>between 9 and 16 years and their parents</p> <p><b>‘Pure anxious school refusal’ group</b> 130 children (52% girls), mean age 12.3 years; mean number of half days missed 4.2</p> <p><b>‘Pure truancy’ group</b> 482 children (35% girls), mean age 14.7 years; mean number of half days missed 6.6</p> <p><b>‘Mixed school refusal group’</b> 35 children (48% girls), mean age 13.0 years, mean number of half days missed 34 (16 due to anxiety, 18 due to truancy)</p> <p><b>‘Non-school refusal group’</b> 775 children (demographic characteristics not reported; absence data not reported,</p>	<p><b>Operationalisation of truants:</b> At least half a day absence for reasons other than school or separation anxiety; staying at home on school mornings; having to be accompanied to school for reasons <b>unrelated</b> to anxiety or emotional disturbance <b>and</b> not reaching school or leaving school before the end of the day</p> <p><b>Operationalisation of mixed school refusers:</b> Met criteria for anxious school refusal and truancy at any point during the 3-month reference period</p> <p><b>Operationalisation of non-school refusers (comparison group):</b> Did not meet criteria for either anxious school</p>		<p>significant trend linking anxious school refusal with conduct-disorder</p> <p><b>Truancy</b> significantly associated with depression (<math>OR=2.6</math>), oppositional defiant disorder (<math>OR=2.2</math>) and conduct disorder (<math>OR=7.4</math>)</p> <p><b>Mixed school refusal</b> significantly associated with separation anxiety disorder (<math>OR=19.0</math>), panic (<math>OR=5.7</math>), ADHD (<math>OR=13.0</math>), conduct disorder (<math>OR=17.0</math>) and substance abuse (<math>OR=4.9</math>)</p> <p>Above associations did <b>not differ by age or gender</b></p> <p><b>Logistic regression outcomes: prediction of fears and worries and somatic symptoms by different school attendance problem subtypes</b></p> <p><b>Anxious school refusal</b> significantly associated with: <i>Separation and school-related fears and worries:</i> ‘worries about leaving home for school’ (<math>OR=15.0</math>), ‘fear of what will happen at home while at school’ (<math>OR=9.5</math>), ‘worry about harm befalling parent’ (<math>OR=3.0</math>), ‘fear specific to school’ (<math>OR=20.0</math>) and performance anxiety (<math>OR=4.5</math>) <i>Somatic complaints:</i> ‘headaches and stomach aches’ (<math>OR=22.0</math>)</p> <p><b>Truancy</b> Not significantly associated with any separation or school-related fears and worries</p> <p>Not significantly associated with any somatic complaints</p> <p><b>Mixed school refusal</b> significantly associated with: <i>Separation and school-related fears and worries:</i></p>
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# EXPLORING ANXIETY, SLEEP AND SENSE OF BELONGING IN SRB

		this group had no absence definable as anxious school refusal or truancy, however they may have had absences for other reasons)	refusal or truancy during the 3-month reference period		<p>‘fear of what will happen at home while at school’ (<math>OR=39.0</math>), ‘fear specific to school’ (<math>OR=51.0</math>)</p> <p><b>Somatic complaints:</b> ‘headaches and stomach aches’ (<math>OR=52.0</math>)</p> <p><b>Mixed school refusers</b> impacted <b>more severely</b> than ‘pure’ refusers (i.e. anxious or truants) across several domains: Frequency of SRB (i.e. rates of both types of absence) Overall rates and range of psychopathology</p>
<p>Brandibas, Jeunier, Clanet, &amp; Fourasté (2004) (10)</p> <p><b>Location:</b> France</p> <p><b>Key Constructs:</b> Anxiety (state-, trait- and separation-anxiety); school refusal (functional profiles of SRB)</p>	<p><b>Objectives:</b> To explore anxiety and functional categories of school refusal among adolescents attending a technical school</p> <p><b>Design:</b> Cross-sectional community study (participants drawn from 6 year groups in a technical high school)</p> <p><b>Key Data Analyses:</b> Correlational analyses; analyses of variance; discriminant analysis</p>	<p>45 adolescents showing SRB (see Operationalisation of SRB left) (2.2% (1) girl) mean age 18.0 years (<math>SD=1.9</math>, range 14 to 21)</p> <p><i>Socio-economic composition:</i> “varied social backgrounds”, 26.7% working class families, 17.8% unemployed families</p>	<p><b>Operationalisation of SRB:</b></p> <p>“21 days of non-justified school absenteeism” (p. 120)*</p> <p>*Note: authors refer to threshold defined by Kearney &amp; Silverman (1993); this paper indicates that children were accepted for the study if “their school refusal behaviour...was acute in nature (i.e., had persisted for more than half the time between problem onset and time of assessment, given that such time</p>	<p><b>Informants:</b> Adolescents</p> <p><b>Anxiety measures:</b> (adolescent self-report)</p> <p><b>State-trait anxiety:</b> State-Trait Anxiety Inventory – Form Y (STAI-Y);</p> <p><b>Separation anxiety:</b> Separation Anxiety Symptom Inventory (SASI)</p> <p><b>SRB function measure:</b> (adolescent self-report)</p> <p>School Refusal Assessment Scale (SRAS); <i>See study</i></p>	<p><b>Outcomes of discriminant analyses:</b></p> <p><i>Two discriminant functions of school refusal functions:</i></p> <p><b>Function 1:</b> Two dimensions within <b>separation anxiety</b> (“anxiety generated by various fears for oneself or for one’s family” and “anxiety generated by school itself, by a tension before going to school”) were predictive of <b>positive tangible reinforcement SRB function*</b></p> <p><b>Function 2:</b> State-anxiety and trait-anxiety were predictive of <b>avoidance of negative affectivity SRB function</b></p> <p><b>Outcomes of correlational analyses:</b></p> <p>Significant <b>negative association</b> between above dimensions of <b>separation anxiety</b> and <b>positive tangible reinforcement*</b> SRB function confirmed (related to various fears, <math>r=.42</math>; related to school object, <math>r=.34</math>)</p> <p>Significant <b>positive association</b> between <b>state-trait anxiety</b> and <b>avoidance of negative affectivity SRB</b></p>

# EXPLORING ANXIETY, SLEEP AND SENSE OF BELONGING IN SRB

			was less than 1 year” (p.87).  SRB selection criteria in the present study therefore lacks quantitative transparency	(11) for SRB function descriptors)  Questionnaires completed in school at same time each day	function confirmed (state-anxiety, $r=.55$ ; trait-anxiety, $r=.47$ )  *Note: these findings appear to have been erroneously reported – authors report that these dimensions of separation anxiety were negatively associated with attention-getting SRB function – which is illogical and not in keeping with their central arguments
Kearney & Albano (2004) (11)  <b>Location:</b> US  <b>Key Constructs:</b> Anxiety (in context of specific anxiety disorders and functional profiles of SRB)	<b>Objectives:</b> (a) To identify primary diagnoses and comorbid conditions associated with functional profiles of SRB, (b) to further evidence the diagnostic heterogeneity with the SRB population  <b>Design:</b> Cross-sectional clinical study (participants recruited from sample of children and adolescents referred to clinics for assessment and treatment of SRB)  <b>Key Data Analyses:</b> Chi Squares/Analyses of variance	143 clinic-referred children and adolescents (38.1% female) mean age 11.6 years ( $SD=3.17$ ), range 5 to 17 years), mean % absence 37.2% ( $SD=32.2$ )  <i>Ethnic composition:</i> Caucasian (89.5%), Hispanic (4.9%), African American (3.5%), Asian or other (2.1%); <i>Family composition:</i> dual parent families (59.8%), mean number of dependents 2.3 ( $SD=1.2$ ); <i>Family income:</i> mean \$34,455 per annum ( $SD=$25,487$ )	<b>Criteria for school SRB</b> Referral to clinic for assessment and treatment  No operationalisation of SRB reported  <b>SRB function descriptors: (p. 149)</b> Four functions, 2 of which constitute negative reinforcement of SRB and 2 of which constitute positive reinforcement of SRB:  (a) “to avoid school-related stimuli that provoke a general sense of	<b>Informants:</b> Children/adolescents, parents  <b>Anxiety measures:</b> (parent and child/adolescent structured interviews by doctoral degree holders/advanced graduate students in clinical psychology) The Anxiety Disorders Interview Schedule for Children-Child/Parent (ADIS-C and ADIS-P respectively)  All psychiatric diagnoses (DSM-IV disorders) based on combined information drawn from parent and child interviews; ratings of	<b>Psychiatric diagnoses (DSM-IV)</b> (based on combined child/parent report)  32.9% No diagnosis  <i>Comorbidity</i> (among youths who received a primary diagnosis) 45.8% received 2 <sup>nd</sup> diagnosis 17.7% received 3 <sup>rd</sup> diagnosis 6.3% received 4 <sup>th</sup> diagnosis 3.1% received 5 <sup>th</sup> diagnosis  <i>Primary diagnoses</i> 22.4% separation anxiety disorder 10.5% generalised anxiety disorder 8.4% oppositional defiant disorder 4.9% major depression 4.2% specific phobia 3.5% social anxiety disorder 2.8% conduct disorder 1.4% attention deficit hyperactivity disorder 1.4% panic disorder 0.7% enuresis 0.7% posttraumatic stress disorder 0.0% agoraphobia

## EXPLORING ANXIETY, SLEEP AND SENSE OF BELONGING IN SRB

			<p>negative affectivity”</p> <p>(b) “to escape school-related aversive social and/or evaluative situations”</p> <p>(c) “to gain attention from significant others”</p> <p>(d) “to pursue tangible reinforcement outside of school”</p> <p><b>Negative reinforcement:</b> functions (a) and/or (b)</p> <p><b>Positive reinforcement:</b> functions (c) and/or (d)</p> <p><b>Mixed profile:</b> where no primary (highest scoring) function (a), (b), (c) or (d) can be delineated</p>	<p>clinical severity were made ranging from 0 (none) to 8 (extreme); – primary and comorbid diagnoses based on clinical severity (primary: highest, comorbid: second up to fifth)</p> <p>Assessment of inter-rater reliability between interviewers not reported, therefore no evidence that this was conducted</p> <p><b>SRB functional profile measure:</b> (<i>child/adolescent self-report</i>) School Refusal Assessment Scale for children and parents (SRAS-C and SRAS-P* respectively)</p> <p>*Note: where both parents were present SRAS-P completed by each separately</p> <p><b>Primary SRB</b> function = function with highest scoring mean (based on combined score from</p>	<p><i>Other noteworthy findings:</i> Generalised anxiety disorder: 9.8% as 2<sup>nd</sup> diagnosis; 6.3% as 3<sup>rd</sup> diagnosis Oppositional defiant disorder: 5.6% as 2<sup>nd</sup> diagnosis Social anxiety disorder <b>more prevalent as 2<sup>nd</sup> diagnosis</b> (4.2%) than primary diagnosis (3.5%) <b>Functions of SRB</b> (based on combined child/parent report)</p> <p><b>37% negative reinforcement</b> (“to avoid school-related stimuli that provoke a general sense of negative affectivity”, 31%, “to escape school-related aversive social and/or evaluative situations” 6%)</p> <p><b>62% positive reinforcement</b> (“to gain attention from significant others”, 28%, “to pursue tangible reinforcement outside of school”, 34%)</p> <p><b>1% mixed profile</b></p> <p><b>Outcomes of Chi-square analyses in respect of distribution of diagnoses by SRB function</b></p> <p><b>SAD</b> significantly more prominent in ‘<b>attention-seeking</b>’ (positive reinforcement) function</p> <p><b>Anxiety diagnoses</b> more prominent among <b>negative reinforcement functions of SRB</b></p> <p><b>Outcomes of Analyses of variance in respect of differences in functional SRB groups by gender, age and clinical severity of primary diagnoses</b></p> <p><b>Gender:</b> no differences found <b>Age:</b> Significant differences found: <b>younger</b> children showed a significantly higher tendency to “avoid school-related stimuli that provoke a general sense of negative affectivity” and to “gain attention from</p>
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				child and parent(s) reports)  <b>Mixed</b> functional profile applied in cases where primary function could not be delineated as two or more functions had equal rating	significant others”; <b>older</b> children tended to “escape school-related aversive social and/or evaluative situations” and to “pursue tangible reinforcement outside of school” <b>Clinical severity rating of primary diagnoses:</b> Significant differences found: children with <b>more severe ratings</b> were significantly more likely to “avoid school-related stimuli that provoke a general sense of negative affectivity”
Kearney (2007) (12)  <b>Location:</b> US  <b>Key Constructs:</b> Anxiety (in context of reported types of anxiety and function of SRB); fear; absenteeism severity	<b>Objective:</b> To establish whether functional profiles of SRB (as measured using the School Refusal Assessment Scale for Children) are a better determinant of absenteeism severity than behavioural forms  <b>Design:</b> Cross-sectional clinical study (participants had been referred for primary SRB to a specialist outpatient clinic within a university)  <b>Key Data Analyses:</b> Correlational analyses; multiple	222 clinic-referred children and adolescents (39.6% female) mean age 11.7 years ( $SD=3.0$ , range 5 to 17 years), mean % absence 38.2% ( $SD=32.3$ )  <i>Ethnic composition:</i> European American (67.6%), Hispanic (5.4%), African American (3.2%), other (1.8%), unreported (22.1%)  <i>Family composition:</i> dual parent families (40.7%),  <i>Family income:</i> mean \$36,640 per annum ( $SD=25,530$ ,	<b>Criteria for school SRB</b> Referral to clinic for assessment and treatment  SRB as identified as primary behaviour problem at point of referral  Absence restricted to <b>full</b> days missed or documented absences  Attendance data obtained from both parents and children/adolescents; school attendance records consulted only in instances where child reports were	<b>Informants:</b> Children/adolescents, parents  <b>Anxiety measures:</b> (parent and child/adolescent structured interviews by clinical psychologists/advanced graduate students in clinical psychology) The Anxiety Disorders Interview Schedule for Children-Child/Parent (ADIS-C and ADIS-P respectively)  <b>Measures of anxiety and fear (i.e. forms of SRB):</b> (child/adolescent self-report) <b>Revised Children's Manifest</b>	<b>Psychiatric diagnoses (DSM-IV)</b> (based on combined child/parent report)  24.3% No diagnosis  <i>Primary diagnoses*</i> 22.5% separation anxiety disorder 12.7% avoidant disorder/social anxiety disorder 12.6% generalised anxiety disorder 5.4% oppositional defiant disorder 4.1% major depression 5.0% specific phobia 4.1% panic disorder  *Note: rated as most severe disorder affecting child/adolescent on a scale of 0-8  <b>Outcomes of multiple regression analyses (p. 57)</b>  <b>Child report:</b>  <i>Hierarchical regression analyses of forms of SRB on degree of school absenteeism</i> <b>None of the forms of SRB</b> (depression as measured by Child depression Index, fear (FSSC-R-SI), manifest anxiety (RCMAS), social anxiety (SASC-R), and trait

## EXPLORING ANXIETY, SLEEP AND SENSE OF BELONGING IN SRB

	<p>regression analyses; structural equation modelling</p>	<p>median 35,000, range 0 - 110,000)</p>	<p>discrepant with parent reports</p> <p>Range of SRB purposefully included within sample including children and adolescents who:</p> <p>were absent from school for large quantities of time</p> <p>missed <i>parts</i> of school days were regularly late to school</p> <p>demonstrated severe morning behaviours in an effort to avoid going to school</p> <p>presented with an extreme degree of dread about attending school and made persistent requests to be removed from school</p> <p>Itemisation of these SRB types not reported</p>	<p><b>Anxiety Scale</b> (RCMAS); <b>State-Trait Anxiety Inventory for Children</b> (STAIC-T): only trait subscale used so that overlap with RCMAS would be minimised; <b>Social Anxiety Scale for Children – Revised</b> (SASC-R); <b>Fear Survey Schedule for Children-Revised</b> (FSSC-R-SI): school-related items</p> <p>(parent self-report) Child Behaviour Checklist (CBCL): internalising and externalising problem behaviours</p> <p><b>SRB functional profile measure:</b> (child/adolescent self-report) School Refusal Assessment Scale for children and parents (SRAS-C and SRAS-P* respectively)</p> <p>Child’s functional profile of SRB based on combined child/parent report</p>	<p>anxiety (STAIC-T) were <b>significant predictors of degree of school absenteeism</b></p> <p><i>Hierarchical regression analyses of functions of SRB on degree of school absenteeism</i></p> <p><b>Each function</b> (“avoidance of school-related stimuli that provoke negative affectivity”, “escape from aversive social and/or evaluative situations”, “pursuit of attention from significant others” and “pursuit of tangible rewards outside of school”) was a <b>significant predictor of degree of school absenteeism</b></p> <p><i>Outcomes of structural equation modelling analyses</i></p> <p>Mediation analyses suggested that relationship between <b>forms</b> of SRB and <b>degree of school absenteeism</b> was mediated by <b>functions of SRB</b></p> <p><b>Parent report:</b></p> <p><i>Hierarchical regression analyses of forms of SRB on degree of school absenteeism by parent report</i></p> <p><b>None of the CBCL subscales</b> (parent report <i>withdrawn, somatic complaints, anxious/depressed, delinquent behaviour, aggressive behaviour</i>) were <b>significant predictors of degree of school absenteeism</b></p> <p><i>Hierarchical regression analyses of functions of SRB on degree of school absenteeism by parent report</i></p> <p><b>Each function</b> (as per child report – see above) was a <b>significant predictor of degree of school absenteeism</b></p> <p><i>Outcomes of structural equation modelling analyses</i></p> <p>No evidence found that relationship between <b>forms</b> of SRB and <b>degree of school absenteeism</b> was mediated by <b>functions of SRB</b></p>
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<p>Dube &amp; Orpinas (2009) (13)</p> <p><b>Location:</b> US</p> <p><b>Key Constructs:</b> Anxiety (in context of function of SRB and stressful or traumatic event); excessive school absenteeism, SRB</p>	<p><b>Objective:</b> To establish whether similar functional profiles of SRB (as measured using the School Refusal Assessment Scale for Children) emerge in a non-clinical population as has been reported in clinical studies</p> <p><b>Design:</b> Cross-sectional community study (participants recruited from upper-elementary and middle schools within a suburban district)</p> <p><b>Key Data Analyses:</b> Analyses of variance (ANOVAs)</p>	<p>99 children/adolescents (41% girls) in grades 3 to 8 (equivalents of Years 4 to 9), mean age 12.5 years (<math>SD=1.38</math>, range 8 to 15 years), mean number of excused absence over an academic year: 6.4 days (<math>SD=5.51</math>), mean number of unexcused absences: 7.4 days (<math>SD=4.24</math>)</p> <p><i>Academic performance:</i> Mean self-reported GPA 2.8 (<math>SD=0.68</math>)</p> <p><i>Special education:</i> 22% of participants in special education, including enrolment on gifted and talented programmes</p> <p><i>Ethnic composition:</i> 90% of participants were white</p> <p><i>Parental responsibility for education:</i></p>	<p><b>Criteria for having a school attendance problem:</b> Referral for attendance problems to a school social worker between October 2005 and April 2006, where referral was based on persisting unexcused absences following two preceding steps:</p> <p>Step 1: parents notified in writing after <b>5 unexcused absences</b></p> <p>Step 2: parents invited to attend conference if unexcused absences continue after step 1</p> <p>Note: individual schools differed in criterion for number of unexcused absences requiring referral to social worker (at step 3); <b>typically, between 6 and 9</b></p>	<p><b>Informants:</b> Children/adolescents, social workers,</p> <p><b>Anxiety measures:</b> (<i>social worker report</i>) Social Worker Survey including traumatic or stressful events experienced by the child to the social worker's knowledge (<i>child/adolescent self-report</i>) Student survey, incorporating the Strengths and Difficulties Questionnaire (SDQ)</p> <p><b>SRB functional profile measure:</b> (<i>child/adolescent self-report</i>) School Refusal Assessment Scale for Children (SRAS-C)</p> <p><b>Profiles of SRB:</b> (<i>see study (11) for full description of SRB functions</i>) <b>Positive reinforcement only:</b> highest mean score on positive</p>	<p><b>Classification of SRB profiles among sample:</b></p> <p>17.2% multiple profile 60.6% positive reinforcement only 22.2% no profile</p> <p><b>Of note, no students could be classified as having a negative reinforcement profile only</b></p> <p>Profiles did not differ by <b>gender</b> or <b>self-reported academic performance</b> or <b>excused/unexcused absences</b></p> <p>More students missed school for positive reinforcement in <b>middle school</b> than in <b>upper-elementary school</b></p> <p>More students in upper-elementary school had a <b>multiple profile</b> (23.5%) than in middle school (15.9%)</p> <p>More students in upper-elementary school had <b>no profile</b> (35.3%) than in middle school (19.5%)</p> <p><b>Analyses of variance in respect of functional profiles</b></p> <p>Students with a <b>multiple profile</b> reported more behavioural difficulties (including <b>emotional difficulties</b>) and a higher frequency of <b>being victimised</b> than students with a positive reinforcement profile or no profile</p> <p>Students with a <b>multiple profile</b> had experienced significantly more <b>traumatic and stressful life</b> events than students with a positive reinforcement profile or no profile</p>
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# EXPLORING ANXIETY, SLEEP AND SENSE OF BELONGING IN SRB

		<p>Shared by both parents (57%), sole responsibility of mother (24%), sole responsibility of father (19%)</p> <p><i>Exclusion criteria:</i> Documented chronic illness or health problem</p>		<p>reinforcement subscale &gt;0.5 higher than mean score on negative reinforcement subscale; <b>Multiple profile:</b> difference between means scores on negative and positive reinforcement subscales <math>\leq 0.5</math>; <b>No profile:</b> mean scores of &lt;1 on both negative and positive reinforcement subscales OR same scores across both negative and positive reinforcement profiles</p>	
<p>Hunt &amp; Hopko (2009) (14)</p> <p><b>Location:</b> US</p> <p><b>Key Constructs:</b> Anxiety (in the context of reported internalising problems); truancy</p>	<p><b>Objective:</b> To explore associations between rates of truancy and a range of child-, school- and family-related risk and protective factors, in a rural sample</p> <p><b>Design:</b> Cross-sectional community study (participants drawn from four high</p>	<p>367 adolescents (58.3% girls), in grades 9 to 12 (equivalents of Years 10 to 13), mean current grade 10.2 (SD=1.2) mean age 15.9 years (SD=1.4, range 14 to 19) mean number of days 'truant'* 4.2 (SD=7.4, range 0 to 76)**</p>	<p><b>Operationalisation of truancy (p.553)</b></p> <p>"Total number of unexcused absences for the entire 2004-2005 academic year"</p> <p>Attendance data obtained from school records (direct from school office personnel)</p>	<p><b>Informants:</b> adolescents</p> <p><b>Externalising and Internalising problems measure:</b> (<i>adolescent self-report</i>) Youth Self-Report (YSR): (designed as self-report addition to Child Behaviour Checklist (CBCL); <i>internalising behaviours:</i> anxious/depressed,</p>	<p><b>Outcomes of correlational analyses (bivariate correlations with truancy)</b></p> <p><b>Academic performance</b> was strongest correlate (<math>r=-.31</math>)</p> <p>YSR-<b>internalising</b> scale score not a significant correlate but YSR-<b>externalising</b> scale score a significant correlate (<math>r=.13</math>)</p> <p>Several internalising and externalising subscales also significant correlates:</p> <p><i>Internalising subscales*</i></p> <p>YSR <b>withdrawn/depressed</b> (<math>r=.14</math>)</p> <p>YSR <b>somatic complaints</b> (<math>r=.11</math>)</p>

	<p>schools in a rural state)</p> <p><b>Key Data</b> <b>Analyses:</b> Correlational analyses; multiple regression analyses</p>	<p>*See right for operationalisation of truancy</p> <p>**Note: 31% of participants missed no days of school; 10% missed <math>\geq 10</math> days of school</p> <p><i>Ethnic composition:</i> Caucasian (94%) <i>Family composition (single/dual parent):</i> 50% split</p> <p><i>Parental education</i>*(p. 556): Mother's education 2.2 (<math>SD=1.0</math>, range 1 to 5), father's education 2.3 (<math>SD=1.0</math>, range 1 to 5)</p> <p>*Note: scale ranging from "did not graduate high school" (1) to "graduate school" (5)</p>		<p>withdrawn/depressed, somatic complaints, <i>externalising behaviours</i>: aggressive behaviour, rule-breaking behaviour</p>	<p>*Note: YSR <b>anxious/depressed</b> not significantly correlated with truancy</p> <p>Several demographic variables were significant correlates: <b>Age</b> (<math>r=.21</math>) <b>Current grade</b> (<math>r=.22</math>) <b>Maternal education</b> (<math>r=-.19</math>) <b>Paternal education</b> (<math>r=-.11</math>) <b>Gender</b> and <b>family composition</b> not significantly correlated with degree of truancy</p> <p><i>Other significant correlates:</i> <b>YSR thought problems</b> (<math>r=.11</math>) <b>YSR attention problems</b> (<math>r=.15</math>) <b>Religious Commitment Inventory</b> (<math>r=-.13</math>) <b>Family Environmental Scale (FES):</b>     <b>Cohesion</b> subscale (<math>r=-.13</math>)     <b>Moral-religious</b> subscale (<math>r=-.11</math>)     <b>Control</b> subscale (<math>r=-.15</math>) <b>Alcohol and drug use frequency</b> (<math>r=.20</math>)</p> <p><b>Outcomes of multiple regression analyses:</b></p> <p>Predictors together accounted for <b>26%</b> of variance in degree of truancy</p> <p>Variables of interest which significantly predicted truancy included: <b>Current grade</b> (as in Year group) (<math>\beta=-.27</math>) <b>YSR withdrawn/depressed</b> (<math>\beta=.23</math>)</p> <p>Other significant predictors of truancy included <b>Academic performance</b> (<math>\beta=-.31</math>) <b>Maternal education</b> (<math>\beta=-.13</math>) <b>YSR-Social problems</b> (<math>\beta=.17</math>)</p>
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# EXPLORING ANXIETY, SLEEP AND SENSE OF BELONGING IN SRB

<p>Hughes, Gullone, Dudley &amp; Tonge (2010) (15)</p> <p><b>Location:</b> Australia</p> <p><b>Key Constructs:</b> Anxiety (in the context of cognitive-emotional regulation strategies); school refusal</p>	<p><b>Objective:</b> To explore the use of emotional regulation strategies in a sample of clinic-referred children and adolescents presenting with school refusal and at least one anxiety disorder</p> <p><b>Design:</b> Case-control (clinical) (school refusal sample were clinic-referred children and adolescents)</p> <p><b>Key Data Analyses:</b> Independent samples <i>t</i>-test</p>	<p><b>School refusal group</b></p> <p>21 children and adolescents referred to a school refusal clinic (48% female), mean age 13.4 years (<i>SD</i>=0.9, range 10.7 to 14.6)</p> <p><b>Non-clinical control group</b></p> <p>21 participants matched by age and gender to clinical school refusal sample (drawn randomly from sample of larger community study (<i>N</i>=859) investigating emotional development and internalising behaviours among children and adolescents from 15 primary and 9 secondary schools)</p> <p><i>Exclusion criteria:</i> Potential controls excluded if they scored above the clinical cut-off on</p>	<p><b>Criteria for inclusion in clinical school refusal group:</b></p> <p><i>Features/ operationalisation of school refusal:</i> School attendance less than 50% in the past 4 weeks*</p> <p>*Note: Attendance data obtained via school records</p> <p>Staying at home with parents' awareness of absence</p> <p>Primary diagnosis of social phobia, GAD, SAD, or panic disorder (with or without agoraphobia)</p> <p>"Primarily anxiety driven...as determined by clinical judgements" (p. 695)</p> <p><i>Exclusion criteria:</i> Physical illness prohibitive to</p>	<p><b>Informants:</b> adolescents, parents</p> <p><b>Anxiety disorders and SRB measure:</b> (parent and child/ adolescent structured interviews by four registered psychologists for school refusal group only)</p> <p>The Anxiety Disorders Interview Schedule for DSM-IV (ADIS-IV)</p> <p>All psychiatric diagnoses (DSM-IV disorders) based on combined information drawn from parent and child interviews; "dual-clinician model" used where one clinician interviewed a child/adolescent and another interviewed the corresponding parent</p> <p>Both clinicians required to reach consensus re diagnoses – if none reached, consultation with child</p>	<p><b>Classification of DSM-IV anxiety, mood, disruptive behaviour and other disorders in school refusal group*:</b></p> <p>* Note diagnostic exclusion criteria for school refusal group (see sample characteristics column)</p> <p>19% of school refusal sample received one diagnosis</p> <p>81% of school refusal sample had between two and five diagnoses – high rates of comorbidity</p> <p><i>Anxiety disorders:</i> 43% generalised anxiety disorder 38% social phobia 33% separation anxiety disorder 19% specific phobia 14% anxiety disorder 'not otherwise specified'</p> <p><i>Mood disorder:</i> 24% major depressive disorder 19% dysthymic disorder 14% depressive disorder 'not otherwise specified'</p> <p><i>Disruptive behaviour disorders:</i> 33% oppositional defiant disorder 5% attention deficit hyperactivity disorder</p> <p><i>Other</i> 5% Asperger's disorder</p> <p><b>Outcome of independent samples <i>t</i>-test between school refusal and non-clinical control group on measure of emotion regulation</b></p>
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		<p>the RCMAS and/or the CDI (see measures)</p> <p>Attendance criteria and data on non-clinical group not reported</p>	<p>attendance; current treatment with medication of psychotropic nature; pregnancy, intellectual difficulties, insufficient proficiency with English language, current admission as an inpatient, behavioural disorder as primary diagnosis, bipolar disorder, OCD, posttraumatic stress disorder, psychotic illness, disorder of substance abuse</p> <p>Attendance criteria for non-clinical control group not reported.</p>	<p>psychiatrist would ensue to guide diagnostic decision-making</p> <p>Assessment of inter-rater reliability between interviewers not reported, but rates of consultation with psychiatrist for diagnostic clarification reported to be low (1 in 20 cases approx.)</p> <p><b>Emotion Regulation measure</b> (adolescent self-report*)</p> <p>Emotion Regulation Questionnaire for Children and Adolescents (ERQ-CA)</p> <p>*Note: age-specific administration of questionnaires: under 12s completed them in school but over 12s completed them at home (questionnaires were mailed to their home addresses)</p>	<p><b>School refusal group</b> reported significantly <b>less engagement</b> with <b>cognitive reappraisal strategies</b> than the non-clinical control group (<math>d=.81</math>)*</p> <p><b>School refusal group</b> reported adopting <b>expressive suppression</b> strategies significantly <b>more</b> than the non-clinical control group (<math>d=.82</math>)*</p> <p>*Large effect-sizes</p>
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# EXPLORING ANXIETY, SLEEP AND SENSE OF BELONGING IN SRB

<p>Richards &amp; Hadwin (2011) (16)</p> <p><b>Location:</b> UK</p> <p><b>Key Constructs:</b> Trait anxiety; functions of SRB (motivating factors for non-attendance); school attendance</p>	<p><b>Objective:</b> (a) To investigate whether the association between anxiety and school attendance can be better understood with reference to motivating factors for non-attendance; (b) to explore goodness-of-fit of four-factor structure of SRAS-R to community sample of adolescents</p> <p><b>Design:</b> Cross-sectional community study (participants drawn from one secondary school)</p> <p><b>Key Data Analyses:</b> Confirmatory factor analysis, mediational analysis</p>	<p><i>Confirmatory factor analysis sample</i> 152 adolescents (50% girls) in Year 8, mean % of half-days attended 95.0% (<math>SD=4.7</math>, range 77.3 – 100.0%)</p> <p><i>Final mediation analysis sample</i> 162 adolescents (50.6% girls) in Year 8, mean % of half-days attended 95.2% (<math>SD=4.6</math>, range 77.3 to 100.0%)</p>	<p><b>Operationalisation of school attendance:</b></p> <p>Attendance figures based on percentage of half-days attended</p> <p>Attendance data obtained from school records</p> <p>Absence (i.e. missed half-days) included both authorised and unauthorised absence</p>	<p><b>Informants:</b> adolescents</p> <p><b>Trait anxiety</b> (<i>adolescent self-report</i>)</p> <p>Trait scale of State-Trait Anxiety Inventory for Children (STAIC)</p> <p><b>SRB functional profile (motivating factors for non-attendance) measure:</b> (<i>child/adolescent self-report</i>)</p> <p>School Refusal Assessment Scale – Revised (SRAS-R) child version</p> <p><b>Functions of SRB:</b> (<i>see study (11) for full description of SRB functions in four-factor model</i>)</p> <p>Administration of questionnaires counter-balanced to avoid order effects</p>	<p><b>Outcomes of confirmatory factor analysis</b></p> <p>Goodness-of-fit indices (Chi-square, CFI and RMSEA) indicated that the <b>original four-factor</b> model had <b>poor</b> fit with the data</p> <p>Systematic modifications of original model yielded three-factor model: <b>negative affect</b> (<math>\alpha=.83</math>), <b>social avoidance</b> (<math>\alpha=.80</math>) and <b>attention-seeking</b> (<math>\alpha=.75</math>)</p> <p><i>Spearman's rank correlations among modified factors:</i> <b>Negative affect</b> significantly correlated with <b>social avoidance</b> (<math>r=.52</math>) and <b>attention-seeking</b> (<math>r=.34</math>); <b>social avoidance</b> significantly correlated with <b>attention-seeking</b> (<math>r=.24</math>)</p> <p><b>Outcomes of mediation analysis using modified model</b></p> <p><i>Significant direct effects:</i> <b>Negative</b> association between <b>trait anxiety</b> and <b>school attendance</b>; <b>positive</b> associations between <b>all three modified factors</b> and <b>trait anxiety</b>; <b>negative</b> associations between <b>social avoidance</b> and <b>school attendance</b> and between <b>attention-seeking</b> and <b>school attendance</b>; but no association between <b>negative affect</b> and <b>school attendance</b></p> <p><i>Significant indirect effects:</i> <b>Trait anxiety</b> had indirect effect on <b>school attendance via social avoidance</b> (explaining 72% of association) and <b>via attention-seeking</b> (explaining 28% of association)</p> <p>Therefore, relationship between trait anxiety and school attendance <b>mediated by both social avoidance and attention-seeking</b> (to greater extent by former)</p>
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<p>Ingul, Klockner, Silverman, &amp; Nordahl (2012) (17)</p> <p><b>Location:</b> Norway</p> <p><b>Key Constructs:</b> Anxiety; school absenteeism</p>	<p><b>Objective:</b> To investigate the relative impact of a range of individual-, school-, family-, peers- and community-related risk factors for school absenteeism in adolescents</p> <p><b>Design:</b> Cross-sectional community study (participants drawn from two high school)</p> <p><b>Key Data Analyses:</b> Chi-square, one-way ANOVAs (post-hocs), exploratory structural equation modelling</p>	<p>865 adolescents (52.3% girls), mean age 17.2 years (<math>SD=1.2</math>, range 16 to 21), mean number of days absent 6.6 (<math>SD=0.3</math>)</p> <p><b>No absence group*</b> 50.0% girls; learning difficulties 8.2%; maternal education level primary/high school 30.6%; maternal unemployment 11.3%; paternal education level primary/high school 49.0%; paternal unemployment 5.4%; living without parents 13.5%</p> <p><b>Normal absence group*</b> 51.5% girls; learning difficulties 13.0%; maternal education level primary/high school 38.4%; maternal unemployment 17.7%; paternal education level primary/high school 50.7%; paternal</p>	<p><b>Operationalisation of school absenteeism*:</b></p> <p>Absenteeism figures based on number of days absent over first academic term (90 days) – absenteeism for each participant reported in days and hours</p> <p>Participants assigned to one of three groups according to absenteeism figure:</p> <p><b>No absence group:</b> &lt;1.5 days' absence (&lt;1.6%)</p> <p><b>Normal absence group:</b> <math>\geq 1.5</math> days' absence (<math>\geq 1.6\%</math>) and &lt;13.5 days' absence (&lt;15%)</p> <p><b>High absence group:</b> <math>\geq 13.5</math> days' absence (<math>\geq 15\%</math>)</p> <p>Attendance data obtained from school records (reported by teachers)</p>	<p><b>Informants:</b> adolescents</p> <p><b>Anxiety</b> (adolescent self-report)</p> <p>Screen for Child Anxiety Related Emotional Disorders (SCARED) <i>internal consistency in present sample:</i> Total SCARED (<math>\alpha=.94</math>); Subscales: panic/somatic syndrome (<math>\alpha=.87</math>), generalised anxiety (<math>\alpha=.88</math>), separation anxiety (<math>\alpha=.74</math>), social phobia (<math>\alpha=.85</math>), school avoidance (<math>\alpha=.62</math>)</p> <p><b>School related factors</b> (adolescent self-report)</p> <p>Dichotomous measures (yes/no):</p> <p>Feeling safe in school; treated with respect in school; being bullied in school</p>	<p><b>Outcomes of Chi-Square analyses:</b></p> <p><u>DSM-IV related disorders as measured by scores on SCARED subscales</u></p> <p>Significant associations found between <b>school absenteeism</b> and <b>generalised anxiety, social anxiety, panic/somatic syndrome, depression, conduct problems and hyperactivity</b>; post-hoc analyses not reported, therefore not made explicit which groups differed on these measures; No significant association found between <b>separation anxiety</b> and <b>school absenteeism</b></p> <p><u>School factors</u></p> <p>Significant associations found between school factors: <b>feeling treated with respect</b> and <b>school absenteeism</b>; No significant association found between <b>being bullied</b> and <b>school absenteeism</b></p> <p><u>Health factors</u></p> <p>All health factors: <b>presence of chronic illness, perceptions of own health, personality problems, tried cannabis, tried other drugs, consumes alcohol more than once per week</b> significantly associated with <b>school absenteeism</b> (higher frequency in high absence group than normal absence and no absence groups)</p> <p><u>Socio-demographic factors</u></p> <p><b>Maternal educational level, maternal unemployment, paternal unemployment, living without parents and participating in leisure time activities</b> significantly associated with <b>school absenteeism</b> (higher frequency in high absence group than normal absence and no absence groups); No significant associations found between <b>gender</b> and <b>paternal educational level</b> and <b>school absenteeism</b></p>
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# EXPLORING ANXIETY, SLEEP AND SENSE OF BELONGING IN SRB

		<p>unemployment 7.1%; living without parents 21.9%</p> <p><b>High absence group*</b> 59.2% girls; learning difficulties 15.8%; maternal education level primary/high school 52.2%; maternal unemployment 29.3%; paternal education level primary/high school 56.7%; paternal unemployment 15.6%; living without parents 36.9%</p> <p>Age and attendance characteristics of each absence group not reported</p>	<p>Absenteeism included both “problematic and unproblematic absence” (p. 96), i.e. no distinction made between excused and unexcused absence</p>		<p><b>Outcomes of exploratory structural equation modelling</b></p> <p><b>Four-factor</b> solution derived from exploratory factor analysis on background (health, school and socio-demographic) variables: <i>Parents’ education, Family work/health, Personality traits</i> and <i>School environment</i>; confirmatory factor analysis established good indicators of internalising and externalising problems within data; structural model devised to explore predictors of school absenteeism; ‘reasonable fit’ of model to data; key findings:</p> <p><b>School absenteeism</b> significantly predicted by <b>externalising problems</b> (standardised value=.47), <b>family work/health</b> (standardised value=.40) and <b>school environment</b> (standardised value=-.16)</p> <p><b>School absenteeism</b> not significantly predicted by <b>internalising problems</b></p> <p>All background factors except parents’ education significantly <b>predicted externalising problems</b>; all background factors except school environment significantly <b>predicted internalising problems</b></p> <p>Significant <i>indirect effects</i> of <b>family work/health, personality</b> and <b>school environment</b> on <b>school absenteeism</b> via <b>externalising problems</b></p>
<p>Maric, Heyne, de Heus, Widenfelt &amp; Westenberg (2012) (18)</p> <p><b>Location:</b> Netherlands</p> <p><b>Key Constructs:</b></p>	<p><b>Objective:</b> To examine the cognitions of youth with anxiety-based school refusal; specifically, to determine (a) whether these youths differ from youths from normal</p>	<p><b>School refusal group</b></p> <p>50 adolescents (42% girls), mean age 14.6 years (<i>SD</i>=1.4; range 11-17); mean attendance rate over two weeks prior to</p>	<p><b>Criteria for school refusal status</b></p> <p>Berg’s (2002), criteria (p.258) “(1) reluctant or refusing to attend school <b>operationalised as absence for ≥20% of 2 weeks prior to</b></p>	<p><b>Informants:</b> adolescents, parents</p> <p><b>Anxiety (diagnostic purposes as per criteria for school refusal)</b> (<i>adolescent and parent structured interviews by Masters-level</i></p>	<p><b>Outcomes of MANCOVAs</b></p> <p><i>Differences between groups on automatic thoughts</i></p> <p><b>1<sup>st</sup> step (gender and age as covariates):</b> Multivariate test statistic was significant; univariate tests indicated that school refusal group had:</p> <p>Significantly <b>higher</b> levels of automatic thoughts relating to <b>social threat</b> and <b>personal failure</b>;</p>

<p>Anxiety (in the context of cognitions – automatic thoughts and cognitive errors); school refusal</p>	<p>populations on negative automatic thoughts, positive automatic thoughts and negative cognitive errors, and (b) whether these cognitions contribute uniquely to the prediction of anxiety-based school refusal</p> <p><b>Design:</b> Cross-sectional clinical study (SRB group drawn from clinic-referred adolescents; controls drawn from two elementary and two secondary schools)</p> <p><b>Key Data Analyses:</b> Multivariate analyses of covariance; hierarchical logistic regression analyses</p>	<p>assessment 24% (Note: 49% had not attended school at all; of those who had attended school, mean attendance rate was 46%)</p> <p><i>Ethnic composition:</i> Dutch (92%), Turkish (2%), 'Other' (6%)</p> <p><i>Exclusionary criteria:</i> (a) IQ&lt;80; (b) participation in CBT intervention during 2 months prior to assessment</p> <p><b>Community sample</b></p> <p>181 adolescents (45% girls), mean age 13.6 years (<i>SD</i>=1.9, range 11-17)</p> <p><i>Ethnic composition:</i> Dutch (88%), Surinamese (3%), Turkish (2%), Moroccan (1%) 'Other' (5%)</p>	<p><b>assessment;</b> (2) at home during school hours, rather than concealing non-attendance from parents; (3) emotional upset at the prospect of attending school, reflected in excessive fearfulness, temper tantrums, unhappiness, or possibly in the form of unexplained physical symptoms <b>operationalised as presence of DSM-IV anxiety disorder (except OCD or PTSD) (58%) or presence of anxiety based on clinical interview (42%);</b> (4) an absence of severe antisocial tendencies, beyond the young person's resistance to parental attempts to get them to school <b>operationalised as absence of DSM-IV conduct disorder (58%) or absence of antisocial</b></p>	<p><i>students &amp; registered psychologists)</i> The Anxiety Disorders Interview Schedule, Child and Parent Versions (ADIS-C/P)</p> <p><b>Anxiety (as control measure)</b> (adolescent self-report)</p> <p>Multidimensional Anxiety Scale for Children (MASC)</p> <p><b>Anxiety (cognitions)</b> (adolescent self-report)</p> <p>Children's Automatic Thoughts Scale-Negative/Positive (CATS-N/P)</p> <p>Children's Negative Cognitive Error Questionnaire-Revised (CNCEQ-R)</p>	<p>significantly <b>lower</b> automatic thoughts pertaining to <b>hostility</b> and significantly <b>lower</b> automatic <b>positive thoughts</b>, than community sample</p> <p>Groups did <b>not differ</b> on automatic thoughts relating to <b>physical threat</b></p> <p><b>2<sup>nd</sup> step: (anxiety added as covariate):</b> Still significantly <b>higher</b> levels of automatic thoughts relating to <b>personal failure</b>; significantly <b>lower</b> automatic thoughts pertaining to <b>hostility</b> and significantly <b>lower</b> automatic <b>positive thoughts</b></p> <p>But groups no longer differed on automatic thoughts relating to <b>social threat</b></p> <p><b>Differences between groups on cognitive errors</b></p> <p><b>1<sup>st</sup> step (gender and age as covariates):</b> Multivariate test statistic was significant; univariate tests indicated that school refusal group demonstrated:</p> <p>Significantly <b>higher</b> levels of <b>overgeneralising</b> than community sample</p> <p>Groups did <b>not differ</b> on cognitive errors relating to <b>underestimating coping ability, personalising without mind-reading, selective abstraction and mind-reading</b></p> <p><b>2<sup>nd</sup> step: (anxiety added as covariate):</b> Groups <b>no longer differed</b> on cognitive error of <b>overgeneralising</b></p> <p>Note: Effect size for negative automatic thoughts relating to <b>personal failure</b> was <b>large</b>; all other effect sizes were <b>small to medium</b></p> <p><b>Outcomes of Multiple Logistic Regression Analyses</b></p>
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# EXPLORING ANXIETY, SLEEP AND SENSE OF BELONGING IN SRB

		<p>The groups <b>did not differ</b> by <b>gender</b> or <b>ethnicity</b></p> <p><b>Groups differed</b> by <b>age</b>: school refusal sample <b>significantly older</b> than community sample</p>	<p><i>behaviour based on clinical interview</i> (42%); and (5) reasonable parental efforts to secure the young person's attendance at school, at some stage in the history of the problem</p> <p><b>Criteria for community sample</b> Not reported; attendance profile of community sample also not reported in descriptive statistics</p>		<p><b>1<sup>st</sup> step: (age and gender as predictors of school refusal)</b></p> <p>Age and gender together significantly predicted school refusal status; but only age was a significant unique predictor: older children were more likely to be school refusers</p> <p><b>2<sup>nd</sup> step: (automatic thoughts: five subscales and cognitive errors: five subscales added to Model 1)</b></p> <p>Age, gender and ten cognition subscales significantly predicted school refusal status (significantly better than Model 1):</p> <p><b>Three cognitive</b> unique predictors of school refusal: <b>higher</b> levels of automatic thoughts pertaining to <b>personal failure</b>, <b>lower</b> levels of automatic thoughts relating to <b>hostility</b> and <b>higher</b> levels of the cognitive error of <b>overgeneralising</b> were predictive of <b>school refusal status</b></p> <p><b>3<sup>rd</sup> step: (anxiety added as a predictor to Model 2)</b></p> <p>Age, gender, ten cognition subscales and anxiety significantly predicted school refusal status (significantly better than Model 2):</p> <p><b>Controlling for age, gender and cognitive variables, anxiety</b> was a <b>significant (positive)</b> predictor of school refusal status</p> <p><b>When controlling for anxiety, three cognitive unique predictors</b> of school refusal in Model 2, <b>remained unique predictors</b> in Model 3</p>
Wood, Lynne-Landsman, Langer, Wood,	<b>Objective:</b> To investigate causal pathways linking	<b>3 longitudinal (secondary) data sets:</b>	<b>Operationalisation of absenteeism:</b>	<b>Informants:</b> children & adolescents, teachers and parents	<b>Outcomes of structural cross-lagged regression analyses</b>

<p>Clark, Eddy, &amp; Ialongo (2012) (19)</p> <p><b>Location:</b> US</p> <p><b>Key Constructs:</b> Anxiety (in the context of youth psychopathology including anxiety and depression); school absenteeism</p>	<p>youth psychopathology with school absenteeism; specifically, to explore whether (a) absenteeism is a risk factor for psychopathology; and (b) pre-existing psychological difficulties trigger or exacerbate school attendance problems</p> <p><b>Design:</b> Longitudinal community study using 3 data sets:</p> <p><b>‘Add Health’ nationally representative data set</b> (‘National Longitudinal Study of Adolescent Health’);</p> <p><b>‘JHU-PIRC’ regionally representative data set</b> (‘John Hopkins Prevention Intervention Research Center Study’);</p>	<p><b>Add Health:</b> Stratified random sample of 14,428 adolescents drawn from secondary schools in US assessed in 1995 and then one year later (49.7% girls), in Grades 7-12, mean number of days absent (over a full academic year) 5.7 – 6.5 (<i>SD</i>=5.8 – 8.1) <b>Ethnic composition:</b> White (68.6%), African American (15.6%), Hispanic (11.0%), Asian (3.9%), Native American (0.8%); <b>Parental education</b> (% &lt;12yrs) 16.8%, <b>Family income</b> (% &lt;\$20K) 24.8%</p> <p><b>JHU-PIRC:</b> 2,297 children and adolescents drawn from 19 schools in socio-economically disadvantaged areas of one city (50.0% girls) comprising two consecutive first grade cohorts, assessed annually</p>	<p>Absence figures reflect number of days absent (both excused and unexcused) over the full academic year concerned; measurement of absence varied between all 3 data sets:</p> <p><b>Add Health:</b> Youth-self-report: <b>Excused absence:</b> multiple choice response: 0/1-2/3-10/&gt;10; <b>unexcused absence:</b> ‘open-ended numeric response’; suspensions not included in absence data</p> <p><b>JHU-PIRC:</b> attendance data obtained annually from school records; suspensions included within excused absence; ≥20 days absent coded 1 (‘frequently absent’), &lt;20 days absent coded 0</p>	<p><b>Anxiety (‘psychopathology’)</b> (<i>child/adolescent self-report</i>)</p> <p><b>Add Health:</b> Note: <b>no anxiety measure, depression only:</b> The Center for Epidemiologic Studies Depression (CES-D) Scale</p> <p><b>JHU-PIRC:</b> The Baltimore How I Feel (BHIF) Scale (including depressive and anxious symptoms – items drawn from existing measures including Children’s Depression Inventory and Revised-Children’s Manifest Anxiety Scale); Note: administered to whole class (youth not required to read)</p> <p><b>LIFT:</b> The Child Behavior Checklist (CBCL), The Teacher Report Form (TRF) – both questionnaires includes scales which measured externalising</p>	<p>Evidence of reciprocal influences between absenteeism and psychopathology found in all data sets but these influences varied between and within data sets as follows:</p> <p><b>Add Health:</b></p> <p><b>Concurrent residual correlations</b> between absenteeism and psychopathology <b>significant (positive)</b> in <b>middle</b> and <b>high</b> school</p> <p><b>Autoregressive pathways</b> (previous absenteeism → subsequent absenteeism and previous psychopathology → subsequent psychopathology) <b>significant (positive)</b> in <b>middle</b> and <b>high</b> school</p> <p><b>Cross-lagged associations:</b></p> <p>Previous absenteeism significantly associated (<b>positively</b>) with subsequent psychopathology in middle school</p> <p>Previous absenteeism <b>not significantly</b> associated with subsequent psychopathology in <b>high</b> school</p> <p>Previous psychopathology significantly associated (<b>positively</b>) with subsequent absenteeism in <b>middle</b> and <b>high</b> school</p> <p><b>Note:</b> due to log-transformations on Add Health data, reciprocal influences may only be interpreted with respect to <u>direction</u> of effect and not <u>size</u> of effect</p> <p><b>JHU-PIRC:</b></p> <p><b>Concurrent residual correlation</b> between absenteeism and psychopathology <b>significant (positive)</b></p> <p><b>All Autoregressive pathways</b> (previous absenteeism → subsequent absenteeism and previous psychopathology</p>
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# EXPLORING ANXIETY, SLEEP AND SENSE OF BELONGING IN SRB

<p><b>‘LIFT’ regionally representative data set</b> (Linking the Interests of Families and Teachers trial)</p> <p><b>Key Data Analyses:</b> Structural cross-lagged regression analyses (assessment of three pathways between absenteeism (A) &amp; psychopathology (P): <i>autoregressive</i>: A at time 1 → A at time 2, P at time 1 → P at time 2; <i>cross-lagged</i>: A at time 1 → P at time 2, P at time 1 → A at time 2; <i>concurrent residual</i>: between A and P at time 1, A and P at time 2; <i>cross-lagged</i> effects assessed while controlling for autoregressive, concurrent residual effects and demographic covariates)</p>	<p>through to Grade 8; mean number of days absent (over a full academic year) 14.3 – 25.0 (<i>SD</i>=16.8 – 26.8)</p> <p><b>Ethnic composition:</b> African American (65.5%), White (33.0%), Native American (0.9%), Hispanic (0.3%) Asian (0.3%)</p> <p><b>Parental education</b> (% &lt;12yrs) 33.3%, <b>Family income</b> (%&lt;\$20K) 56.2%</p> <p><b>LIFT:</b> 595 children and adolescents drawn from 12 schools within one city, located in neighbourhoods with high levels of youth crime; mean number of days absent (over a full academic year) 10.0 – 16.7 (<i>SD</i>=10.0 – 20.3); sample comprised <b>first-graders at baseline</b> (<i>N</i>=281) assessed annually through to 10<sup>th</sup>-grade and</p>	<p><b>LIFT:</b> attendance data obtained annually from school records; suspensions not included within excused absences; ≥20 days absent coded 1 (‘frequently absent’), &lt;20 days absent coded 0</p>	<p>(conduct) and internalising (anxiety &amp; depression) problems</p>	<p>→ subsequent psychopathology) significant (<b>positive</b>) across grades</p> <p><b>Cross-lagged associations:</b></p> <p>Previous absenteeism <b>not significantly</b> associated with subsequent psychopathology at any grades</p> <p>Previous psychopathology <b>not significantly</b> associated with subsequent absenteeism at any grades; but <b>approaching significance</b> (<i>p</i>&lt;.10) between <b>6<sup>th</sup> to 7<sup>th</sup> grade</b></p> <p><b>LIFT:</b></p> <p><b>Concurrent residual correlation</b> between absenteeism and psychopathology <b>significant (positive)</b> in <b>5<sup>th</sup> grade cohort</b> (see sample characteristics left)</p> <p><b>Concurrent residual correlation</b> between absenteeism and psychopathology <b>not significant</b> in <b>1<sup>st</sup> grade cohort</b> (see sample characteristics left)</p> <p><b>All Autoregressive pathways</b> (previous absenteeism → subsequent absenteeism and previous psychopathology → subsequent psychopathology) significant (<b>positive</b>)</p> <p><b>Cross-lagged associations:</b> Previous absenteeism significantly associated (<b>negatively!</b>) with subsequent psychopathology in between <b>6<sup>th</sup> to 7<sup>th</sup> grade</b> among <b>5<sup>th</sup> grade cohort</b> Previous absenteeism significantly associated (<b>positively</b>) with subsequent psychopathology between <b>7<sup>th</sup> to 8<sup>th</sup> grade</b> among <b>5<sup>th</sup> grade cohort</b> and between <b>8<sup>th</sup> to 10<sup>th</sup> grade</b> among <b>1<sup>st</sup> grade cohort</b>; association <b>approaching significance</b> (<i>p</i>&lt;.10) between <b>5<sup>th</sup> and 6<sup>th</sup> grade</b> among <b>5<sup>th</sup> grade cohort</b></p>
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		<p><b>fifth-graders at baseline</b> (<math>N=314</math>) assessed annually through to 12<sup>th</sup> grade; <b><u>1<sup>st</sup>-graders at baseline</u></b>: 54.4% girls; <b>Ethnic composition</b>: White (84.0%), Hispanic (6.4%), African American (2.5%), Native American (2.5%), Asian (1.8%), <b>Parental education</b> (% &lt;12yrs) 17.8%, <b>Family income</b> (%&lt;\$20K) 38.8%; <b><u>5<sup>th</sup>-graders at baseline</u></b>: 50.0% girls; <b>Ethnic composition</b>: White (86.6%), Hispanic (3.8%), Native American (3.5%), Asian (2.2%), African American (1.3%), <b>Parental education</b> (% &lt;12yrs) 11.2%, <b>Family income</b> (%&lt;\$20K) 27.7%</p>			<p>Previous psychopathology <b>significantly</b> associated (<b>positively</b>) with subsequent absenteeism between 7<sup>th</sup> and 8<sup>th</sup> grade among 5<sup>th</sup> grade cohort; association <b>approaching significance</b> (<math>p&lt;.10</math>) between <b>3<sup>rd</sup> to 4<sup>th</sup> grade, 6<sup>th</sup> to 8<sup>th</sup> grade and 8<sup>th</sup> to 10<sup>th</sup> grade</b> among 1<sup>st</sup> grade cohort</p>
Ingul & Nordahl (2013) (20)	<b>Objective:</b> To investigate factors which distinguish students with high	865 high school students (52.3% girls), mean age 17.2 years	<b>Operationalisation of absenteeism</b>	<b>Informants:</b> adolescents	<b>Outcomes of independent sample <math>t</math> tests and chi-square tests</b>

## EXPLORING ANXIETY, SLEEP AND SENSE OF BELONGING IN SRB

<p><b>Location:</b> Norway</p> <p><b>Key Constructs:</b> Anxiety; school absenteeism</p>	<p>anxiety who attend school regularly (anxious attenders) from students with high anxiety who attend school sporadically (anxious non-attenders); specifically, to explore how these groups can be differentiated by (a) individual risk factors and (b) combinations of risk factors</p> <p><b>Design:</b> Cross-sectional community study (sample drawn from two high schools)</p> <p><b>Key Data Analyses:</b> Independent sample <i>t</i> tests and chi-square tests (to assess group differences on individual factors); multigroup discriminant analysis (to assess for combinations of factors that can distinguish between</p>	<p>(<i>SD</i>=17.2, range 16 to 21), mean number of days absent over one term 6.5 (<i>SD</i>=8.32), mean anxiety* 11.7 (<i>SD</i>=11.2)</p> <p><b>High anxiety*, high absence^ group:</b> 21 students (85.7% girls), mean age 17.6 years (<i>SD</i>=1.5), mean number of days absent over one term 25.1 (<i>SD</i>=12.2); mean anxiety* 40.0 (<i>SD</i>=13.8)</p> <p><b>High anxiety*, low absence^ group:</b> 73 students (79.5% girls), mean age 17.5 years (<i>SD</i>=1.6), mean number of days absent over one term 5.7 (<i>SD</i>=4.2); mean anxiety* 34.6 (<i>SD</i>=19.8)</p> <p><b>Normal anxiety*, high absence^ group:</b> 80 students (52.5% girls), mean age 17.6 years</p>	<p><b>High absence group missed ≥13.5 days over one term; low absence group missed 0-13.49 days over one term;</b> authors report that this is consistent with the criteria for problematic absence advocated by Kearney (2008)</p> <p>Attendance data obtained from school records – reported in days and hours for each participant</p> <p>No distinction was reported between excused and unexcused absence, therefore assumption may be made that absence figures were inclusive of excused absence</p>	<p><b>Anxiety (adolescent self-report)</b></p> <p>Screen for Child Anxiety-Related Emotional Disorders (SCARED)</p> <p>High and normal anxiety groups differentiated using cut-off score of 26 (authors report that this is as per recommendations of Birmaher et al. 1999)</p>	<p>High-anxiety, high-absence group differed from high-anxiety-low-absence group on the following measures:</p> <ul style="list-style-type: none"> <li>• <b>Types of anxiety:</b> social anxiety and panic/somatic syndrome significantly greater in high absence group (Note: groups <b>did not differ</b> in levels of reported generalised anxiety or separation anxiety)</li> <li>• <b>Psychiatric severity:</b> behavioural problems, psychiatric severity (i.e. sum of number of scales in which scores were reported above cut-off) and frequency of narcotic usage significantly greater in high absence group (Note: groups <b>did not differ</b> in reported personality problems, alcohol consumption, cannabis use or depressive symptoms)</li> <li>• <b>Psychosocial problems:</b> likelihood of reporting perceptions of own health as bad and having fewer friends significantly greater in high absence group; of particular interest, high absence group also significantly less likely to report being bullied at school, and more likely to report feeling respected in school (Note: groups <b>did not differ</b> on number of negative life events, resilience, family work, family economy or chronic illness)</li> </ul> <p><b>Outcomes of multigroup discriminant analyses</b> Note: all risk factors entered as predictors; four groups: anxiety (high, low) by absence (high, low) entered as dependent variables</p> <p><b>3 significant discriminant functions identified:</b></p> <p><b>Function 1:</b> (85.4% of between-group variability) high score on this function reflected greater psychiatric severity (“symptom burden”), negative personality traits and relational problems</p>
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	the different groups)	<p>(<math>SD=1.5</math>), mean number of days absent over one term 22.9 (<math>SD=12.1</math>); mean anxiety* 10.0 (<math>SD=6.9</math>)</p> <p><b>Normal anxiety*, low absence^ group:</b> 636 students (48.0% girls), mean age 17.1 years (<math>SD=1.1</math>), mean number of days absent over one term 3.9 (<math>SD=3.3</math>); mean anxiety* 8.3 (<math>SD=6.2</math>)</p> <p>* Anxiety assessed using SCARED self-report measure (see Measures right)</p> <p>^ See operationalisation of high/low absence (right)</p>			<p><b>Function 2:</b> (10.1% of between-group variability) high score on this function reflected more behavioural and substance abuse problems</p> <p><b>Function 3:</b> (4.5% of between-group variability) high score on this function indicated higher levels of resilience and greater participation in exercise and leisure time activities</p> <p><b>Outcomes of post-hoc tests</b></p> <p><b>Function 1</b> differentiated between all 4 groups</p> <p><b>Function 2</b> differentiated between all groups except between <b>high anxiety</b>/high-absence and <b>low anxiety</b>/high-absence groups</p> <p><b>Function 3</b> differentiated between all groups except between <b>high anxiety</b>/low-absence and <b>low anxiety</b>/low-absence groups</p> <p><b>High anxiety/high absence</b> group scored significantly <b>higher</b> than <b>high anxiety/low absence</b> group on <b>Function 1</b> and <b>Function 2</b>, and significantly <b>lower</b> on <b>Function 3</b></p> <p>The discriminant function <b>correctly classified 73%</b> of students in the whole sample; <b>most misclassifications</b> were made between the <b>low anxiety</b> groups (high vs. low absence)</p>
Vaughn, Maynard, Salas-Wright, Perron, & Abdon (2013) (21)	<b>Objective:</b> To investigate correlates of truancy in multiple domains in a	17482 adolescents (51% girls) selected by area probability sampling from adolescents who	<b>Operationalisation of truancy</b> Attendance data gathered via youth self-report	<b>Informants:</b> adolescents  <b>Anxiety</b> (adolescent self-report)	<b>Outcomes of multinomial logistic regression analyses</b> ( <i>Adjusted odds ratios (AORs) based on inclusion of age, sex, ethnicity, family income, lifetime depression and lifetime anxiety as covariates</i> )

## EXPLORING ANXIETY, SLEEP AND SENSE OF BELONGING IN SRB

<p><b>Location:</b> US</p> <p><b>Key Constructs:</b> Anxiety; truancy (“skipping” school)</p>	<p>nationally representative sample</p> <p><b>Design:</b> Cross-sectional population-based study (sample constituted of participants in the 2009 National Survey on Drug Use and Health (NSDUH) in the general population of the United States)</p> <p><b>Key Data Analyses:</b> Multinomial logistic regression analyses to assess relationships between levels of truancy (no skipping, moderate skipping, high skipping – see operationalisation of truancy left) and potential correlates described above</p>	<p>completed the NSDUH survey to derive a representative US sample; mean age 14.6 years (<math>SD=1.7</math>, range 12 – 17); prevalence of skipping school over past month: 11%, comprising 9% who skipped 1-3 days and 2% who skipped 4 or more days (see operationalisation of truancy left)</p> <p><b>Ethnic composition:</b> White (58.7%), Hispanic (17.7%), African American (14.0%); <b>Socio-economic status</b> (as measured by family income): &lt; \$20,000 (15.8%), \$20,000 to \$49,999 (32.6%), \$50,000 to \$74,999 (19.4%), &gt;\$75,000 (32.2%)</p>	<p><b>3 levels of truancy delineated as follows:</b></p> <p><b>Non-school skipping:</b> no school days skipped over past 30 days</p> <p><b>Moderate level skipping:</b> 1-3 days skipped over past 30 days</p> <p><b>High level skipping:</b> 4 days skipped over past 30 days</p>	<p><b>Survey item relating to lifetime history of anxiety:</b></p> <p>Dichotomous item (yes/no) to indicate whether participant had ever been notified by a medical practitioner that they had an anxiety disorder</p>	<p><b>Note: Reference group: students who reported missing no days of school (non-skippers)</b></p> <p><b>Socio-demographic predictors of truancy:</b></p> <ul style="list-style-type: none"> <li>• <b>Age:</b> moderate level skippers <b>31% more likely</b> and high level skippers <b>35% more likely</b> to be older</li> <li>• <b>Family income:</b> high level skippers 68% less likely to report family income &gt;\$75,000 (than to report family income &lt;\$20,000)</li> <li>• <b>Father in household:</b> moderate level skippers <b>37% more likely</b> to have <b>no father</b> in the household</li> </ul> <p><b>Mental health predictors of truancy:</b></p> <ul style="list-style-type: none"> <li>• <b>Lifetime anxiety:</b> Moderate level skippers almost <b>twice (1.97 times) more likely</b> to report medical history of anxiety; high level skippers <b>almost two and a half (2.47) times more likely</b> to report medical history of anxiety but this was statistically significant due to lower confidence interval which fell below 1 (0.98, 6.24)</li> <li>• <b>Lifetime depression:</b> High level skippers <b>almost three (2.88) times more likely</b> to report medical history of depression</li> </ul>
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## **Appendix D: Autonomic nervous system and echocardiogram: key information**

### **The autonomic nervous system**

The ANS is regulated by the hypothalamus within the brain and it consists of two divisions:

- The sympathetic nervous system (SNS) accelerates the heart rate, constricts blood vessels, and raises the blood pressure.
- The parasympathetic nervous system (PNS) which slows the heart rate.

#### **During physical or psychological stress**

The activity of the SNS becomes dominant, producing physiological arousal to aid in adapting to the challenge. The SNS signals the adrenal glands (which are found at the top of the kidneys) to release hormones including adrenaline and cortisol which increase the heart rate.

#### **During periods of relative safety and stability**

The PNS is dominant and maintains a lower degree of physiological arousal and a decreased heart rate.

### **Electrocardiogram (ECG)**

#### **The structure of the heart**

The heart consists of the Pericardium, a smooth outer lining; the Myocardium, the heart muscle and the Endocardium, the inner lining.

#### **The heart consists of four chambers**

The Two thin-walled upper chambers known as the Atrium, the two thicker walled lower chambers known as the Ventricle. A septum divides the heart into the left and the sides. The right side receives de-oxygenated blood from the tissues and pumps it through the lungs and the left side takes oxygenated blood and sends it back to the tissues.

#### **The cardiac (heart) conduction system**

This consists of a group of specialised cardiac muscle cells in the walls of the heart that send signals to the heart muscles causing it to contract.

The main components are:

- Sinus Atrial Node (SA) also known as the pacemaker.
- Atrial ventricular Node (AV)
- Bundle of His
- Right and Left bundle branches
- Purkinje fibres.

#### **Electrical activity in the heart**

The heart muscles generate electrical energy when they contract and at rest. Virtually all the electrical activities seen results from the myocardial contraction and the recording are called an Electrocardiogram (ECG). These actions can be readily observed by connecting an ECG monitor to Electrodes attached to the skin. The ECG is normally placed on the torso or upper body (See Appendix F)

## EXPLORING ANXIETY, SLEEP AND SENSE OF BELONGING IN SRB

### ECG Waves - (P, QRS, T)

One heart beat consists of depolarisation and repolarisation of the Atria and the Ventricles through myocardial cells shows up in 3 distinct waves on the ECG. A unique labelling system is used to identify each wave. The waves are P, QRS, and T.

P waves – are atrial depolarisation which starts in the SA node and is conducted to the right and left atria. This is followed by atrial contraction.

QRS complex – shows ventricular depolarisation and ventricular contraction. The QRS Complex is made up of 3 waves. These waves indicate the changing direction of the electrical stimulation as it passes through the heart's conduction system. The largest wave in the QRS is the "R" wave and it is generated during normal conduction. NB: the "R" wave represents electrical stimulus as it passes through the main portion of the ventricle.

T waves – shows the resting or recovery phase, including the repolarisation of the ventricles

### Bibliography


Hampton, J. R. (2008). *The ECG Made Easy* (7<sup>th</sup> ed.). London: Churchill Livingstone Elsevier

Kalat, J. W. (1995). *Biological Psychology* (5<sup>th</sup> ed.). London: Brooks/Cole Publishing

## Appendix E: Regulated parental qualification levels (proxy measure for SES)

Compare different qualifications - GOV.UK

Page 1 of 3



### Compare different qualifications

Show all parts of this guide

- 1. Overview (<https://www.gov.uk/what-different-qualification-levels-mean/overview>)
- 2. Compare different qualification levels

### 2. Compare different qualification levels

Regulated qualifications in England, Wales and Northern Ireland are in either the:

- Regulated Qualifications Framework (RQF)
- Framework for Higher Education Qualifications (FHEQ)

The table shows how the most common qualifications compare. The levels show how difficult a qualification is.

**!** There's no simple comparison for NVQ levels 4 and 5. Contact the National Careers Service (<https://nationalcareersservice.direct.gov.uk/Pages/Home.aspx>) if you need advice.

Level	RQF examples	FHEQ examples
Entry	<ul style="list-style-type: none"> <li>- Entry level certificate</li> <li>- Entry level Skills for Life</li> <li>- Entry level award, certificate and diploma</li> <li>- Entry level Functional Skills</li> <li>- Entry level Foundation Learning</li> </ul>	
1	<ul style="list-style-type: none"> <li>- GCSE (grades D-G)</li> <li>- Key Skills level 1</li> <li>- NVQ level 1</li> <li>- Skills for Life level 1</li> <li>- Foundation diploma</li> <li>- BTEC award, certificate and diploma level 1</li> <li>- Foundation Learning level 1</li> <li>- Functional Skills level 1</li> <li>- Cambridge National level 1</li> </ul>	

<https://www.gov.uk/what-different-qualification-levels-mean/compare-different-quali...> 29/01/2016



Level	RQF examples	FHEQ examples
2	<ul style="list-style-type: none"> <li>- GCSE (grades A*-C)</li> <li>- Key Skills level 2</li> <li>- NVQ level 2</li> <li>- Skills for Life level 2</li> <li>- Higher diploma</li> <li>- BTEC award, certificate and diploma level 2</li> <li>- Functional Skills level 2</li> <li>- Cambridge National level 2</li> <li>- Cambridge Technical level 2</li> </ul>	
3	<ul style="list-style-type: none"> <li>- AS and A level</li> <li>- Advanced Extension Award</li> <li>- Cambridge International award</li> <li>- International Baccalaureate</li> <li>- Key Skills level 3</li> <li>- NVQ level 3</li> <li>- Advanced diploma</li> <li>- Progression diploma</li> <li>- BTEC award, certificate and diploma level 3</li> <li>- BTEC National</li> <li>- Cambridge Technical level 3</li> </ul>	
4	<ul style="list-style-type: none"> <li>- Certificate of higher education</li> <li>- Key Skills level 4</li> <li>- NVQ level 4</li> <li>- BTEC Professional award, certificate and diploma level 4</li> </ul>	<ul style="list-style-type: none"> <li>- Certificate of higher education</li> <li>- HNC</li> </ul>
5	<ul style="list-style-type: none"> <li>- HND</li> <li>- NVQ level 4</li> <li>- Higher diploma</li> <li>- BTEC Professional award, certificate and diploma level 5</li> <li>- HNC</li> <li>- HND</li> </ul>	<ul style="list-style-type: none"> <li>- Diploma of higher education</li> <li>- Diploma of further education</li> <li>- Foundation degree</li> <li>- HND</li> </ul>
6	<ul style="list-style-type: none"> <li>- NVQ level 4</li> <li>- BTEC Advanced Professional award, certificate and diploma level 6</li> </ul>	<ul style="list-style-type: none"> <li>- Bachelor's degree</li> <li>- Graduate certificate</li> <li>- Graduate diploma</li> </ul>
7	<ul style="list-style-type: none"> <li>- BTEC Advanced Professional award, certificate and diploma level 7</li> </ul>	<ul style="list-style-type: none"> <li>- Master's degree</li> <li>- Postgraduate</li> </ul>

<https://www.gov.uk/what-different-qualification-levels-mean/compare-different-quali...> 29/01/2016

Level	RQF examples	FHEQ examples
	<ul style="list-style-type: none"> <li>- Fellowship and fellowship diploma</li> <li>- Postgraduate certificate</li> <li>- Postgraduate diploma</li> <li>- NVQ level 5</li> <li>- BTEC Advanced Professional award, certificate and diploma level 7</li> </ul>	<ul style="list-style-type: none"> <li>certificate</li> <li>- Postgraduate diploma</li> </ul>
8	<ul style="list-style-type: none"> <li>- NVQs level 5</li> <li>- Vocational qualifications level 8</li> </ul>	<ul style="list-style-type: none"> <li>- Doctorate</li> </ul>

### Get advice

Contact the National Careers Service for advice about qualifications and courses.

#### National Careers Service

National Careers Service website (<http://nationalcareersservice.direct.gov.uk>)

Email a careers adviser

(<https://nationalcareersservice.direct.gov.uk/aboutus/contactus/Pages/adviser.aspx>)

Telephone: 0800 100 900

Monday to Sunday, 8am to 10pm

Find out about call charges (<https://www.gov.uk/call-charges>)

You can also arrange for a National Careers Service adviser to call you (<http://nationalcareersservice.phoneme.net>) - this won't cost you anything.

Last updated: 4 December 2015

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### Apprenticeships, 14 to 19 education and training for work

- Further education courses and funding (<https://www.gov.uk/further-education-courses>)
- More (<https://www.gov.uk/browse/education/find-course>)

### Education and learning

- Higher education courses: find and apply (<https://www.gov.uk/higher-education-courses-find-and-apply>)
- More (<https://www.gov.uk/browse/education>)

<https://www.gov.uk/what-different-qualification-levels-mean/compare-different-quali...> 29/01/2016

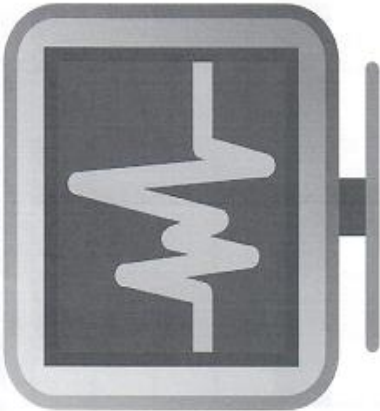
Appendix F: Research diary

Front and back cover:

DAILY CHECKLIST

DAY	THINGS I NEED TO DO:
Friday (start)	<ul style="list-style-type: none"><li>• Meet Sharon McKenzie at 8.30 in school to have heart rate monitor fitted</li><li>• Meet Sharon McKenzie again before last lesson to return heart rate monitor</li><li>• Fill in diary in the evening before bedtime</li><li>• Wear SOMNOwatch to bed*</li></ul>
Saturday and Sunday	<ul style="list-style-type: none"><li>• Fill in diary in the morning and in the evening before bedtime</li><li>• Wear SOMNOwatch to bed*</li></ul>
Monday	<ul style="list-style-type: none"><li>• Fill in diary in the morning before school</li><li>• Meet Sharon McKenzie at 8.30 in school to have heart rate monitor fitted</li><li>• Meet Sharon McKenzie again before last lesson to return heart rate monitor</li><li>• Fill in diary in the evening before bedtime</li><li>• Wear SOMNOwatch to bed*</li></ul>
Tuesday Wednesday Thursday	<ul style="list-style-type: none"><li>• Fill in diary in the morning before school and in the evening before bedtime</li><li>• Wear SOMNOwatch to bed*</li></ul>
Friday (end)	<ul style="list-style-type: none"><li>• Fill in diary in the morning before school</li><li>• Hand in diary to the school office</li></ul>

STUDENT RESEARCH DIARY



Name \_\_\_\_\_

\* press the button once to mark when I go to bed and once more in the morning to mark when I get out of bed.

If found please return to School Office

## Inside pages

## COMPLETE EVERY MORNING

	Mon	Tues	Wed	Thurs	Fri	Sat	Sun
I went to bed last night at	PM/AM	PM/AM	PM/AM	PM/AM	PM/AM	PM/AM	PM/AM
I got out of bed this morning at	PM/AM	PM/AM	PM/AM	PM/AM	PM/AM	PM/AM	PM/AM
Last night I fell asleep							
Easily							
After some time							
With difficulty							
Last night there was							
nothing different about my sleep							
something different about my sleep (please state)							

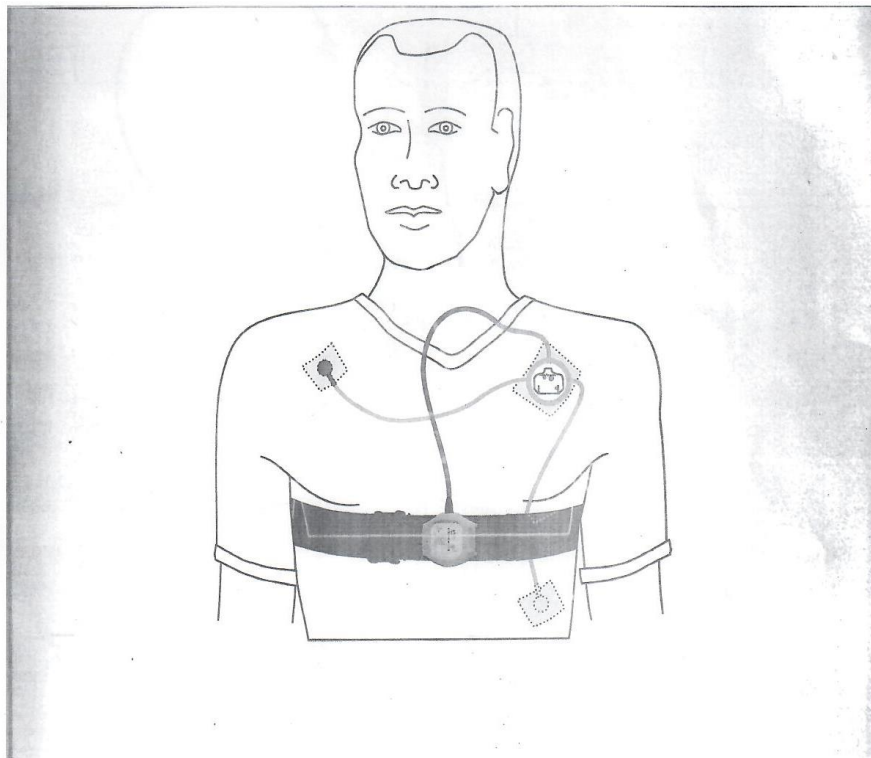
## COMPLETE EVERY EVENING BEFORE BEDTIME

	Mon	Tues	Wed	Thurs	Fri	Sat	Sun
I had a drink containing caffeine* this							
Morning							
Afternoon							
Evening							
I did a physically energetic activity this							
Morning							
Afternoon							
Evening							
My mood today on a scale of 1 to 5 was**							

\* This includes tea, coffee, coke and some other canned drinks, high energy drinks

\*\* 1=very bad mood, 5=very good mood

**Appendix G: Electrocardiogram procedure: attachment of SOMNOwatch™ and sensors to upper body**



## Appendix H: Ethics Committee approval for study



Ethics and Research Governance Online  
**ERGO**

[Accessibility toolbar](#) [Help](#)  
 Logged in as: sm12p13 | [Logout](#)

**Main Menu**

- [My Research](#)
- [Submissions to review](#)
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- [Adverse Incident](#)

[View all my research](#)

### Exploring links between feelings of worry and anxiety, sleep and school attendance in adolescent girls

Submission ID: 10181

[Submission Overview](#)
[IRGA Form](#)
[Attachments](#)
[History](#)
[Adverse Incident](#)

**Amendment History**

[Latest Version](#)

[Version 2](#)

[Original Submission](#)

**Current Status**

Approved

Category A Research

[Click here for more information on research categories](#)

**Submission Checklist**

IRGA Form	Complete
Ethics Form	Attached
Risk Form	Attached

**Comments**

**Co-ordinators**

Julie Hasleth

Sharon McKendrick

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## Appendix I: Introductory letter to Headteacher

UNIVERSITY OF  
**Southampton**

Psychology Academic Unit  
Faculty of Social and Human Sciences  
Building 44  
Highfield Campus  
SO17 1BJ

[Address of School]

[Date]

Dear [Name of Headteacher]

### Consent to school participation in research study

**Study Title:** *Exploring links between feelings of worry and anxiety, sleep and school attendance in adolescent girls.*

I would like to introduce myself as a Trainee Educational Psychologist studying at the University of Southampton. I will be entering the final year of a three-year training programme in September 2015, across which I will be on placement in [Name of Placement Borough]. At this point in my training, I am required to complete a thesis which makes an original contribution to research in the field of child and educational psychology. I am writing to tell you about a study we are hoping to carry out in secondary schools.

I have a background in Educational Welfare and have chosen to carry out research into school attendance. Specifically, the project aims to understand feelings of worry and anxiety, sleep patterns and associations with school attendance in adolescent girls (years 8 and 9). I hope to work with girls who report low levels of worry and no difficulty attending school, as well as those who report more worry and show difficulty with attending school or remaining in school for the full day.

The study is important for understanding what aspects of the school day might be most worrying for some adolescent girls, and also whether sleep problems are more likely for girls who report higher than typical levels of worry, and have difficulty attending school. The results will be used to develop effective interventions to address feelings of worry and anxiety, improve sleep quality and increase school attendance.

The study is in two parts including a *screening* and a *project* component. These components are described briefly below. I can meet with you to provide more information, if you think your school would like to take part.

**Screening:** I would hope to work with all adolescent girls in Years 8 to 9 during tutor time to ask them 6 questions. For example, I will ask them to respond in a paper and pen format "never", "sometimes", "often", "always" to questions like "I worry about things". It will take two to three minutes for the girls to answer all six questions.

**Project:** Involvement in the study requires working on a series of activities related to measurements of sleep and worry or anxiety over the course of a week, to be completed by young people and their parents. We will measure sleep quality via questionnaires and each

night for one week using a specialist watch. In addition, we will measure worry and anxiety via questionnaires and across two school days using a heart rate monitor.

The research will be conducted under the primary supervision of Dr Julie Hadwin, University of Southampton, contactable by phone on 023 8059 5000, or email: J.A.Hadwin@soton.ac.uk. Please also note that the study has been approved by the University of Southampton (School of Psychology) Ethics Committee and the Research Governance Office.

I will contact you directly to arrange to meet with you to go over the study in more detail. Thank you very much in advance for your time and consideration.

Yours sincerely

Mrs Sharon McKenzie  
Trainee Educational Psychologist



## Appendix J: Headteacher consent form



### HEADTEACHER CONSENT FORM

(Version Number 01, 11/05/2015)

**Study title:** Exploring links between feelings of worry and anxiety, sleep and school attendance in adolescent girls

**Researcher name:** Sharon McKenzie

**ERGO Study ID number:** 15151

*Please initial the box(es) if you agree with the statement(s):*

I understand that my school's participation in this study will involve assisting Mrs Sharon McKenzie with the following activities as detailed in her consent letter dated [date]:

- Initial Screening across Years 8 to 9
- Selection of students who meet SRB and control group criteria
- Obtaining consent from parents and assent from students
- Identification of a named staff member in school whom students could approach for support if required
- Group session in school to complete standardised questionnaires
- Data collection in school during Autumn 2015 on Mondays and Fridays

☐

I have read and understood the following documents in connection with the study:

- 'Opt-out' consent letter to parents for initial screening
- Verbal script for administration of screening questionnaire
- Letter to parents requesting full participation
- Participant information sheet for SRB group
- Participant information sheet for control group
- Parent consent form
- Student assent form

☐

Further to reading the above documents, I have had the opportunity to ask questions about the study. I understand that I remain free to direct any future questions, comments or concerns about the study as they arise, to Mrs Sharon McKenzie, Researcher or Dr Julie Hadwin, Research Supervisor.

☐

I understand that I am at liberty to contact the Southampton University Ethics Committee to discuss any complaints I may have pertaining to this research.

☐

I understand that my school's participation and assistance in this study is completely voluntary.

☐

I consent to Mrs Sharon McKenzie conducting this study in my school under the supervision of Dr Julie Hadwin.

☐

Name of School.....

Name of Headteacher.....

Signature of Headteacher.....

Date.....

## Appendix K: Opt out parental consent letter to parents in respect of initial screening process

### [School Letterhead]

[Address]

[Date]

Dear Parents/Carers

**Study Title: "Exploring links between feelings of worry and anxiety, sleep and school attendance in adolescent girls"**

A Trainee Educational Psychologist, Sharon McKenzie is studying at the University of Southampton. She is hoping to carry out a research project with adolescent girls in the school.

The project aims to understand feelings of worry and anxiety, sleep patterns and associations with school attendance in adolescent girls. It will include girls who report low levels of worry, and no difficulty attending school versus girls who report more worry and show difficulty with attending school or remaining in school for the full day.

In order to identify adolescent girls who report more worry and anxiety versus those who report less worry and anxiety we would like to ask all girls in the school who are in Years 8 and 9, six questions about worry. During tutor time we will ask your child to respond in a paper and pen format "never", "sometimes", "often", "always" to questions like "I worry about things". It will take two to three minutes for your child to answer all six questions.

We have organised for this to take place on the week beginning [date]. If you have a daughter in Year 8 or 9 and you have any queries or concerns about the questions, then please contact Mrs McKenzie directly: phone: 07827 013 801; Email: sm13g13@soton.ac.uk

We will use this information to invite girls to take part in the main project. Participation will be dependent on informed written consent from both parents and young people.

Unless you notify the school, either by phone, email or letter on or before [date], we will assume that you are happy for your daughter to complete the six questions.

Yours sincerely

[Name of Senior School Administrator]

## Appendix L: Verbal script for screening process undertaken by form tutors



### VERBAL SCRIPT FOR SCREENING

(Version Number 01, 11/05/2015)

**Study title:** Exploring links between feelings of worry and anxiety, sleep and school attendance in adolescent girls

**Researcher name:** Sharon McKenzie

**ERGO Study ID number:** 15151

**Preliminary Note:** Form Tutors will need to be aware of those girls for whom parental consent to participate in the screening has not been given, and to ensure that they do not participate.

The following script will be read by Form Tutors prior to administering the screening questionnaire to tutor groups:

*"The school has agreed to take part in a research study focusing on school attendance in girls between 12 and 14 years old. In order to select potential participants for the study, we need to go through what's called a 'screening' process. We're going to do that now. Your parents have been informed about this and we have your parents' consent.*

*"I'm going to hand out a very short questionnaire with just six questions on it. Follow the instruction on the top which says: PLEASE PUT A CIRCLE AROUND THE WORD THAT SHOWS HOW OFTEN EACH OF THESE THINGS HAPPEN TO YOU. THERE ARE NO RIGHT OR WRONG ANSWERS. So for each question, you need to circle 'never', 'sometimes', 'often' or 'always' to show how often each of these things happen to you". Please make sure that you put your name on the top. Your answers will be kept confidential.*

## Appendix M: Participant information sheet



### Participant Information Sheet

**Study Title:** Exploring links between feelings of worry and anxiety, sleep and school attendance in adolescent girls

**Researcher:** Sharon McKenzie

**Ethics number:** 18241

Dear Parent

**Please read this information carefully before deciding to take part in this research. If you are happy to participate you will be asked to sign a consent form.**

#### **What is the research about?**

This study aims to understand links between feelings of worry and anxiety, sleep patterns and school attendance in adolescent girls. We will be exploring these links in girls who report higher than typical levels of worry and anxiety.

#### **Why is the research important?**

The study is important for understanding what aspects of the school day might be most worrying for some adolescent girls, and also whether sleep problems are more likely for girls who report higher than typical levels of worry and sometimes have difficulties with attending school. The results will be used to develop effective interventions to address feelings of worry and anxiety, improve sleep quality and increase school attendance.

#### **Why has your family been chosen to take part?**

Your family has been selected to take part in the study because:-

- you have a female child aged between 12 and 14 years old
- your child's rate of attendance in school last term was less than 95%
- your child reported higher than typical levels of worry in a recent questionnaire

#### **What will happen if you take part?**

Involvement in the study requires working on a series of activities related to measurements of sleep and worry or anxiety over the course of one week, to be completed by you and your child. We will measure sleep quality using a questionnaire, daily diary and a specialist watch to be worn in bed each night. In addition, we will measure worry and anxiety using a questionnaire and a heart rate monitor to be worn by your child across two school days.

You and your child will be supported through this process and will be offered reminders during the week we work with your child.

15/11/2015 [Version Number 02]



All activities are summarised below:

Description of Activity	How long will this take?
<b>Parent Report Questionnaires</b> You will be asked to complete two questionnaires at home (measuring your views of your child in relation to her strengths and difficulties, and her feelings of worry and anxiety)	20 minutes
<b>Child Report Questionnaires</b> Your child will be asked to complete five questionnaires in school (measuring her own views of her strengths and difficulties, feelings of worry or anxiety, feelings of sadness or low mood, sleep and health habits, and her sense of belonging in school).	One lesson period
<b>Home visit</b> The researcher will visit your home to: <ul style="list-style-type: none"> <li>familiarise you and your child with the specialist watch that will be used to measure heart rate and sleep;</li> <li>talk to you and your child about what will happen over the week we will work with you;</li> <li>provide an opportunity for you and your child to ask any questions.</li> </ul>	45 minutes to 1 hour
<b>Measuring Heart Rate</b> Measuring heart rate across the school day will involve your child wearing a monitor on her chest for two full school days (Monday and Friday). The researcher will fit the monitor in school on Monday and Friday mornings just before the first lesson period and will remove it just before the final lesson period.	Monday and Friday AM and PM. 10 minutes
<b>Measuring sleep</b> Measuring sleep will require your child to wear a specialist watch in bed for seven consecutive nights (Monday to Sunday night).	We will provide advice on how to use the watch. We will pick the watch up from school after one week.
<b>Keeping a diary</b> We will ask your child to keep a daily diary (provided) from the Monday to Sunday of the data collection week. Brief diary entries will be made twice a day (before school and before bedtime). This will involve keeping records of sleep times, mood, vigorous physical activities, caffeinated drinks consumed, any stress-provoking events, and any positive events or thoughts.	Monday to Sunday: approximately 10 minutes each day

At the end of your participation, you will be offered a summary of the research findings following completion of the study.

#### Are there any benefits in our taking part?

Taking part in this research will potentially offer you and your child rewarding opportunities to understand how poor sleep and feelings of worry and anxiety can impact on daily activities in adolescent girls, such as attending school. By participating in this study you will contribute to a body of research that is working to improve the future experiences of young people who experience worry, problems sleeping and difficulties going to school.

**Will there be any rewards for taking part?**

Your child will receive £35 in high street vouchers as a thank you for completing the study.

**Are there any risks involved?**

Our priority is to ensure the wellbeing of you and your child as participants. Every effort will be made to ensure that your participation in the study is a positive experience, and that you and your child remain happy to continue with the study over the course of a week.

It is possible that you and/or your child may experience some discomfort or distress, however the risks are considered to be small and will be well managed. The potential risks include emotional distress when completing the questionnaires or recording stressful events in a school day. Your child might also experience minor discomfort when wearing the heart rate monitor or the watch.

If you or your child experience distress, you are free to leave the study. In addition, you or your child can discuss these feelings with a supportive adult (e.g., a member of staff in school) or the family GP.

**Will our participation be confidential?**

Yes. All questionnaires will be stored securely in locked filing cabinet within the researcher's office base to protect confidentiality. As an additional measure, all participants will be assigned identification numbers, so that information stored within electronic data files will be anonymised.

**What happens if we change our minds?**

You and your child are fully entitled to change your mind and you can withdraw from the study at any point without your legal rights being affected.

**What happens if something goes wrong?**

In the unlikely event that you feel that you have been placed at risk, you may contact the Chair of the Ethics Committee, Psychology, University of Southampton, Southampton SO17 1BJ. Phone: +44 (0)23 8059 3856, email [fshs-rso@soton.ac.uk](mailto:fshs-rso@soton.ac.uk)

**Where can we get more information?**

If you have any questions about the study after reading this information sheet, please contact either: Sharon McKenzie (Researcher, University of Southampton) Phone: 07827 013 801, email: [sm13g13@soton.ac.uk](mailto:sm13g13@soton.ac.uk) or Dr. Julie Hadwin, (Research Supervisor, University of Southampton), Phone 023 8059 5000, email: [J.A.Hadwin@soton.ac.uk](mailto:J.A.Hadwin@soton.ac.uk)

## Appendix N: Parental consent form



### PARENT CONSENT FORM

(Version Number 02, 15/11/2015)

**Study title:** Exploring links between feelings of worry and anxiety, sleep and school attendance in adolescent girls

**Researcher name:** Sharon McKenzie

**ERGO Study ID number:** 18241

*Please initial the box(es) if you agree with the statement(s):*

I have read and understood the Participant Information Sheet (15/11/2015, Version Number 02) and have had the opportunity to ask questions about the study

☐

I agree to take part in this research and agree for my data to be used for the purpose of this study

☐

I agree for my child \_\_\_\_\_ to take part in this research and I agree for my child's data to be used for the purpose of this study

☐

I understand that our data will be stored securely and will be anonymised in the research report.

☐

I understand that in the event of publication, the study will not include our names or other identifying characteristics

☐

I understand that our participation is completely voluntary and may be withdrawn at any time without our legal rights being affected

☐

I understand that my child will receive £35 in high street vouchers as a reward for taking part in the research, and that this will be subject to my child's full participation in the study

☐

Name of participant (print name).....

Contact Phone Number.....

Contact Email Address.....

Signature of participant.....

Date.....



## Appendix O: Student assent form



### STUDENT ASSENT FORM

(Version Number 02, 15/11/2015)

**Study title:** Exploring links between feelings of worry and anxiety, sleep and school attendance in adolescent girls

**Researcher name:** Sharon McKenzie

**ERGO Study ID number:** 18241

*Please tick the box(es) if you agree with the sentences below:*

I understand that my parent or carer must give permission for me to take part in this study

☐

I understand that I can agree or disagree to take part in the study and that nobody will be upset or disappointed if I decide that I don't want to take part

☐

I understand that I can decide not to take part even if my parent or carer has given their permission for me to take part

☐

My parent or carer has talked with me about the study and whether or not I would like to take part

☐

I have had the chance to ask questions about the study and talk about anything that is worrying me about taking part

☐

I understand that my data will be stored safely to keep it private

☐

I understand that it will not be possible for anybody reading the research report to be able to tell that I took part in this study

☐

I understand that I can change my mind or decide to stop taking part in the study at any time, without needing to give a reason

☐

I understand that I will receive £35 in high street vouchers as a thank-you for taking part in the study, provided that I complete all of the set tasks

☐

I agree to take part in this study

☐

Name of participant (print name).....

Signature of participant.....

Date.....



## Appendix P: Introductory home-visit schedule

EXPLORING LINKS BETWEEN FEELINGS OF WORRY AND ANXIETY, SLEEP AND SCHOOL ATTENDANCE IN ADOLESCENT GIRLS

### Introductory Home-Visit Schedule

**Student ID:** \_\_\_\_\_

**Date of Home-visit:** \_\_\_\_\_

**Items to bring:**

- Parent Questionnaires: SDQ & Spence ☐ (Tick when completed & returned)
- SOMNOWatch equipment for demonstrations
- Two copies of Participant Information Sheet
- School Diary (remember to select Friday/Monday start accordingly)
- Vests for ECG

**Preliminary Matters**

- a) Thanks for participation
- b) Request to see signed Consent Form (in not already in my possession) to verify full informed consent to participate
- c) Succinct reminder of research objectives (i.e. to explore the relationships between feelings of worry and anxiety, school attendance and sleep)
- d) Reminder of right to withdraw consent to participate any time
- e) Outline research activities for student and parent (with reference to Participant information sheet)
- f) Underline that the SOMNOWatch is an expensive device and therefore must be stored safely at home while not in use, explain about pick-ups and drop-offs
- g) Clarify when high street voucher will be received (i.e. upon completion of data collection: HR/HRV/sleep/student & parent questionnaires)

**Practical Considerations**

- a) Take student and parent through how to complete the Student Diary, starting with Daily Checklist at the back, which reminds students and parents of requirements on each day of the data collection week
- b) Provide the parent with SDQ and Spence questionnaires for completion by next visit.
- c) Establish appropriate vest size and take student through ECG fitting procedure; explain that the imprint left by electrodes is nothing to worry about and fades within a day to a week
- d) Ask the student to walk around and go to the toilet – check they are comfortable
- e) Take the student through independent removal of the belt and electrodes; allow time for practice
- f) Take the student through the procedure for fitting the watch – ensure that student and parent feel confident to attach this correctly; reinforce requirement to press the patient button just before going to bed and upon getting up

**Essential Details**

Enquire about the following:

- a) Usual waking time and leaving time for school

EXPLORING LINKS BETWEEN FEELINGS OF WORRY AND ANXIETY, SLEEP AND SCHOOL ATTENDANCE IN ADOLESCENT GIRLS

- b) Mode of transport to school
- c) Usual return time home
- d) Weight and height measurement and date of birth (for BMI index – computed using NHS Choices BMI Healthy Weight Calculator, accessible from <http://www.nhs.uk/Tools/Pages/Healthyweightcalculator.aspx>)  
Height:                      Weight:                      D.O.B.:  
Ethnicity:
- e) What day student is timetabled to have PE; explain potential for interference with signal and request parental permission to be excused from PE on this occasion (email school if parental permission is given)
- f) Parental/student preferences in relation to subjects which must not be missed for student questionnaire completion in school
- g) Any other dates to avoid this term for purposes of student questionnaire completion in school
- h) Parent's mobile (if not already on file)
- i) Would the parent like me to send reminders to wear SOMNOWatch to bed? If so, at what time?
- j) Highest educational level within household
- k) First and second choice of high street voucher

**Closing Procedure**

- a) Enquire whether student or parent has any questions about the project at this time
- b) Invite both to contact me at a later date with any questions which may arise
- c) Extend final thank-you for participating in the project

## Appendix Q: Participant debriefing form



### Exploring links between feelings of worry and anxiety, sleep and school attendance in adolescent girls

#### Debriefing Statement for Students

(Version Number 01, 11/05/2015)

The reason for doing this study was to learn more about the experiences of girls who find it difficult to come to school, or to stay in school, and who describe feeling anxious a lot of the time. Hopefully what we learn from the study can be used to help girls in this situation feel less anxious about coming to school and being in school. Future studies could help us learn more about boys who have these difficulties.

Remember that nobody reading the end report of this study will be able to tell that you took part in it. After the study has finished, you and your parent will receive a summary about what was learned from the study.

If either you or your parent have any later questions about the study please contact:

Sharon McKenzie (Researcher, University of Southampton) Phone: 07827 013 801, email: sm13g13@soton.ac.uk or

Julie Hadwin (Research Supervisor) Phone: 023 8059 5000, email

J.A.Hadwin@soton.ac.uk.

Thank you for taking part in this study.

Name of participant (print name).....

Signature of participant.....

Date.....

#### For the attention of parents/carers:

Thank you for taking part in this research. If you have questions about your rights as a participant in this research, or if you feel that you have been placed at risk, you may contact the Chair of the Ethics Committee, Psychology, University of Southampton, Southampton, SO17 1BJ. Phone: +44 (0)23 8059 3856, email [fshs-rso@soton.ac.uk](mailto:fshs-rso@soton.ac.uk)

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