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**Can improving the academic buoyancy of secondary
school students improve their school attendance?**

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A thesis submitted for the degree of Doctor of Philosophy

School of Education

The University of Durham

United Kingdom

2022

ABSTRACT

This study explores a potential link between academic buoyancy, school attendance and mindfulness in Key Stage 3 students in English state-funded schools. Following a unique time in school history, schools are continuing to experience higher-than-normal school absences in the aftermath of the COVID-19 pandemic. Continuing school-related challenges such as studying from home, anxiety relating to examinations and the impact on students' futures, breakdowns in social relationships with peers and general disengagement from school have been reported as reasons for students' absence (Ofsted, 2022). Despite the most recent trends in school absence being largely driven by the pandemic, persistent absence has continued to increase without including students' covid non-attendance in the figures (GOV.UK, 2021e). Understanding the factors that drive problematic school absence, particularly persistent and unauthorised absence, and finding evidence-based and data-driven ways to intervene have been highlighted as government priorities for the current Education Secretary. Driving factors such as improving student mental health and wellbeing are often cited as the motivation for prioritising action in this policy area.

This thesis is underpinned by three key constructs: academic buoyancy, school absence and mindfulness. Academic buoyancy is defined as students' ability to successfully deal with academic setbacks and challenges that are typical of the ordinary course of school life (Martin & Marsh, 2008a). In this thesis, school absence will encompass all types of school non-attendance and is defined as pupils who fail to attend school (Thambirajah, Grandison & De-Hayes, 2008). Furthermore, mindfulness is defined as, "the awareness that emerges through paying attention on purpose, in the present moment, and non-judgementally" (Kabat-Zinn, 2003, p.145). In phase one of this PhD project, a systematic review of buoyancy literature identified mindfulness as a potential promising intervention to change students' levels of academic buoyancy. This review also explores how the construct is defined and measured in existing literature and considers randomised controlled trial (RCT) evidence to assess whether it could be a malleable construct.

In phase two, a longitudinal secondary data analysis of one cohort's absence and exclusions data ($N=536,530$) is carried out over their academic career. This phase explores how much data is missing from the National Pupil Database (NPD), what patterns of absence and exclusions exist for this cohort, which students and schools may benefit from an attendance intervention and a series of models are designed to predict which students are most likely to be absent from state-funded schools in England at KS3. This analysis identified that school absence increased as students got older, with the poorest attendance highlighted during the transition between KS3 and KS4. An intervention aimed at Year 9 students attending state-funded schools in the North East region of England may be beneficial. An analysis of the NPD also identified that students' eligibility for Free School Meals (FSM) was a key predictor of unauthorised absence and persistent absence at KS3. Targeting students in areas of high disadvantage and poverty should be prioritised. The final phase presents a protocol

for a potential RCT which combines the findings from phases one and two to test a 10-week mindfulness curriculum. Through implementing a mindfulness intervention in schools this project would ultimately aim to explore the question, can improving academic buoyancy in secondary school students improve their school attendance?

As improving school attendance and students' mental health and wellbeing are national priorities, the findings of this thesis have implications for educational policymakers and practitioners. For policy makers this thesis offers a different approach to defining a type of resilience which may encompass the wider student population, as opposed to a minority of students who are exposed to significant adversity. For practitioners, this thesis offers an evidence-based approach to identifying a promising intervention which may have the potential to improve students' ability to cope with the daily challenges encountered at school, which in turn could also improve their school attendance.

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LIST OF ABBREVIATIONS

.b	Pronounced “dot be” (<i>stop, breathe and be</i>)
ABS	Academic Buoyancy Scale
ABR	Academic Resilience Scale
ACT	Acceptance and Commitment Therapy
AP	Alternative Provision
CONSORT	Consolidated Standards Of Reporting Trials
CBT	Cognitive Behavioural Therapy
DBS	Disclosure Barring Service
DBT	Dialectical Behaviour Therapy
DfE	Department for Education
EEF	Education Endowment Foundation
FSM	Free School Meals
GDPR	General Data Protection Regulation
GIAS	Get Information About Schools Database
GRT	Gypsy, Roma and Traveller families
ITT	Intention-To-Treat
KS	Key Stage (1 to 4)
LA/LAs	Local Authority/Local Authorities
LAC	Looked After Child(ren)
LSYPE	Longitudinal Study of Young People in England
MBI	Mindfulness-Based Intervention(s)
MBSR	Mindfulness Based Stress Reduction
MBCT	Mindfulness Based Cognitive Therapy
MiSP	Mindfulness in Schools Project
NC	National Curriculum

NHS	National Health Service England
NPD	National Pupil Database
Ofsted	Office for Standards in Education
ONS	Office for National Statistics
PICOS	Population, Intervention, Comparison, Outcomes, Study design
PLASC	Pupil-Level Annual School Census
PRISMA	Preferred Reporting Items of Systematic Reviews and Meta-Analyses
PRU	Pupil Referral Unit
PSHE	Personal, Social, Health and Economics education
RCT	Randomised Controlled Trial
SEN	Special Educational Needs
SES	Socio-economic status
TM	Transcendental meditation
URN	Unique Reference Number

PSYCHOLOGICAL SCALES ABBREVIATIONS

CAMM	Child and Adolescent Mindfulness Measure
CAMS-R	Cognitive and Affective Mindfulness Scale – Revised
CHIME	Comprehensive Inventory of Mindfulness Experiences
CHIME-A	Comprehensive Inventory of Mindfulness Experiences for Adolescents
DASS-21	Depression Anxiety Stress Scale 21 Items
DERS	Difficulties in Emotion Regulation Scale
EDE-Q	Eating Disorder Examination Questionnaire
ERS	Ego-Resiliency Scale
KIMS	Kentucky Inventory of Mindfulness Skills
MAAS	Mindful Attention Awareness Scale

MAAS-A	Mindful Attention Awareness Scale for Adolescents
MAAS-C	Mindful Attention Awareness Scale for Children
MBI-TAC	Mindfulness Based Interventions Teaching Assessment Criteria
RBDI	Raitasalo's Beck Depression Inventory
RS14	Resilience Scale 14 Items
SCS	Self-Compassion Scale
SDQ	Strengths and Difficulties Questionnaire
WEMWBS	Warwick-Edinburgh Mental Wellbeing Scale

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CHAPTER ONE: INTRODUCTION

1.1: Introduction

The inspiration for this PhD project evolved from my first-hand professional experiences. I worked as a secondary school teacher with additional responsibilities for improving attendance in Key Stage 3 (KS3) students. Whilst working with adolescents I became increasingly curious about the role that resilience played in students' daily lives. I questioned if their ability to bounce back from school-based challenges could be linked to their absences from school. At this time character education had been identified as a key policy area for the Department for Education (DfE) with terms such as 'grit', 'growth mindset' and 'resilience' becoming regular jargon used in classrooms (Duckworth, 2016; Dweck, 2008, Masten, 2001). Whilst searching for interventions to apply in a school setting, my review of the existing evidence on academic resilience guided me to discover the academic buoyancy construct. I wondered if academic buoyancy could offer a fitting description for the non-cognitive skill I was hoping to improve in students. The definition of academic resilience appeared to be relevant to a smaller proportion of the students that I had worked with. Furthermore, I questioned if students' level of academic buoyancy is malleable and, if so, could improving this construct also lead to improved school attendance? This doctoral study was designed in search of answers to my questions.

This introductory chapter provides an overview to the study's background and focuses on three constructs: academic buoyancy, school attendance and mindfulness. It considers the project's significance and the original contributions it offers to advancing educational research across each topic area. The study's aims and objectives are outlined in addition to the research questions which underpin each of the three stages that put together this ambitious PhD project. This chapter ends with a description of what can be found in each chapter.

1.2: Study background

1.2.1: Academic buoyancy: An everyday type of resilience in schools

Interest in resilience as a psychological construct began when researchers observed that some children, despite exposure to several risk factors and adversities managed to hold their own or even flourish, regardless of their adverse experiences during childhood (Masten & Barnes, 2018). Many academics have focused on conceptualising, operationalising, and exploring the relationships that exist between resilience and several related constructs in detail (Garmezy, 1991b; Luthar, 1991; Masten, 2001; Rutter, 1979a, 1979b; Ungar, 2004a, 2004b, 2008; Werner & Smith, 1982). Through decades of empirical work, researchers have clarified that resilience may not be an inherent trait, it is more likely to be a dynamic process which focuses on interactions between the individual and their environment (Masten, 2014). Nevertheless, a lack of consensus in defining terms that are inherent to

our conceptual understanding of resilience, such as risk factors, protective factors and adaptation, continue to present problems in operationalising the construct robustly and reliably (Shean, 2015).

Identifying resilience as a dynamic process has encouraged researchers to explore the construct across a wide range of disciplines and consequently it has caught the attention of educational researchers. This may be due to classic resilience research emphasising school and education as potential protective factors (Rutter, 1979a, 1979b, 1987; Werner 1993; Ungar, Connelly, Liebenberg & Theron, 2019). Applying resilience within the field of education, to understand how this phenomenon impacts on the wider student population, has presented conceptual, operational and methodological challenges. Rutter (1999) emphasises the point that for the resilience construct to be relevant to an individual there must be exposure to significant adversity and an increased risk for developing psychopathology or poor outcomes. It is implausible to assume that all students are exposed to such serious adversity. Therefore, resilience and its associated interventions may not be the most relevant construct or way forward when intervening with the wider student population in schools. Despite the DfE in England's recommendation to educational practitioners to increase resilience in all students (DfE, 2019e).

Some educational researchers have applied the classic resilience concept within academic settings to identify which students are most likely to be at high-risk of poor educational outcomes and examine which factors predict and contribute to their academic resilience (Alva, 1991; Gonzalez & Padilla, 1997; Waxman, Huang & Padrón, 1995, 1997). Many of these studies focus on children who have been exposed to severe adverse circumstances. For example, students from poor socio-economic backgrounds, low achievers and those exposed to violence, amongst many other risk factors (Catterall, 1998; Finn & Rock, 1997; Gordon, 1996). These studies do not focus on the dynamic process of resilience in children that are exposed to ordinary stress levels induced by setbacks and challenges that are experienced by most children and are commonly associated with a normal school day.

Martin and Marsh (2006) highlight that there are methodological issues with applying the academic resilience construct to all students. In a series of papers, Martin and his colleagues introduce academic buoyancy as a new construct, grounded in positive psychology theory, as a potential answer to this problem (Martin, 2013a; Martin & Marsh, 2008a, 2009b). Making clear distinctions between academic resilience and academic buoyancy as two separate constructs has assisted researchers to understand their potential differences in degree and kind, and the samples to which they relate. Academic buoyancy is defined as, "students' ability to successfully deal with academic setbacks and challenges that are typical of the ordinary course of school life" (Martin et al., 2008a, p.54).

As the concept of academic buoyancy develops and gains attention, academics are continuing to improve their understanding about factors which may relate to buoyancy and those that are distinct. Martin et al. (2006) state that they have identified five possible predictors of academic buoyancy, referred to in the literature as ‘the 5C’s’ (Martin, Colmar, Davey & Marsh, 2010). They include confidence (self-efficacy), coordination (planning), control, composure (low anxiety), and commitment (persistence). These predictors might provide a basis for intervention work in the future but this requires further investigation (Martin et al., 2008a). Overall, academic buoyancy may offer a proactive approach for educational practitioners to support the wider student population and enhance their ability to deal with setbacks and challenges encountered at school. If further rigorous testing and evaluation demonstrate that improving levels of academic buoyancy in students is possible, it might be effective for improving a range of student outcomes. If so, it may be beneficial to introduce academic buoyancy interventions into educational settings more widely.

1.2.2: Attendance in mainstream state-funded schools in England

All children in England are lawfully entitled to receive an *efficient* and *suitable* full-time education (Education Act, 1996, Section 7). For most students, their parents enrol them at a mainstream state-funded school which is appropriate for their age. If a student fails to attend the school at which they are registered *regularly*, in accordance with the school’s rules, their parents may be guilty of a legal offence which could lead to financial penalties and the possibility of prosecution. In this thesis school absence will encompass all types of school non-attendance and is defined as pupils who fail to attend school (Thambirajah et al., 2008).

The Audit Commission (1999) reported that persistently absent and excluded pupils were more likely to achieve poorly in examinations, partake in crime and be less likely to secure jobs. Reid (2002) reflects on the amount of tax-payers money that persistent school absentees have the potential to cost in social security, unemployment, housing, crime prevention and psychiatric health care, as severe non-attendance is also associated with poorer educational outcomes and social development. In the late 1990’s, the Audit Commission highlighted that at least 10 per cent of students, approximately 40,000 children, were absent from school every day. It is not surprising that school attendance has become a focus of interest for the British government in recent decades. Since the early 2000’s, the government have reformed attendance policies and modified methods of data collection with the aim of improving persistent absence in schools. In doing so Local Authorities (LAs) have been held to account for improving attendance figures in the schools in their local area. For example, absence information was collected for the first time via the School Census in secondary schools in 2005/06 and a year later schools were required to provide reasons for students’ absence. The government also introduced a measure of persistent absence with a threshold of 20 per cent, which meant that all students with 20 per cent or more absent sessions during the school year would be classified as a

persistent absentee. In five-yearly instalments the threshold was increased to 15 per cent in 2010/11 and again to 10 per cent in 2015/16, to make further attempts to raise standards of school attendance nationally. A reform introduced in 2013/14 prevented Head Teachers from approving family holidays as a reason for absence, except for in exceptional circumstances (DfE, 2019a). This amendment caught the attention of the national media, which followed the unravelling of a high-profile court case (*Isle of Wight v John Platt*) where a father challenged whether the British government should be allowed to take these decisions away from parents. Several other reforms have also been introduced to reduce the number of children reported to be persistently absent over time.

Occasional school absence is not uncommon, and some even consider it to be normal behaviour (Evans, 2000; Ingul, Havik & Heyne, 2019). Children are absent from school for a multitude of reasons and existing research literature highlights an abundance of risk-factors associated with school absenteeism. Risk factors can be divided into individual factors such as age, gender, ethnicity, and various special educational needs (SEN). Yet health, specifically illness and injury, are the most reported reasons for student absences in English schools. Familial factors such as parental involvement, parental income and entitlement to Free School Meals (FSM), children who are looked after by their LA, young carers who provide care to family members and friends, pupils who are school mobile and students born into Gypsy, Roma and Traveller (GRT) families may also be frequently absent from school. Additionally, school-based factors may be the reason for a student's non-attendance such as disengagement with the curriculum, difficult teacher-pupil relationships and bullying. Whilst this does not represent an exhaustive list of risk factors associated with school absence, it is important to note that there may be complex interactions between a multitude of factors for some students. As a result of these complex interactions, researchers have described chronic absenteeism as a “wicked problem” which is difficult to solve (Childs & Lofton, 2021). In line with current government priorities, it is important to ascertain a better understanding of the factors which predict which students are persistently absent from schools in England (Morton, 2021).

Labels such as truancy, persistent absence, school refusal, school phobia and school withdrawal are often used to distinguish between different types of parent and child-motivated absences. Yet these terms do not describe the full array of problems experienced by students who fail to attend school. School exclusions may also be perceived as a type of school-motivated absenteeism. Many researchers have attempted to identify the common characteristics and traits of students who have been assigned to these labels. Nevertheless, inconsistencies in how these terms have been defined and measured across existing research literature have been perceived as a barrier when determining their impact and in judging how and when is best to intervene (Elliott, 1999; Pellegrini, 2007).

1.2.3: Mindfulness in schools

Across existing research literature there are various definitions of mindfulness which attempt to describe the complexity of this psychological construct. For the purposes of this thesis mindfulness will be defined as, “the awareness that emerges through paying attention on purpose, in the present moment, and non-judgementally” (Kabat-Zinn, 2003, p.145). Conceptualisations of mindfulness that are influenced by Eastern Buddhist traditions have often been linked with constructs such as attention, awareness and being in the present moment. Historically, Mindfulness-Based Interventions (MBIs) have focused on improving a range of outcomes in adult samples. An increase in promising research with adults has boosted the popularity of mindfulness interventions and this enthusiasm has led to the extension of MBIs being applied with children and young people in school settings. Nevertheless, early research with children indicates that young people may not benefit to the same extent as adults or in the same ways (Maynard, Solis, Miller & Brendel, 2017).

Several systematic reviews and meta-analyses have analysed, summarised and synthesised existing MBIs with young people in school settings. There is some early evidence to suggest that mindfulness-based school interventions might benefit psychological outcomes in students. It appears that MBIs may be operating as originally intended to directly target and improve psychological processes which, in turn, might impact distal outcomes such as socio-emotional processes, mental health and wellbeing outcomes (Dunning et al., 2019; Maynard et al., 2017). Many MBIs for children have been adapted and modified from courses that were originally designed for adult samples. Some have suggested that possible developmental differences seen in adolescents, such as their ability to focus their attention and engage with complex cognitive processes, may provide an explanation for the variable effects seen in children to date (McKeering & Hwang, 2019). In addition, the low-quality research designs and methodologies which have been implemented to evaluate MBIs and measure mindfulness in children require further attention and consideration. Whilst enthusiasm for MBIs in school settings continues to grow, getting the “recipe” right with MBIs in school settings requires further robust and trustworthy research which draws on the strengths and limitations of existing studies (Johnson, Burke, Brinkman & Wade, 2017a).

1.3: Significance of the research

This three-phase PhD thesis offers significant contributions to advance the evidence on academic buoyancy, school attendance and mindfulness in schools’ research. By doing so, it may also have benefits for a range of stakeholders including academic researchers, policy makers and educational practitioners. This thesis is believed to be the first research project of its kind to combine a systematic review, secondary data analysis of the National Pupil Database (NPD) and design a randomised control trial (RCT) protocol to explore the relationships which underpin academic buoyancy, school attendance and mindfulness in a multi-component thesis.

Since the start of the COVID-19 pandemic in March 2020 most young people in England have experienced changes in their lives. For many, changes may have impacted factors at school. One education-related challenge that most students have faced is the closure of schools for extended periods of time. A report by the Children's Commissioner (2020a) identified that the greatest reported increase in anxiety during the lockdown period came from young people's school-based worries. Further research suggests that school closures may have had large consequences on children's wellbeing, and some believe that the lasting impacts may take some time to disappear (Blanden, Crawford, Fumagalli & Rabe, 2021). An NHS report published by Newlove-Delgado et al. (2021), reported that over 10% of 6- to 16-year-olds missed more than three weeks of school, equivalent to 15 days, during the autumn term of 2020. This was the first term that schools were permitted to re-open to all students after almost 6 months of closures from March to September 2020. Whilst peoples' lives are starting to resemble what life was like pre-pandemic two years after it began, there continues to be a higher-than-normal surge of school absences. The Education Secretary reports a concerning increase in persistent absences, even with covid-related absences removed from the data (GOV.UK, 2021d). With persistent absence figures rising, this policy area has become a national focus for the government.

Academic buoyancy may help students to deal with the everyday stressors and challenges associated with school life. Consequently, it may be a proactive tool for promoting wellbeing and providing students with the skills to cope with the challenges that threaten their wellbeing in school settings (Hoferichter, Hirvonen & Kiuru, 2021). Hoferichter et al. (2021) found that students with high academic buoyancy and the ability to overcome school-related setbacks were able to view school and school life more positively. With the potential to increase school-related wellbeing and promote a positive outlook on school and academic life, increased academic buoyancy may have the ability to increase students' school attendance. Reflecting upon the reported impacts of the COVID-19 pandemic on students' wellbeing and school attendance, equipping students with the skills to be academically buoyant in the face of school-related challenges could be timely. As schools re-open their classrooms for the wider student population following a unique period of disruption to ordinary schooling, there may be greater interest from academic researchers, policy makers and educational practitioners to explore the relationships between academic buoyancy and school attendance. As such, this PhD thesis is expected to make a significant contribution to this field of research.

The research designs, methods and objectives at each stage of the project will also contribute to the significance of the thesis in each topic area. For example, phase one is a systematic review of existing academic buoyancy research which is believed to be the first of its kind. With almost 15 years of academic buoyancy research, this review will explore all available evidence to summarise and synthesise how the construct is defined and measured by researchers in the field. An inclusive

approach will be taken to examine what is already known about the construct, which is believed to be the best approach to answer the underlying research questions. This will be followed by an analysis of RCT studies which have been designed to explore relationships between implemented academic buoyancy interventions and their outcome measures. RCT studies were selected as the only research designs eligible to answer questions about the construct's malleability and suggest ways forward for future academic buoyancy interventions, due to their ability to provide more convincing and robust evidence when compared to other research designs with less experimental control. The research methods used to undertake this stage of the thesis and the aims and objectives of the research are expected to advance academic buoyancy research and significantly contribute to this developing field of academic research.

Stage two is a longitudinal secondary data analysis of the NPD in England, which will focus on one cohort's attendance and exclusions data in mainstream state-funded schools across their academic lives from reception to Year 11. In addition to attendance data the NPD also provides individual characteristics data about students' age, gender, eligibility for FSM, ethnicity, first language and SEN status. With this longitudinal data it is possible to track if students' circumstances change during their time in compulsory schooling. This powerful secondary dataset was selected due to its validity, reliability and size which would be beyond the scope of an individual researcher to re-create for many reasons, including time, cost and capacity to collect accurate historical attendance data for the population of interest. Furthermore, the NPD was considered the most valid secondary dataset to answer the research questions as outlined in the next section in this chapter (section 1.4). Using a rich population-level dataset like the NPD is favourable for increasing the generalisability and applicability of the findings to the population. Within existing educational research, researchers' commitment to reporting and working with missing data varies. This study will treat and analyse missing data with transparency and clarity to ascertain how data that is unaccounted for may be impacting the dataset and how it may influence the reported findings. In this study, missing data is treated with equal importance to available data and will be included as an indicator in the regression analyses, as it is feasible to assume that these students could represent the most vulnerable students who are missing from schools and may be most in need of intervention. Utilising robust designs and methods as described to undertake this secondary data analysis will make significant contributions to school attendance research.

The Education Secretary in England, at the time of writing this thesis, has identified tackling persistent pupil absence and "getting to the root of the problem" as key priorities (Morton, 2021). Analysing population-level data from the NPD using regression modelling should identify the characteristics of students who are more likely to be absent from school based on different types of school non-attendance such as unauthorised and persistent absence. The objectives of the detailed

analysis undertaken in stage two of this thesis will also make significant contributions to school attendance research in English schools as it aligns with current government priorities. As a result, the findings of this research project have potential benefits for policy makers and educational practitioners by highlighting the characteristics of students who are most likely to be absent from schools, which in turn may provide greater insight into the best ways to intervene.

To date, MBIs in schools have been carried out with various research designs and methods and report differing levels of risk of bias and quality of evidence. For many, design issues such as small sample sizes, lack of random allocation, absence of a control group and use of measures which are not validated for use with adolescents are commonly reported limitations of the research. This study will take these limitations into account to design a protocol for a robust RCT which will include treatment and control groups, utilise a measure of mindfulness which is validated for use with adolescents and will recruit a sample size which is suitable for a feasibility trial. The protocol will also draw upon the limitations of studies which have tested the Mindfulness in Schools Project (MiSP) “.b” (pronounced “dot be”) curriculum to consider important factors such as strict adherence to the curriculum, exposure and dosage, transparency in the reporting of factors such as implementation integrity, and inclusion of a process evaluation. Acting upon the limitations of previous research, this would make significant and original contributions to MBI research in schools and for evaluating the .b curriculum.

Competing time pressures and lack of capacity are possible challenges which might prevent educational practitioners from prioritising and implementing efficient evidence-based interventions to improve a range of outcomes in students. With MBIs attracting more attention from schools it is essential to ensure that research in this area utilises powerful research designs and methods to report any evidence of effect with confidence. The direct and indirect costs of interventions implemented in schools should be carefully considered to ensure that interventions are cost-effective and are adequately examined. To date, the .b curriculum has gained varying levels of support from existing studies, which have largely reflected the rigour of the research design and methods utilised. Yet there are still a high number of educational professionals who are paying for training to deliver this curriculum to students, without a high degree of confidence about what the effects of the training may be for young people. This thesis will evaluate the .b MBI for schools in a rigorous way and monitor the outcomes to assess whether this curriculum could be given empirical support for use with KS3 adolescents in English schools.

For all the reasons discussed in this section, this PhD thesis will make significant and original contributions to the advancement of academic buoyancy, school attendance and mindfulness-based interventions in schools’ research.

1.4: Research aims and objectives

This thesis is divided into three stages, each with its own independent research objectives, designs and questions. Based on Gorard's (2013) description of the research cycle in social science research, the first two stages of this thesis are evidence syntheses which lead to the development of a feasibility study in stage three. Stage one is a systematic review of the academic buoyancy construct to review pre-existing literature and ascertain what is already known about this construct. The findings from this review are intended to inform the design of an appropriate intervention which will be presented as a research proposal in stage three. Research questions to be answered in stage one include:

1. How is academic buoyancy defined?
2. How is academic buoyancy measured?
3. Is academic buoyancy malleable?
4. What is the evidence from existing RCTs of a promising intervention for improving academic buoyancy?

Stage two is a secondary data analysis of school attendance and exclusions data from the NPD. This section aims to produce a longitudinal understanding of school absence patterns over the academic lifespan of one selected cohort. The purpose of this analysis is to illustrate pupil-level and school-level determinants that influence students' school attendance. This stage begins with an analysis of missing data to determine how many, and which students are missing from the large-scale dataset. This is followed by a descriptive analysis of students' background characteristics to describe which students are absent for authorised and unauthorised reasons, persistently absent and excluded from English schools. This analysis will also highlight where an intervention may be best targeted. Finally, statistical modelling will predict which KS3 students in state-funded schools in England are most likely to be persistently absent or absent for unauthorised reasons. The research questions that support this phase are:

1. To what extent is data on students' characteristics missing from NPD?
2. What patterns of absence and exclusions exist in the selected cohort according to students' background characteristics?
3. Who would benefit from an attendance intervention according to students' school-level background characteristics?
4. To what extent do pupil characteristics, school characteristics and students' prior attainment predict unauthorised absence and persistent absence from school at KS3?

Stage three presents a research proposal for a feasibility RCT, which would implement a mindfulness-based intervention in schools. The aim of the trial would be to answer the research question, can improving the academic buoyancy of secondary school students improve their school attendance?

1.5: Impact of the COVID-19 pandemic on the delivery of the RCT

The RCT protocol outlined in chapter eight was designed and planned during the 2018/2019 academic year. The aim of this trial is to explore the relationships which may exist between mindfulness, academic buoyancy and school attendance. Requisite Mindfulness Based Stress Reduction (MBSR) and .b curriculum training courses were completed by February 2020. On 20th March 2020, the Prime Minister announced that all schools in England would close until further notice. Following the announcement of school closures, all schools that had volunteered to partake in the trial were contacted and the intervention was paused until schools could reopen for the wider student population.

Schools remained closed for the remainder of the academic year until the beginning of September 2020. Allowing for a re-integration period schools were contacted again at the beginning of October 2020 to reinvite them to take part in the resuming intervention. To facilitate social distancing requirements and comply with University Ethics an online taught, condensed version of the originally planned 10-week intervention was offered to schools. The ‘.breathe’ curriculum is a 4-week introduction to mindfulness course intended to be taught to 9- to 14-year-olds. Schools that responded to this invitation explained that they were unable to participate due to new school policies relating to the pandemic. These included changes to timetabling and ongoing issues with poor staff and student attendance due to self-isolation, which had seen whole year groups not attending school for two-week periods. Unfortunately, many schools did not respond despite registering their interest in March 2020 to be re-contacted when schools were re-opened to the wider student population.

With schools reporting their first-hand struggles and the media documenting ongoing problems with attendance as schools embarked on unprecedented and worrying times, it was agreed to pause plans for carrying out the RCT until further notice. A third national lockdown commencing in January 2021 saw another long-term closure of schools in England until March 2021. Recommencement of the RCT would have been dependent on an appropriate time presenting itself during a period of tremendous uncertainty. In these circumstances, a contingency plan was agreed with supervisory support to focus on extending the secondary data analysis of the NPD. As a result, the cluster RCT is presented as a research proposal in chapter eight and is recommended as an area for future research. This cluster RCT is a proposed rather than an implemented study and it is an outcome of the exploration and evaluation of evidence from the systematic review of academic buoyancy (chapter six) and secondary data analysis of the NPD (chapter seven).

1.6: Chapter overview

Chapter one is the introduction and provides a rationale for undertaking this thesis. There is a brief outline of academic buoyancy, school attendance and mindfulness in schools research as these are the primary constructs which underpin each stage of this project. This is followed by a discussion about the significance of the research and outlines the original contributions that each stage will make to advance their respective topic areas. The aims and objectives of each stage are provided to highlight the research questions which will be answered at each stage of the project. This introductory chapter concludes with an overview of each chapter and provides a description of what they will contain.

Chapter two is a literature review of academic buoyancy research. It provides a historical overview of classic resilience research to understand how this complex construct has been defined. This provides the foundation for understanding how resilience was applied and understood within an academic setting. A comparison of academic resilience and academic buoyancy as two distinct constructs is explored to explain how these constructs are reported to be different with regards to their definitions, samples to which they relate, measurement, methodology and interventions. This chapter ends with a description about how academic buoyancy fits within a positive psychology theoretical framework.

Chapter three is a review of school attendance literature. It begins with a description of the education system in mainstream English schools and provides contextual information about the admission and attendance registers in state-funded schools. Drawing upon existing research literature, several individual, familial and school-related risk factors are explored as potential correlates of school absence. This provides some insight into the complexity of defining different types of school attendance problems such as persistent absence, truancy, school refusal, school phobia and school withdrawal. School exclusions are also explored with a focus on unofficial exclusion strategies that are implemented by schools such as managed moves, alternative provision and off-rolling. This is followed by a description of the different penalties that parents may experience if they do not ensure their child is a regular school attender. This chapter ends with an explanation of pupil absence in English schools during the pandemic to document how this has impacted school attendance during an unprecedented period in school history.

Chapter four is a literature review about mindfulness-based interventions in schools. The chapter begins with a description of how mindfulness is defined and measured in young people. There is an overview of findings presented in systematic reviews and meta-analyses focusing on mindfulness-based interventions in education settings. This is followed by a description of the Mindfulness in Schools Project (MiSP) .b intervention. An overview of RCT studies which have tested the .b curriculum are also summarised. This chapter ends with a rationale for why the .b curriculum should be evaluated further.

Chapter five provides an overview of the research designs and methodology used in each stage of this study. Stage one describes the methods utilised to conduct a systematic review of studies which explore the academic buoyancy construct. Stage two presents the methods utilised in the secondary data analysis of school attendance data from the NPD.

Chapter six presents the results of the systematic review on the academic buoyancy construct to explore how the construct is defined and measured, whether it is malleable to intervention and propose an intervention to be tested in schools. This chapter also contains a discussion about how the research findings relate to existing research evidence.

Chapter seven presents the results from a secondary data analysis of school attendance and exclusions data from the NPD. It explores how many children are missing from the dataset, patterns of school absence and exclusions, and considers where an attendance intervention may be best suited. Finally, several regression models are discussed to explore the extent to which different individual, school and attainment predictors can explain different types of school attendance. Findings are discussed in relation to what is already known about school attendance from existing literature.

Chapter eight draws upon the findings from the systematic review and the secondary data analysis chapters to design a protocol for an RCT feasibility study. This is a proposed study for further research as implementation was not feasible due to the disruption caused by the Pandemic in English schools.

Finally, *chapter nine* concludes and draws together the research findings as presented in chapters six and seven, to consider them in relation to the research questions presented in this introductory chapter. The limitations of this study are considered and implications for future research are discussed. The implications for key stakeholders such as academic researchers, educational practitioners and policy makers are also discussed.

CHAPTER TWO: FROM RESILIENCE TO BUOYANCY

2.1: Introduction

This chapter explores how academic buoyancy emerged from classic resilience research. It begins with a historical overview of traditional resilience research to explore how the construct developed from the early works of Garmezy, Masten & Tellegen (1984) and Rutter (1979a,b) to current conceptualisations of the construct. For researchers like Ungar (2008) recent conceptualisations of resilience incorporate factors such as the environment through inclusion of culture and context. Early resilience researchers observed that some children, despite exposure to several risk factors and adversities, managed to hold their own or even flourish regardless of their adverse experiences during childhood (Masten & Barnes, 2018). Through decades of empirical work, researchers have suggested that resilience may not be an inherent trait. Instead, it might be a dynamic process with interactions between the individual and their environment (Masten, 2014). A lack of consensus in defining terms that are inherent to our conceptual understanding of resilience, such as risk factors, protective factors and adaptation, continue to present problems in operationalising the construct robustly and reliably (Shean, 2015).

Identifying resilience as a dynamic process has encouraged researchers to explore the construct across disciplines. It has caught the attention of educational researchers as school and education have been highlighted as possible protective factors against adversity. Nevertheless, applying classic resilience theory to the wider student population may present some methodological issues. Rutter (1999) proposes the idea that for resilience to be a relevant construct, the individual must have been exposed to significant adversity and have an increased risk of developing psychopathology or poor outcomes. It is implausible to suggest that exposure to serious adversity would apply to all students across the wider student population. Therefore, resilience and its associated interventions may not be relevant to all students in schools.

Martin et al. (2006) explore possible methodological issues when applying academic resilience to all students. Andrew Martin and his colleagues propose academic buoyancy as an alternative type of academic resilience which is relevant to the wider student population (Martin, 2013a; Martin, Colmar, Davey & Marsh, 2010; Martin et al., 2008a, 2009b). The authors make clear divisions between academic resilience and academic buoyancy and make distinctions about their conceptual and operational differences. Martin et al. (2006; Martin et al., 2010) found five predictors of academic buoyancy, referred to in the literature as the 5C's, confidence (self-efficacy), coordination (planning), control, composure (low anxiety), and commitment (persistence). It is believed that these predictors might provide a basis for future intervention work, but this requires further exploration (Martin et al., 2008a).

Further examination of character building and resilience policy recommendations in England supports a rationale for widening the debate around academic resilience and the language used by practitioners in educational settings. If further rigorous testing and evaluation demonstrates that buoyancy is an effective construct for improving a range of student outcomes, there might be an argument to introduce academic buoyancy interventions into educational settings more widely.

2.2: Classic resilience

Empirical research in the field of resilience has burgeoned over recent decades. Academics have focused on conceptualising, operationalising, and exploring relationships between resilience and related constructs in detail (Garmezy, 1991b; Luthar, 1991; Masten, 2001; Rutter, 1979a,b; Ungar, 2004a, 2004b, 2008; Werner & Smith, 1982). The study of resilience emerged from developmental psychopathology research focusing on vulnerable and at-risk children for developing psychopathology or mental disorders. Examples of risk factors include parental psychopathology, child abuse and neglect, teenage mothers, and socio-demographics such as poverty, ethnic groups, gang culture (Faber & Egeland, 1987; Garmezy, 1991a, 1993; Hammen, 2003; Masten, Best & Garmezy, 1990; Werner, 1989; 2000; Werner et al., 1992).

Garmezy (1991b) describes resilience as a “capacity for recovery and maintained adaptive behaviour that may follow an initial retreat or incapacity upon initiating a stressful event” (p.459). He normalises the process suggesting it is a “reality” for many children to be tested by negative events, such as dangerous environments and threatening life events. Garmezy was a pioneer in developmental psychopathology research embarking on the Project Competence Longitudinal Study in the 1960s which took a person-focused approach to compare two groups of children, those with schizophrenic mothers and those whose mothers did not have schizophrenia. The research revealed that amongst a group of children considered high risk for developing psychopathology, there was a subgroup who demonstrated healthy patterns (Luthar, Lyman & Crossman, 2014). Based on this initial project, Garmezy’s work continued to investigate protective and risk factors in stress-resistant children (Garmezy, Masten & Tellegen, 1984).

Over 10 years Rutter (1979b) studied two groups of children, one group living on the Isle of Wight and the other living in inner-city London, whose parents were diagnosed with mental illness. He highlighted that despite exposure to maternal deprivation many children were not damaged by exposure to this risk factor, and they did not become mentally ill or exhibit maladaptive behaviours. Rutter (1979a) proposed that investigation into the “invulnerability” of these children was worth exploration (1979a, p.283). Terminology such as invulnerability, invincible and hardy were later modified to reflect the idea that risk avoidance was not absolute, and the term resilience was adopted instead of these earlier terms (Luthar et al., 2014). Rutter’s (1979b) early work also suggested that

single risk factors have a small effect on developing psychopathology, but the risk increases as factors accumulate (Crews et al., 2007). He defines resilience in operational terms where “someone’s life outcome has been relatively good, despite his or her experience with situations shown to carry a major risk for developing psychopathology” (Rutter, 2001, p.13). Rutter (1999) presents a model of resilience whereby children vary in their vulnerability to adversity and psychosocial stress due to genetic (individual differences) and environmental influences, suggesting that the two factors are intercorrelated.

Following the first wave of research which focused on children whose parents were diagnosed with mental disorders, a second wave of resilience research was led by Werner et al. (1982). Their work focused on identifying protective factors in children at risk, where a third of children were exposed to multiple risk factors including poverty and family instability (Werner et al., 1982, 1992). Werner et al. (1982) define resilience as the capacity to cope with internal and external stresses. Their longitudinal study began in 1955 on the Island of Kauai in Hawaii and followed the development of individuals and their families from birth until they were 40 years old. The focus of this study was to understand the impact of biological and psychosocial risk factors, stressful life events and protective factors on the development of individuals. This project highlighted protective factors that distinguished at-risk individuals who were functioning well, compared to those who were not. Protective factors existed at the individual, familial and community levels.

Luthar (1991) defines resilience as the capability of “children to remain competent despite exposure to stressful life experiences” (p.600). Her study which was undertaken in an inner-city public school, highlighted that high intelligence, which was previously considered a protective factor, was a potential risk factor. It is worth noting that constructs such as intelligence and IQ are also highly contested concepts within educational research (Adey, Csapó, Demetriou, Hautamäki & Shayer, 2007). Luthar identified that students with a high cognitive ability were also vulnerable to high stress, which could put them at a higher risk of adversity. This research highlighted factors which were previously considered to be protective could also pose a risk to certain individuals (Luthar & Barkin, 2012).

Masten’s work demonstrates a shift in discourse from “disorder and dysfunction” to “the ordinary magic” of individuals overcoming adversity through their daily thoughts and behaviours (Masten, 2001; Ungar, 2019, p.2). Masten’s 2014 definition of resilience moves away from the idea that individuals withstand or recover from changes that threaten development, and instead focuses on the notion that individuals adapt successfully. She defines resilience as, “the capacity of a dynamic system to adapt successfully to disturbances that threaten system function, variability, or development” (Masten, 2014, p.6). Ungar (2011) introduced a social ecological model of resilience

highlighting the role of the environment, culture and context (Masten, 2014). Ungar (2008) presents a contextualised definition of resilience acknowledging that exposure to significant adversity can be psychological, environmental or both. He defines resilience as, “the capacity of individuals to navigate their way to health-sustaining resources, including opportunities to experience wellbeing” (p.225).

As outlined in this section there are numerous ways to define and interpret fundamental terms associated with the resilience construct, such as: risk factors, protective factors, competence, and resilience. It is not surprising, therefore, that there are some challenges encountered when conceptualising and operationalising the resilience construct. Luthar et al. (2000) ask for further clarity in presenting a consistent definition of resilience and its related terminology. This is further supported by Ungar and Teram (2005) who agree that there are ambiguous definitions around terms such as “risk factors, protective mechanisms, vulnerability and resilience” (p.150). The concepts of risk factors and protective factors continue to cause debate between researchers. There is a requirement to understand the context and community in which risk and protective factors are being studied to ensure findings are not misleading. Garmezy and Masten (1986) further support this by emphasising that very little is known about protective factors and what is known is too generalised. Further research is required to be more specific about what the risk and protective factors of resilience are, leading to further understanding of their impact.

Despite different levels of consensus there are two fundamental ideas contained within resilience literature. Resilience is (a) good psychological outcomes despite (b) exposure to adversity associated with negative outcomes (Garmezy, 1993; Luthar, Cicchetti & Becker, 2000; Masten, 2001; Masten, Best & Garmezy, 1990; Rutter, 1999; Werner & Smith; 1992). In this thesis resilience is defined as ‘a dynamic process encompassing positive adaption within the context of significant adversity’ (Luthar et al., 2000, p.543). Many resilience researchers agree that resilience is not a special quality that only some individuals possess, and it is not an intrinsic trait. Instead, it is a dynamic process between the individual and their environment. Likewise, positive adaption despite adversity is not permanent and it is a developmental process which develops with changing life circumstances (Garmezy & Masten, 1986; Werner et al., 1992). Masten (2014) claims that this issue of questioning whether resilience is an individual trait should finally be “put to rest” and she confidently believes that the “answer is no” (p.14).

2.3: Resilience in educational settings

Within educational settings, resilience has been defined as an increased likelihood of academic success and other educational outcomes despite exposure to adversities (Wang et al., 1994).

Educational researchers refined the resilience concept to identify protective factors that could explain

academic, rather than social, resilience (Condly, 2006). Academic resilience literature starting in the 1990s highlighted protective factors that might enhance resilience in students with achievement or social integration difficulties. These studies included children at risk of living in poverty, students with special health-care needs, individuals exposed to gang culture, children from ethnic minority groups, and underachievers and school dropouts (Alva, 1991; Arellano & Padilla, 1995; Buckner, Mezzacappa & Beardslee, 2003; Catterall, 1998, Finn et al., 1997; Gordon, 1996; Gonzalez et al., 1997; Sinnema, 1991; Waxman, Huang & Padrón, 1997).

Some evidence suggests that individuals who demonstrate academic resilience may be more likely to have a positive self-view of their intellectual abilities and a strong sense of responsibility for their future (Alva, 1991). They might also have a healthy self-concept and a sense of belonging to their school (Gordon, 1996; Gonzalez et al., 1997). Furthermore, Finn et al. (1997) claimed that students with academic resilience may be harder workers, regular school attenders and engaged with school and learning. With regards to environmental factors, supportive student relationships with teachers, parents and peers may be protective factors, along with school responsiveness to students and supportive teachers (Alva, 1991, Catterall, 1998, Gordon, 1996). Parental support and involvement in their child's learning, such as checking homework and engaging in conversations about learning might also be protective factors (Catterall, 1998).

Studies which explore the academic resilience construct are often interested in children who are considered most at risk of academic adversity. They do not focus on the majority of students who encounter normal academic setbacks and challenges that are typical of school life. With increasing pressures on schools to succeed academically, policymakers in England have advised educational practitioners to instil a "resilient mindset" in all young people (Brooks & Goldstein, 2001; Goldstein & Brooks, 2005, p.3; DfE, 2016). Based on classic definitions of resilience, it may not be possible to promote resilience in all children without knowing if they have suffered experiences that would carry an increased risk of psychopathology (Rutter, 1999). In an academic setting this may refer to setbacks, challenges and pressures that pose a threat of long-term developmental issues (Martin et al., 2010).

2.4: From academic resilience to academic buoyancy

Andrew Martin and his colleagues (2008a, 2009b, 2010) introduced the academic buoyancy construct in 2008 and research has since attempted to demonstrate how this type of resilience differs to traditional notions of academic resilience. Academic resilience and buoyancy are presented as two distinct concepts within the literature. For pragmatic reasons it might be logical to treat academic resilience and academic buoyancy as distinct based on their differences, to provide clarity for conceptualisation, operationalisation, and methodologies.

2.4.1: Definitions and relevant samples

Martin (2013) defines academic resilience as the capacity to overcome major adversities which place students at risk of poor educational outcomes and serve as major threats to their academic development. As previously outlined, samples in academic resilience studies have often included students most at risk of major academic adversity. As with traditional resilience research, the academic resilience construct might map onto a reduced number of students who experience severe adversity and find themselves at the “problematic” end of the spectrum (Martin et al., 2008a, p.55).

Academic buoyancy, on the other hand, might account for the setbacks, pressures and challenges that are commonly experienced by students in schools. Martin et al. (2008a) define buoyancy as an “everyday” type of academic resilience (Martin et al., 2008a, p.53). A common definition of buoyancy found within existing literature defines the construct as, “students’ ability to successfully deal with academic setbacks and challenges that are typical of the ordinary course of school life” (Martin et al., 2008a, p.54). A systematic review of the academic buoyancy construct in chapter six provides a more detailed overview of how the construct is defined in existing research literature.

2.4.2: Measurement

Operational distinctions are also made between academic resilience and academic buoyancy. Earlier disagreements about whether resilience could be an inherent trait or a dynamic process have led to numerous variable focused and person focused approaches to measuring academic resilience. In a systematic review, Tudor and Spray (2018) speculate whether the numerous existing academic resilience scales measure the same construct. Inconsistencies in measurement could lead to biased reporting of effects in intervention studies.

Academic resilience measures have included (Tudor et al., 2018):

- The Resilience and Youth Development Module (Hanson & Kim, 2007; Jowkar, Kohoulat & Zaken, 2011)
- Resilience Scale (Saavedra & Villalta, 2008, as cited in Esteban & Martí, 2014)
- Academic Resilience Scale (ARS; Martin & Marsh, 2006)
- Academic Risk and Resilience Scale (Martin, 2013a)

Amongst other scales and subscales (Burger, Nadirova & Keefer, 2006; Phan, 2016; Sarwar, Inamullah, Khan & Anwar, 2010; Skinner, Pitzer & Steele, 2013; Thornton, Collins & Daugherty, 2006).

Martin et al.'s (2006) ARS is comprised of six items:

- “I believe I am mentally tough when it comes to exams.”
- “I do not let study stress get on top of me.”
- “I am good at bouncing back from a poor mark in my school work.”
- “I think I am good at dealing with schoolwork pressures.”
- “I do not let a bad mark affect my confidence.”
- “I am good at dealing with setbacks at school (e.g. bad mark, negative feedback on my work).”

Students are asked to rate themselves on a scale of 1 (“strongly disagree”) to 7 (“strongly agree”).

Overall, the internal consistency for the full scale was reported as $\alpha=0.89$ and where each item was removed to ascertain scale reliability, Cronbach's alpha remained at $\alpha>0.85$. Cronbach's alpha is an indication of reliability, which measures the extent to which the scale items ask the same underlying information. A score of $\alpha=0$ would mean that all items on the scale are measuring something different, a score of $\alpha=1$ would mean that the statements are identical. Gorard (2001) questions the extent to which reporting Cronbach's alpha is a useful statistic as a high score could indicate that the ARS scale is asking the same question 6 times. This may imply that answering the scale is a waste of the respondent's time, yet it is common for researchers to report a high alpha as a desired outcome.

The Academic Buoyancy Scale (ABS; Martin et al., 2008a) is an adaptation of the ARS. The ABS is the most common scale for measuring academic buoyancy and it has four items:

- “I am good at dealing with setbacks at school (e.g., negative feedback on my work, poor results).”
- “I do not let study stress get on top of me.”
- “I think I am good at dealing with schoolwork pressures.”
- “I do not let a bad mark affect my confidence”.

Individuals are asked to rate themselves on a scale of 1 (“strongly disagree”) to 7 (“strongly agree”).

There is limited information in published literature about how the items from the ABS were chosen and their rationale for removing two items from the ARS (Tudor et al., 2018). Across many studies which utilise the ABS, Cronbach's alpha is regularly reported by researchers. Nevertheless, this single measure of reliability presents a narrow perspective to judge the scale's consistency and is not sufficient enough on its own to evaluate the psychometric quality of the ABS. Within existing academic buoyancy literature there is an over-reliance on reporting internal consistency statistics as the only indicator of the scale's quality. This is sometimes in addition to citing a limited number of early studies which have explored aspects of the ABS's construct validity (such as, Martin et al.,

2006; 2008a,b; Putwain, Connors, Symes & Osborn, 2012). Alongside establishing if the instrument is reliable, researchers should also demonstrate the scale's validity to ensure that the items on the instrument measure what it claims to measure.

In an early study Martin et al. (2006) took a construct validity approach to examine educational and psychological correlates of academic resilience using within- and between-network validity approaches. Based on a sample of high-school students in Australia they support the notion that their measure of academic resilience showed unidimensionality and they report that the within-network validity analysis demonstrated convincing outcomes. A between-network validity approach indicated that academic resilience was predicted by five factors, self-efficacy (confidence), control, planning (coordination), low anxiety (composure) and persistence (commitment). The findings from this preliminary work directly resulted in the creation of the academic buoyancy 5C's model (Martin et al., 2010). Research literature has documented that the ABS was developed from the ARS, but there is insufficient explanation about the theoretical basis for selecting six items to make up the ABS, and the decisions involved in removing two items (Tudor et al., 2018).

Construct validity can be explored further through examining convergent and discriminant validity. Convergent validity describes the extent to which measures of similar constructs correlate with each other. Discriminant validity describes the extent to which measures of distinct constructs are unrelated. Existing literature has outlined that academic buoyancy may be related to a range of positive psychological and education outcomes. Studies have also explored numerous constructs which have been shown to intersect with academic buoyancy on the ABS whilst remaining conceptually distinct (Martin et al., 2009). These have included constructs such as academic anxiety (Martin et al., 2008a; Martin, Ginns, Brackett, Malmberg & Hall, 2013), academic achievement (Khalaf & Abulela, 2021; Miller, Connolly & Maguire, 2013) and academic coping (Martin et al., 2009). By understanding the amount of variance that these constructs share with academic buoyancy Martin et al. (2009) suggest that this can be an effective way to assess the convergent and discriminant validity of the construct. To confidently measure construct validity in this way, academic buoyancy's related constructs must also utilise reliable and valid measures for the analysis to be meaningful. Interpretation of these findings should be interpreted with caution.

Martin et al. (2008a) draw upon previous research to provide evidence of academic buoyancy's construct validity. A range of their earlier works are cited to support the notion that academic buoyancy is significantly associated with constructs such as persistence and negatively associated with disengagement (Martin, 2007), it predicts class participation (Martin et al., 2006), is correlated with objective measures such as homework, completion, absenteeism, literacy and numeracy, and is applicable across different ethnic groups (Martin et al., 2008a). The authors claim that these studies,

which examine academic buoyancy's relationship with different constructs across varying contexts, provide multiple "objective" perspectives to consider academic buoyancy as a valid construct. In some examples, academic buoyancy is conceptualised and operationalised under the Motivation and Engagement Scale – High School (Martin et al., 2006) which comprises 11 factors and includes items which make up the 5C's of academic buoyancy. It is unclear if they test the 4-item ABS directly. In Martin et al., (2008a) they examine the psychometric properties and measurement invariance of the ABS across genders and high school year groups. For a scale to be considered valid the items should be relevant and appropriate across varying populations and contexts. This study suggested that the ABS was a valid and reliable measure across varying genders and ages.

Martin & Marsh (2008b) adopted within- and between-network approaches to better understand the construct validity of academic buoyancy in samples of school personnel and students. Their broad aim for this study was to conduct a psychometric scoping of the academic buoyancy construct amongst different ages and genders. They explored the within-network properties of buoyancy to examine the consistency of the scale items, correlations and invariance across school personnel and students. To explore the between-network properties they examined how different demographic, motivation, engagement and behavioural factors were associated with academic buoyancy. On the basis of this study, Martin et al. (2008b) conclude that the ABS may have some positive psychometric properties and demonstrate some evidence of validity from within- and between-network perspectives. They cite the subjective nature of the ABS due to self-reported items as a potential limitation of the scale.

A study by Putwain et al. (2012) explored whether academic buoyancy explained additional variance in test anxiety above what could be explained by adaptive coping. A hierarchical regression analysis suggested that academic buoyancy could explain additional variance in test anxiety when the variance for adaptive coping had been accounted for. This study might support the discriminant validity of the ABS and highlight it as a distinct construct from adaptive coping.

In a more recent study by Datu and Yang (2018a) they examined the psychometric validity and gender invariance of the ABS in a sample of students from the Philippines. They concluded that academic buoyancy was a valid and applicable measure when applied in a non-Western context. The authors report that the cross-sectional design and use of a self-reported instrument were limitations of their study. Datu et al. (2018a) highlight that there a limited number of studies that have explored the psychometric properties of the ABS in academic settings across a variety of contexts (Martin et al., 2008a,b).

Most recently, Khalaf and Abulela (2021) have also examined measurement invariance of the ABS across culture and gender. The researchers found that measurement invariance was held across cultures but not gender in samples of Egyptian and Omani university students. The ABS was also not able to yield valid inferences related to comparing gender groups within each culture. Validity evidence was supported by moderate correlations between the ABS and academic achievement for both samples. They also assessed the reliability of the scale which they found was moderate across both samples. Khalaf et al. (2021) utilised a different approach to measure internal reliability and report coefficient omega as opposed to Cronbach’s alpha. This may provide one explanation for why the findings do not support previous findings regarding gender (Martin et al., 2008a). Like Datu et al. (2018a) the researchers recommend further research which incorporates other objective measurements of academic buoyancy to compare with the self-reported instrument. Whilst there is some emerging evidence of psychometric testing the ABS, this remains an area for further research to fully understand the ABS’s construct validity and reliability across varying samples and contexts. This idea is supported by the researchers that have conducted validation work to date (Datu et al., 2018a; Khalaf et al., 2021; Martin et al., 2008a,b; Putwain et al., 2012).

2.4.3: Methodology

Martin et al. (2008a) create methodological distinctions between the constructs and refer to their differences in “degree” and differences in “kind” (p.55). Table 2.1 outlines examples provided by the authors.

Table 2.1: Academic resilience and academic buoyancy methodology differences

Academic resilience is relevant to...	Academic buoyancy is relevant to...
Differences in degree	
<ul style="list-style-type: none"> Chronic and sustained under achievement. 	<ul style="list-style-type: none"> Isolated poor grades and patches of poor performance.
<ul style="list-style-type: none"> Incapacitating and overwhelming feelings of anxiety at school. 	<ul style="list-style-type: none"> Normal stress levels and daily pressures associated with school life.
<ul style="list-style-type: none"> Debilitation in the face of failure. 	<ul style="list-style-type: none"> Threats to confidence from underachieving and receiving poor grades.
Differences in kind	
<ul style="list-style-type: none"> Chronic truancy and total disaffection from school. 	<ul style="list-style-type: none"> Dips in motivation and engagement.
<ul style="list-style-type: none"> Clinical types of anxiety and depression. 	<ul style="list-style-type: none"> Low-level stress.
<ul style="list-style-type: none"> Alienation from school and opposition to student-teacher relationships. 	<ul style="list-style-type: none"> Dealing with negative feedback.

Differences in degree are explored by highlighting the intensity, magnitude or extent of the adversity experienced by the individual. For example, resilience is relevant to chronic and sustained under achievement, whereas buoyancy is relevant to isolated poor grades and patches of poor performance.

Academic resilience and buoyancy are also differentiated by the kind, type, or nature of instances in which the constructs are deemed applicable. Resilience is relevant in instances of chronic truancy and total disaffection from school, whereas buoyancy is relevant for a student experiencing dips in motivation and engagement.

Martin et al. (2008a) indicate that if distinctions are made with regards to differences in degree and kind, then it might be possible for academic buoyancy to be “a necessary but not sufficient condition for academic resilience” (p.55). This means that providing students with the skills to deal with minor ups and downs at school might help them to cope with more severe adversity if they encounter it during their academic career.

Research on academic buoyancy has continued to grow since 2008 (Martin et al., 2008a; Martin & Marsh, 2019). Some researchers have taken a person-focused approach to studying academic buoyancy (Collie, Martin, Bottrell, Armstrong, Ungar & Liebenberg, 2017; Putwain & Daly, 2013). These studies have used methods such as cluster analyses to identify empirically distinct clusters of students based on their characteristics. Other researchers have also tried to explore how the academic buoyancy construct differs from other potentially related constructs. Other constructs which may be correlated with academic buoyancy, but are also conceptually distinct, include adaptability (Martin, Nejad, Colmar, & Liem, 2013), control (Putwain & Aveyard, 2018), coping (Putwain et al., 2012; Putwain, Daly, Chamberlain, & Sadreddini, 2015), fear (Symes, Putwain, & Remedios, 2015), future time perspective (Fong & Kim, 2019), grit (Fong et al., 2019), academic hassles (Martin et al., 2008a), and test anxiety (Putwain, Chamberlain, Daly, & Sadreddini, 2014; Putwain et al., 2013).

Another body of research has taken a variable-focused approach to exploring buoyancy and has attempted to understand how academic buoyancy relates to and predicts a series of motivational and engagement factors (Martin et al., 2019). There is early evidence to suggest that buoyancy is positively correlated with adaptability (Holliman, Sheriston, Martin, Collie & Sayer, 2018), engagement (Datu et al., 2018a; Martin, 2014; Putwain et al., 2015), and high confidence, persistence, self-efficacy and planning (Martin et al., 2010). On the other hand, buoyancy is negatively correlated with factors such as absenteeism (Martin et al., 2008a; Putwain, Gallard & Beaumont, 2020a), emotional instability and neuroticism (Martin, Ginns, Brackett, Malmberg & Hall, 2013), general academic anxiety (Martin et al., 2010; Martin et al., 2008a, 2008b), stress (Hirvonen Yli-Kivisto, Putwain, Ahonen & Kiuru, 2019), test anxiety (Putwain et al., 2012; Putwain et al., 2013), and uncertain control (Martin et al., 2010). Researchers have also turned their attention to understand how culture and context impacts academic buoyancy in students (Martin et al., 2019).

2.4.4: Academic buoyancy interventions

Some researchers have turned their attention to exploring school-based interventions aimed at promoting academic buoyancy (Puolakanaho et al., 2019; Putwain, Gallard & Beaumont, 2019). Academic buoyancy interventions with robust designs and evaluations continue to be an under-developed area requiring further attention from researchers. Based on two exploratory studies Martin and colleagues proposed a “5C” model of academic buoyancy. The 5C model implies confidence (self-efficacy), coordination (planning), control, composure (low anxiety), and commitment (persistence) are all predictors of academic buoyancy with varying levels of power (Martin & Marsh, 2006; Martin et al., 2010). Preliminary modelling suggests that composure (low anxiety) may be a strong predictor of academic buoyancy, which could be a starting point for potential intervention work (Martin et al., 2006; 2010).

To date there have been two RCTs which have implemented academic buoyancy interventions. Puolakanaho et al. (2019) implemented an acceptance and commitment therapy intervention which examined the efficacy of a web- and mobile-delivered intervention on students’ levels of academic buoyancy. This study found that implementing the Youth COMPASS intervention decreased students’ overall stress and increased academic buoyancy in the intervention group. This provides some early evidence to suggest that buoyancy is a malleable construct in adolescents. The second, by Putwain et al. (2019), is a multi-component wellbeing intervention combining elements of school-related wellbeing, academic buoyancy, and adaptability. This study found that buoyancy was increased in the early intervention group, but the same effect was not found in the wait-list intervention group. The researchers conclude that a wellbeing programme like BePART may have potential to impact school-related wellbeing and constructs such as adaptability and buoyancy, but the timing of when to implement the intervention during the school year may be an important factor.

The results of these RCTs are explored in more detail in the systematic review in chapter six. The quality of each intervention will be judged to consider how trustworthy their findings are. This systematic review will also review evidence to consider what a promising academic buoyancy intervention could look like. As the first two RCTs in this area of research Puolakanaho et al. (2019) and Putwain et al. (2019) should be credited for their contributions to the field of academic buoyancy research. They are recognised for taking the lead in providing the first insights into intervention studies which take this construct into a more mature stage of development.

2.4.5: Direction for further research

There has been almost 15 years of academic buoyancy research. Chapter six presents the results and discussion from an original systematic review of the academic buoyancy construct to synthesise findings to date and suggest implications for future research based on convincing evidence. The aim

of the systematic review is to synthesise, analyse and evaluate existing literature to discuss how academic buoyancy is defined and measured, consider whether it is malleable to intervention, and highlight a promising way forward for designing an academic buoyancy intervention. The rationale for conducting a systematic review of evidence is to encourage greater rigor in empirical research in this field. The implications of this review may offer a new angle for policy makers to think about resilience in academic settings (DfE, 2019a,d). It may also provide insights for education practitioners to assist their students in dealing with the everyday ups and downs of school life. The review in chapter six is an original contribution to the growing body of research around academic buoyancy.

2.5: Positive psychology theoretical framework

Positive psychology is a branch of psychology research established to address negativity bias (Seligman and Csikszentmihalyi, 2000). Seligman et al. (2000) recognised that psychologists knew more about how people survive and endure conditions of severe adversity, but less was known about how normal people flourish under “benign” and ordinary conditions (p.5). Mainstream psychology had focused primarily on negative behaviours and aspects of life, and positive psychology offered a new theoretical framework to prioritise positive experiences and character (Jorgensen & Nafstad, 2012). As differentiated by Jorgensen et al. (2012) the main distinction between the two schools of thought is that conventional psychology prioritises negative behaviour, as opposed to positive psychology which focuses on fostering positive experiences and character. Positive psychology adds to existing knowledge on pathology, mental illness and dysfunction by providing investigation and knowledge of positive emotions and human strengths (Norrish & Vella-Brodrick, 2009). The field of positive psychology values subjective experiences in the past, present and future. These subjective experiences include well-being and satisfaction (past), flow and happiness (present), and hope and optimism (future) (Seligman et al., 2000).

Positive education is simply defined as “applied positive psychology in education” or “an approach to education that fosters traditional academic skills *and* skills for happiness and wellbeing” (Green, Odes and Robinson, 2011, p.16; Seligman et al., 2009; Waters, 2011, p.77). Positive education advocates the teaching of positive skills and mindsets which promote positive emotions, relationships, and character strengths. In turn, evidence supports that these positive factors will promote learning and academic success (Bernard & Walton, 2011). It is documented in existing literature that academic buoyancy is grounded in positive psychology theory and it aligns with a “positive psychology version of resilience” (Martin et al., 2008a).

In recent years student well-being, resilience and character building have become topics of interest for government and policymakers in England. A five-year strategic plan between 2015 and 2020

identified building character and resilience in children as a key ministerial priority (DfE, 2016). An update to the Department's plans in 2019 (DfE, 2019d) continues to identify this as a key priority in the coming years. This has been supported with population level initiatives and provision of funding for interventions aimed at improving mental health and well-being and building character and resilience amongst the student population (2019b,d; 2021d). Where interventions are to be most effective, it is crucial to ensure they are based on empirical evidence and rigorous evaluation.

In recent years politicians and educational practitioners have used terms such as well-being, coping, resilience, grit, growth mindset and persistence interchangeably (Duckworth, Peterson, Matthews & Kelly, 2007; Dweck, 2008; Smith, 2015; Fong & Kim, 2019). There is growing interest in education around non-cognitive skills and their association with academic success (Fong et al., 2019). However, these labels describe distinct constructs, characteristics and require different interventions to appropriately intervene. Sin and Luybomirsky (2009) support that Positive Psychology Interventions (PPIs) should meet three key criteria. Including an approach aimed at building positive factors, implemented at school, and evaluated using valid and reliable research designs and measures (Waters, 2011).

2.6: Chapter Summary

This chapter presents an overview of how academic resilience has emerged from classical resilience research. The main argument focuses on the definitions of classic resilience and academic resilience to question whether these constructs could be applicable to the wider student population who may not have experienced adversity which puts them at greater risk of psychopathology or developmental difficulties. The academic buoyancy construct, by definition, may present an alternative type of resilience which is applicable to all students as it focuses on adapting to the minor ups and downs of school life. The results of a systematic review on academic buoyancy are presented in chapter six to explore the construct in more detail, synthesise what is already known and consider how trustworthy the findings of existing research are.

CHAPTER THREE: ATTENDANCE AND NON-ATTENDANCE IN ENGLISH SCHOOLS

3.1: Introduction

This chapter provides an overview of school attendance legislation, policy documents, official statistics, media articles and research literature. The chapter begins with an explanation of the education system in English schools to explore what parents are legally responsible for with regards to their child's attendance. This is followed by an outline of what schools are responsible for with regards to monitoring, measuring and recording school attendance. There are several factors outlined in existing research literature which may place a pupil at risk of not attending school. These variables have been categorised as individual-, family- and school-based factors. Individual factors can include personal characteristics such as age, gender, ethnicity, special educational needs (SEN) status and health. Supported by government collated school absence statistics in state-funded secondary schools, each of these characteristics will be considered in turn to highlight the profiles of students who are absent from school. There are several family-based factors which prevent students from attending school. In this chapter factors such as parental involvement, entitlement to Free School Meals (FSM) as an indicator of disadvantage, looked after children (LAC), young carers, pupil mobility and Gypsy, Roma and Traveller (GRT) families are explored. Furthermore, a variety of school factors may also impact students' attendance. Factors considered in this chapter include the curriculum, teacher-pupil relationships and bullying.

Many researchers have attempted to distinguish between different types of child-motivated and parent-motivated school attendance problems to assess how to intervene. School attendance problems may be considered as an overarching term for types of problematic absenteeism such as truancy, school refusal and school withdrawal. Discrepancies exist where terms have been used interchangeably. Furthermore, exclusions could be explained as school-motivated attendance problems and may be carried out on an official or unofficial basis. The pressures placed on schools to compete in league tables, raise standards and maintain an outstanding reputation means that some schools may implement unofficial methods of exclusion to keep their reported cases low. Some unofficial methods of exclusion are illegal and are carried out in the best interest of the school and not for the child.

If children do not attend school there are other choices available. For some parents, educating their child at home is their preferred option. At present there are no statutory requirements for home schooled children to be registered with their Local Authority (LA). The COVID-19 pandemic has highlighted the inequalities that can exist in standards of home schooling, particularly for the students who are most vulnerable. If children are enrolled at a school but are not attending regularly there are several legal actions that can be enforced which hold parents to account for improving their child's

school attendance. Examples of high-profile cases where parents have resisted enforced action have highlighted the powers that LAs have for ensuring that a child is a regular school attender.

Since March 2020, schools have experienced a unique period in history due to the COVID-19 pandemic. A timeline of events which have directly impacted students' attendance in state-funded schools in England is outlined. The long-term impacts that missing large periods of school may have had on students' education and health outcomes are often speculated. Disruption caused by multiple periods of school closures for most of the student population has encouraged debates about the importance of regular school attendance and suitability of home-schooling for the wider student population.

3.2: Education system in English schools

Education is mandatory for all children of compulsory school age in England between the ages of 5 and 16 years old (Education Act, 1996). In England students can leave school at age 16 but they must remain in full-time education or take an alternative vocational route until they turn 18 years old (GOV.UK, 2021e). The Education Act 1996 outlines legislation and duties relating to school attendance and states that every child is entitled to an "efficient" and "suitable" full-time education, relevant to their "age, ability and aptitude" (Section 7). If a student fails to attend "regularly" at their registered school, their parent may be found guilty of an offence (Section 444 [1]). The Supreme Court ruled that regularly, in this context, is defined as "in accordance with the rules prescribed by the school" and not "sufficiently frequent" attendance at school (Isle of Wight Council v. Platt [2017] UKSC28, p.17).

To provide suitable and efficient education, the UK system is divided into five phases including early years, primary, secondary, further education, and higher education. In England, secondary education incorporates students aged between 11 and 16. Key Stage 3 (KS3) is the curriculum delivered to 11- to 14-year-olds and is usually delivered over the first three years of secondary education. The first three years of secondary school are often referred to as National Curriculum year groups 7, 8 and 9. At the end of KS3 children are assessed by their teachers across a broad and balanced range of subjects (DfE, 2014). Key Stage 4 (KS4) is commonly known for the General Certificate of Secondary Education external examinations that students take at the end of their final year at secondary school. KS4 is aimed at students aged 14 to 16 and consists of National Curriculum year groups 10 and 11. Some may commence KS4 learning in Year 9, but this is a decision made by schools.

In England, children are to be "educated in accordance with parents' wishes" (Education Act, 1996, Section 9). For many students their parents will enrol them at a state-funded school such as a

community or maintained school, foundation or voluntary school, academy or free school, grammar school, or special school (GOV.UK, 2021f). Types of schools can differ based on factors such as funding, administration, faith, academic ability and SEN. A state school education is available free of charge for all students whose parents' request it. For others, parents may wish to register their child at an independent school where fees are payable as these schools are not funded by the government. Some independent schools may also specialise in teaching children with SEN. There are other types of schools and educational institutions in England such as state boarding schools, city technical colleges, pupil referral units (PRUs), or alternative provision (AP) academies and free schools (GOV.UK, 2021f).

For state-funded schools the academic year should contain a minimum of 190 days, or 380 sessions. One session is equal to half of a school day. In England the academic school year commences in September and ends in July and includes three full terms described by the seasons in which they begin or end: autumn (September to December), spring (January to April) and summer (May to July). Each term is divided in two, described as half-terms, and is separated by short breaks. Half-term breaks last between one or two weeks on average and are usually arranged to correspond with events that are celebrated in the Christian religious calendar such as Easter and Christmas. The summer holidays are an exception and last for an average of six weeks between July and August.

3.3: Admission register

It is a legal requirement for all state-funded schools to hold an admission register which logs details of students' personal details including their date of admission to the school, parental information and details of previous schools attended (DfE, 2020g). Pupils can lawfully be deleted from the register for specified reasons, for example, if arrangements have been made for the child to receive an efficient full-time education elsewhere or permanent exclusion. Records deleted from the admission register should be reported to the school's LA and changes should be preserved for three years. For children of compulsory school age who are not enrolled at a school, LAs have a duty to recognise who these children are in their local area to ensure that they are receiving a suitable full-time education.

3.4: Attendance register

All schools are legally required to keep an attendance register (DfE, 2020g). Schools must record if pupils are present, attending an alternative approved educational activity, absent for authorised reasons, or absent for unauthorised reasons. In instances where students are absent it is the school's responsibility to determine the pupil's reason for absence and accurately log this by entering a code into the attendance register. Non-statutory attendance guidance provides schools with suggested national codes to monitor and record attendance to comply with regulations.

3.4.1: Present

Students should be marked as present if they attend registration sessions and are on school premises during their registration period. There are two sessions that students can be marked present for throughout an ordinary school day, once in the morning and once in the afternoon. If pupils arrive at school soon after the register has been completed, these students are recorded as late. All schools have a policy which determines a reasonable length of time that the register can remain open and if students arrive after this period closes, students' excessive lateness is differentiated and indicated with a different lateness code.

3.4.2: Present at an approved off-site educational activity

Approved educational activities include taking students to supervised activities such as field trips, educational visits, supervised sporting activities, work experiences or AP. Off-site educational activities can only be recorded as such if they meet the requirements outlined in the education regulations. Activities must be approved and supervised by the school and take place during the session for which it is recorded. In some instances, students may be dual registered at two educational establishments. This code is used to indicate that the pupil was not required to attend the session because they are attending another school. This may happen when students attend AP, a PRU or another school for behavioural reasons.

3.4.3: Authorised absence

Authorised absence is a session of school non-attendance where the reason has been approved for exceptional circumstances. A representative of the school must give their approval in advance for the absence or accept the explanation offered as a satisfactory justification for absence (Thambirajah, Grandison & De-Hayes, 2008). Despite authorisation a missed session will lower the student's overall attendance percentage. Reasons for authorised absences can include illness, medical or dental appointments, a leave of absence authorised by the school, an exclusion without alternative provisions made, holidays authorised by the school in exceptional circumstances, religious observances, periods of study leave, or GRT absences.

3.4.4: Unauthorised absence

Unauthorised absences are sessions of non-attendance from school without the permission of a school representative. The reasons provided for an unauthorised absence are unjustified, unexplained, or may represent a late arrival (DfE, 2019a; Thambirajah et al., 2008). Unauthorised absences can include holidays without authorisation from the school or for longer periods of time than approved by the head teacher, absences where the reason has not been provided, absences from school without authorisation, or arrival after the school's official registration period has closed.

3.5: Risk factors of school non-attendance

Children fail to attend school for a multitude of reasons (Thambirajah et al., 2008). School absenteeism is a complex problem associated with several risk factors, which are often categorised into individual factors, socio-economic conditions, family factors, the school and society (Ingul, Klöckner, Silverman, Nordahl, 2011). Occasional absence from school is not uncommon and has been described as “normal” behaviour (Evans, 2000, p.183; Ingul et al., 2011). Periods of extended non-attendance without extenuating circumstances may be perceived as aberrant behaviour and can become problematic (Pellegrini, 2007). Educational policies and interventions are often implemented with the best of intentions, but they may not consider the complexity of interconnecting interactions and could detract from the root of the problem. Childs et al. (2021) describe chronic absenteeism as a “wicked problem”, a complex social phenomenon which is difficult to solve (Rittel & Webber, 1973). Whilst determinants of absenteeism may be presented as individual risk factors, it is important for interventions to account for the inter-connectedness of factors that result in school absenteeism as multi-faceted problems require multi-faceted solutions (Childs et al., 2021). This section summarises several risk factors associated with school non-attendance, which have been categorised into three groups: individual, familial or school factors.

3.5.1: Individual factors

The DfE in England publishes annual school attendance data tables and headline statistics for the public’s interest and viewing (DfE, 2020e,f). This section will focus on statistics for the academic year 2018/19 and other relevant datasets to explore school absence for a variety of pupil characteristics including age, gender, ethnicity and special educational needs (SEN). The findings of this analysis will be supported with reference to existing research literature to consider explanations for these attendance outcomes. An additional section focusing on the physical and mental health of students has also been included as a key individual determinant of school absence. The annual publication of DfE absence data for the academic year 2019/20 was cancelled in order to focus on the impact of the pandemic in schools.

3.5.1.1: Age

As young people get older, absenteeism increases (Kleine, 1994). In England, pupils in National Curriculum year groups 10 and 11 (14- to 16-year-olds) had the highest rates of overall absence during the academic year 2018/19 with absence rates of 6.3% and 6.4% (DfE, 2020f). Overall absence was lower in the primary age phase with year groups 3 and 4 (7- to 9-year-olds) presenting overall absence rates of 3.9%. Whilst percentages have fluctuated, general patterns of absence based on pupil’s age have remained constant for several years in state-funded schools. Wood et al. (2012) suggest that an increase in absence as students get older may be attributable to an interactive combination of hormonal changes, decreased parental monitoring, increased autonomy and increased influence of

peers during adolescence. These factors may heighten the risk of deviant, sensation-seeking behaviours amongst some young people whose attendance behaviour was previously well-controlled in their younger years.

3.5.1.2: Gender

With regards to gender and school absence boys are reportedly more likely to be absent from school during the primary age phase, whereas girls have higher rates of absence during the secondary age phase (Morris & Rutt, 2004; Teasley, 2004). In state-funded secondary schools in 2018/19, the percentage of girls and boys reporting authorised absences were alike, with boys registering higher percentages of sessions missed due to exclusions from school and other authorised circumstances. Girls reported higher percentages of sessions missed due to reasons such as illness, medical and dental appointments and agreed family holidays. Table 3.1 is adapted from the DfE (2020e) National and LA data tables and details the reasons for absence by gender during the 2018/19 academic year.

Table 3.1: Pupil absence by reason and gender in state-funded secondary schools in England, academic year 2018/19, over six half-terms.

		State-Funded Secondary Schools		
		Boys	Girls	Total
Percentage of absent sessions due to:	Illness (not medical or dental)	49.0	50.5	49.7
	Medical/dental	5.5	6.5	6.0
	Religious observance	0.9	0.8	0.9
	Study leave	1.2	1.2	1.2
	Traveller absence	0.1	0.1	0.1
	Agreed family holiday	0.6	0.7	0.6
	Excluded, no alternative provision	4.1	1.8	3.0
	Other authorised circumstance	6.7	6.4	6.6
Total authorised absence		68.1	68.1	68.1
Percentage of absent sessions due to:	Family holiday not agreed	5.0	5.3	5.1
	Arrived late	1.2	1.1	1.1
	Other unauthorised circumstances	24.3	24.1	24.2
	No reason yet	1.4	1.4	1.4
Total unauthorised absence		31.9	31.9	31.9

Note. Extracted from *Pupil absence in schools in England 2018 to 2019: National and local authority tables*, by DfE (2020e), Table 2.1.

There are a variety of reasons why girls may be more likely to miss school due to illness and medical appointments during the secondary age phase. One possible explanation, due to its distinctive impact on girls, is period poverty. The DfE (2018a) use period poverty as a term to explain that some females from economically disadvantaged backgrounds cannot afford the cost of sanitary products. In the UK it is believed that one in ten girls have been unable to afford period products and 49% of girls have reported that they have missed an entire day of school because of their period. From the same 49% of girls, more than half reported that they had told a lie or given an alternate excuse for why they

were unable to attend school. These findings are based on the Opinium Research survey of a representative weighted sample of 1,000 young women aged between 14 and 21 (Plan International UK, 2017). Period poverty statistics have caught the media's attention who have publicised the number of girls missing school each year due to a lack of access to sanitary products (BBC News, 2018; George, 2019).

In a recent report the DfE (2018a) conducted an analysis of absence data to examine whether disadvantaged girls were missing school due to not being able to afford sanitary products. This analysis was carried out by exploring absence rates by gender, age and entitlement to FSM. Their analysis showed that by the age of 13, the absence rates of girls catch up and continue to surpass those of boys for both FSM and non-FSM pupils. Whilst government data is not specifically collected for issues relating to period poverty, the analysis implies that there may be further unexplained reasons for absence amongst secondary school age girls, for which period poverty could provide one explanation. Following the roll out of the government's period product scheme for schools and colleges in England, additional research is required to understand the extent to which period poverty is a factor impacting on school attendance and to gain a better understanding of how issues relating to period poverty could be recorded as part of the School Census (DfE, 2020d).

It is well documented within existing research literature and government reports that exclusions are disproportionate for boys. During the academic year 2016/17 permanent exclusion rates for boys were over three times higher than that of girls and this imbalance was also reflected in fixed-term exclusions (Timpson, 2019). In the same academic year, 78% of all permanent exclusions and 74% of fixed-term exclusions were issued to boys. A review in mainstream English schools' states that there is limited evidence to explain the overwhelming gender difference in exclusions (Timpson, 2019). One explanation provided is that dissatisfaction with school may present itself differently amongst boys and girls. Boys report higher rates of behavioural disorders, which may manifest externally as violent behaviour or physical and verbal disruption in the classroom, as opposed to internalised emotional disorders which are commonly experienced by girls (Gill, Quilter-Pinner & Swift, 2017; NHS, 2018). Boys are also more likely to be identified as having SEN, another characteristic which is also highly associated with exclusions.

3.5.1.3: Ethnicity

In state-funded secondary schools in England, during the academic year 2018/19, White students and students of mixed ethnicity recorded the highest overall absence rates of all major ethnic groups. Black Caribbean students reported the highest percentage of overall absence in the Black major ethnic group and students of White and Black Caribbean mixed ethnicity had higher rates of overall absence than many other ethnic minority groups. Table 3.2 outlines pupil absences by ethnic group across

state-funded secondary schools in England, during the 2018/19 academic year, over the full academic year. Literature notes a variety of school factors which may contribute to Black Caribbean students' disaffection from school, which include inadequate support from teachers, relevance of the National Curriculum to a multi-ethnic school population, institutional racism, and low teacher expectations. Family and home factors which may also contribute to Black students' disaffection from school could include low parental involvement, low literacy levels, economic disadvantage and poor housing conditions (Demie & McClean, 2017).

Table 3.2: Pupil absence by ethnic group in state-funded secondary schools in England, academic year 2018/19, over six half-terms

	Pupil enrolments in state-funded secondary schools in 2018/19	Percentage of session missed (six half terms)		
		Overall absence	Authorised absence	Unauthorised absence
White	2,217,838	5.8	4.0	1.8
White British	2,027,744	5.8	4.0	1.8
Irish	8,858	6.2	4.4	1.8
Traveller of Irish Heritage	1,345	16.5	8.1	8.5
Gypsy/Roma	9,054	14.5	5.6	8.9
Any Other White Background	170,837	5.2	3.4	1.9
Mixed	165,940	5.8	3.8	2.0
White and Black Caribbean	45,439	7.2	4.3	2.9
White and Black African	21,804	5.4	3.6	1.8
White and Asian	39,022	5.2	3.6	1.6
Any other mixed background	59,675	5.4	3.6	1.8
Asian	324,901	4.5	3.1	1.4
Indian	87,391	3.6	2.8	0.8
Pakistani	131,370	5.3	3.5	1.8
Bangladeshi	53,201	4.6	3.1	1.5
Any other Asian background	52,939	3.7	2.7	1.0
Chinese	10,708	2.2	1.7	0.5
Black	175,319	3.7	2.5	1.2
Black Caribbean	37,983	5.4	3.4	2.0
Black African	115,385	3.1	2.2	0.9
Any other Black background	21,951	4.0	2.6	1.5
Any other ethnic group	55,633	4.6	3.0	1.6
All pupils	3,014,063	5.5	3.7	1.8

Note. Adapted from *Pupil absence in schools in England 2018 to 2019: National and local authority tables*, by DfE (2020e), Table 5.3.

Chinese students, whilst a proportionally smaller ethnic minority group, recorded the lowest overall absence rates and their statistics are reported independently from other Asian ethnic groups. This may be to highlight a difference in behaviour from other Asian students, such as students of Pakistani heritage who have much higher rates of overall absence. The media have speculated that factors such as family background, parental involvement, school choice, positive student work ethic and high teacher expectations may contribute to Chinese students' success and engagement with school, yet

there appears to be limited empirical evidence to support these arguments (Coughlan, 2014; Li, 2017). For students of Pakistani and Bangladeshi heritage, high social and economic disadvantage, low parental involvement, restricted access to technology at home and attendance at disadvantaged schools are amongst some of the factors that could explain higher rates of overall absence from school (Strand, 2007).

Whilst absence rates are reported independently for Chinese students this methodology of extracting outlier groups is not replicated for other ethnic minority groups, such as Travellers of Irish Heritage and Gypsy/Roma students, who demonstrate significantly higher levels of all types of school absence when compared to other White ethnicity students. When reporting absence for students of White ethnicity as a combined group, the higher rates of absence contributed by minority groups such as GRT students should be carefully considered in the interpretation of the results. White students reported the highest percentage of authorised absence sessions, likely due to authorised absences reported by GRT students where families are known to be travelling for occupational purposes in agreement with their school, but it is unknown whether the pupil is attending educational provision. Further exploration of factors affecting school attendance amongst GRT students is presented in section 3.5.2.6. White British students also reported a higher than national average percentage of sessions missed due to authorised absence reporting reasons such as illness, authorised medical and dental appointments, authorised holidays and exclusions. Students of mixed ethnicity also reported higher than average sessions missed due to authorised absence with a high quantity of absences accountable to illness and authorised exclusions, particularly for White and Black Caribbean students and students from other mixed backgrounds (DfE, 2020e).

From Asian ethnic minority groups, Pakistani students demonstrated the highest number of authorised sessions missed due to religious observance than any other ethnic group. Students of Pakistani heritage also reported higher numbers of sessions missed due to absence due to illness, medical and dental appointments and authorised exclusions compared to other Asian ethnic groups (DfE, 2020e). As a combined ethnic group, students from Black ethnic backgrounds reported lower than average absence for authorised reasons. However, high rates of exclusion amongst Black students and the impact this has on learning opportunities is well documented in existing literature (Demie et al., 2017). In recent years, there has been considerable concern about increasing numbers of Black ethnic students cited in exclusion data, with Black Caribbean boys over-represented in both permanent and fixed-term exclusions (Demie, 2021). Demie et al. (2017) discuss the possibility that some teachers respond to the behaviour of Black students more harshly than other ethnic groups.

With regards to unauthorised absence, students from mixed ethnic backgrounds reported the highest percentage of sessions missed for unauthorised reasons. Within this major ethnic group, reasons for a

higher number of unauthorised sessions missed for White and Black Caribbean students included lateness to school and other unauthorised reasons which the school deemed to be unsatisfactory. Students from White ethnic backgrounds also reported high percentages of unauthorised sessions due to unauthorised holidays, lateness, unsatisfactory reasons for absence and instances where reasons remained unknown. Black Caribbean students also reported a high number of sessions missed for unauthorised reasons which were not deemed satisfactory by their school (DfE, 2020e).

3.5.1.4: Special Educational Needs (SEN)

Table 3.3 outlines that students with SEN report higher absence rates than those without. Students recorded as unclassified should be treated with caution as it represents a proportion of students with missing SEN data from the School Census. Government statistics (DfE, 2021a) across all English state-schools (primary, secondary and special schools) highlight that SEN is more prevalent in boys than girls. In 2019, boys were more likely to register with speech, language and communication needs and girls required support for moderate learning difficulties (DfE, 2019h). The percentage of students who have recognised SEN increases with age during the primary phase until students transition into secondary school, where frequency begins to decrease again with age. The most prevalent types of SEN change with age, with moderate learning difficulties and social, emotional and mental health (SEMH) needs most common in older pupils. Students with SEN are more likely to be eligible for FSM and SEN are also most prevalent in some ethnic groups, such as Travellers of Irish Heritage. The lowest rates of SEN support were recorded for Chinese students and Education Health Care (EHC) plans for Indian students.

Factors such as increased bullying amongst students with SEN in mainstream schools may go some way to explain the higher rates of absence (Mishna, 2003). In addition, school environmental factors such as low school connectedness, teachers' failure to understand and deal with students' behavioural needs appropriately, schoolwork not meeting students' needs, poor relationships with teachers and peers, and stereotyping of students with SEN may also result in students' disaffection with school and poor attendance (Prince & Hadwin, 2013; Vizard, 2009). It is likely that SEN students who have not been appropriately supported and had their needs met will become disaffected and disengaged with school (Vizard, 2009).

Table 3.3: Pupil absence by SEN in state-funded secondary schools in England, academic year 2018/19, over six half-terms

	Pupil enrolments in state-funded secondary schools in 2018/19	Percentage of session missed (six half terms)		
		Overall absence	Authorised absence	Unauthorised absence
Statements of SEN/EHC plan	51,797	8.6	5.9	2.7
SEN support	347,147	8.1	5.1	3.0
No identified SEN	2,594,706	5.1	3.5	1.6
Unclassified	20,413	24.0	10.4	13.6
Total	3,014,063	5.5	3.7	1.8

Note. Adapted from *Pupil absence in schools in England 2018 to 2019: National and local authority tables*, by DfE (2020e), Table 5.1.

3.5.1.5: Health

Illness and injury explain the most common reasons for absence from school (DfE, 2020g; Havik, Bru & Ertesvåg, 2015). Table 3.4 outlines pupil's reasons for absence in state-funded schools during the academic year 2018/19. Across all state-funded primary, secondary and special schools, authorised absence explained 70.1% of all absences and 29.9% were unauthorised. More than half of all absences (52.6%) during this academic year were explained by illness. In state-funded secondary schools illness accounted for almost half (49.7%) of all absences. At a first glance, the categorisation of reasons for absence as reported by the School Census may provide some insight but there is more work to be done in the reporting of sickness to individually differentiate types of illness and injury if this data is to be helpful for improving illness-related absence in schools.

Kearney (2008b) lists 20 medical problems that researchers have linked to school absenteeism. These include minor problems such as injuries (like bruises, sprains and fractures), head lice, influenza and headaches (Barnes, Price, Maddocks, Lyons, Nash & McCabe, 2001; Breuner, Smith & Womack, 2004; Neuzil, Hohlbein & Zhu, 2002; Sciscione & Krause-Parello, 2007). To chronic conditions including cancer, chronic fatigue, asthma and diabetes (Charlton et al., 1991; Glaab, Brown & Daneman, 2005; Moonie, Sterling, Figgs and Castro, 2006; Sankey, Hill, Brown, Quinn & Fletcher, 2006). In a study by Barnes et al. (2001), they monitored children attending an emergency department in two counties across Wales for treatment on a Sunday, preceding a school week, with a minor injury that should not have prevented school attendance. Researchers tracked the student's school attendance for each half day during the week following their injury. Bruises were the most common minor injury reported in 27% of the sample and the average number of sessions missed from school was 7.9 in the following school week. Sprains were the second most common reported injury (26%) equating to an average of 7.1 absent sessions. Whilst this study was published two decades ago and there have been many reforms to school attendance policy during this time, this study provides a rationale for further sub-categorisation of illness on the School Census. The minor state of some

types of illness and injury experienced by some children exemplifies the unnecessary nature of some absences from school. In these instances, children and parents should be held to account for the sessions they miss at school. This is in comparison to those who experience chronic illnesses which may prevent mobility or the ability of children to provide self-care.

Table 3.4: Pupil absence by reason in state-funded secondary schools compared to all state funded school types in England, academic year 2018/19, over six half-terms

		State-Funded Secondary Schools	State-Funded Secondary, Primary and Special Schools
Percentage of absent sessions due to:	Illness (not medical or dental)	49.7	52.6
	Medical/dental	6.0	6.0
	Religious observance	0.9	1.1
	Study leave	1.2	0.6
	Traveller absence	0.1	0.2
	Agreed family holiday	0.6	1.4
	Excluded, no alternative provision	3.0	1.7
	Other authorised circumstance	6.6	6.4
Total authorised absence		68.1	70.1
Percentage of absent sessions due to:	Family holiday not agreed	5.1	8.7
	Arrived late	1.1	1.5
	Other unauthorised circumstances	24.2	18.5
	No reason yet	1.4	1.2
Total unauthorised absence		31.9	29.9

Note. Adapted from *Pupil absence in schools in England 2018 to 2019: National and local authority tables*, by DfE (2020e), Table 2.1.

DeSocio and Hootman (2004) report that frequent school absences due to ambiguous physical health problems, such as aches, pains and medically unexplained physical symptoms, may be related to mental health issues and underlying emotional and behavioural problems. For young people mental health problems have the potential to impact school attendance and dropout (Lawrence, Dawson, Houghton, Goodsell & Sawyer, 2019). The most common disorders and mental health problems linked to absenteeism are disruptive behaviour disorders, depression and anxiety disorders (Wood et al., 2012). Wood et al. (2012) explore a reciprocal relationship between school absenteeism and psychopathology to understand whether the presence of one increases the risk that the other will emerge. They provide examples to illustrate their hypothesis that absenteeism may emerge as part of a psychological disorder. For example, young people who are prone to anxiety may be more likely to avoid school due to perceptions of threat such as social situations or academic difficulty. Brandibas, Jeunier, Clanet and Fourasté (2004) support this idea that school can produce anxiety in students.

On the other hand, psychopathology could potentially emerge because of extended periods of school absenteeism. For example, there may be young people who fail to attend school for reasons unrelated to their mental health, but their psychopathology is adversely impacted by their absence from school.

Wood et al.'s (2012) study tested models of the reciprocal relationships between absenteeism and psychopathology in young people and found that there was evidence to suggest psychopathology is a predictor of absenteeism in adolescents. Lawrence et al.'s (2019) study concluded that mental disorders were an important indicator of school absence particularly in the secondary age phase. Reasons for school absence related to mental disorders may manifest as somatic symptoms and physical conditions such as headaches, stomach aches and nausea. This may lead to recording the reason for absence as illness when there are deeper routed mental health issues at play. It is important for schools and educational practitioners to monitor student's attendance and track reasons for absence to highlight emerging patterns and remain proactive.

Furthermore, sleep is highlighted as an important predictive factor of child and adolescent health and wellbeing (Gregory & Sadeh, 2016). School absence due to sleep is a further risk factor which can be linked to health problems and psychopathology. A population-based study by Hysing, Haugland, Stormark, Bøe and Sivertsen (2015) identified that students who experienced short sleep duration, sleep deficiency, extreme weekday-weekend bedtime discrepancies and insomnia could lead to higher school absence.

3.5.2: Familial factors

Families and students' home lives are also recognised to have an important influence on student attendance (Epstein & Sheldon, 2002). This section discusses some family factors linked to school absence supported by research literature. Factors include parental involvement, entitlement to FSM, LAC, young carers, pupil mobility and GRT families.

3.5.2.1: Parental involvement

There is agreement amongst many researchers that parental involvement in a child's studies has the potential to benefit a range of educational outcomes (Hoover-Dempsey & Sandler, 1997). High parental involvement in a child's education may reduce school absenteeism (Park & Holloway, 2018). There have been many different attempts to define parental involvement with some focusing on an overt range of activities categorised as home-based activities and school-based activities. Parents who engage with home-based activities such as homework, reading, monitoring students' grades and promoting good sleeping habits could lead to better school attendance for their child (Teasley, 2004, Hysing et al. 2015). School-based activities could include attending parents' evenings and opening evenings to discuss their child's learning, participation as school governors and partaking in school activities (West, Noden, Edge & David, 1998). Parental involvement could also be indirect and subtle, such as emphasising the value of education and holding high expectations for their child (Tan, Lyu & Peng, 2020). Kinder, Wakefield & Wilkin (1996) also emphasise that school absence may be reactionary to family problems and home circumstances. Students listed factors such as divorce and

separation, difficult relationships with family members, bereavement, violence and drug-taking, and abuse within the family as reasons for school absence.

Within existing parental involvement literature, there are well-established associations between parental involvement and family income (Cooper, 2010; Lee & Bowen, 2006). Families from high socio-economic backgrounds are reported as more likely to be involved in their child's education when compared to parents from low socio-economic backgrounds (Teasley, 2004). For low-income families attending school-based events may be difficult due to long or unpredictable work hours, a lack of transportation and childcare. Barnard (2004) suggests that parental involvement may be linked to a parent's self-esteem and confidence to take part in their child's education. As such, low-income parents may be less likely to express concerns about their child's school due to lacking specialised knowledge (Park et al., 2018). Unsupportive home backgrounds are a potential risk factor which may prevent students from attending school. Reid (2002) suggests that parents who played truant at school are more likely to perpetuate a truancy syndrome in their children who are also more likely to be absent from school. Meanwhile, supportive home backgrounds are considered a key factor in preventing children from being absent from school (Reid, 2002).

3.5.2.2: Free School Meals (FSM)

Eligibility for FSM is a measure of low parental income and is widely used as an individual indicator of disadvantage (Gorard, 2012). Children in state-funded schools in England receive FSM entitlement if their parent receives income-related benefits such as: Income Support, Income-based Jobseekers Allowance, Child Tax Credit (provided they have a gross annual income of less than £16,190), and Universal Credit (provided their annual net income is no more than £7,400), amongst others (DfE, 2018c, 2018d). Since April 2018, the roll out of the government's Universal Credit benefit has also increased the proportion of students eligible for FSM as more children retained status even if their circumstances had changed. This saw the percentage of pupils known to be eligible for FSM in state-funded secondary schools from 14.1% in 2018/19 to 15.9% a year later (DfE, 2020a). As families are required to officially register their child as eligible for FSM, this may create discrepancies between those who have officially registered and those who are entitled but do not wish to accept the offer of FSM. The FSM indicator is an imperfect measure of disadvantage, but it is currently better than alternative measures collated by the School Census (Gorard, 2012).

As outlined in Table 3.5, the percentage of sessions missed for overall absence were almost double for students known to be eligible for FSM during the 2018/19 academic year. The percentage of sessions missed for unauthorised reasons by students entitled to FSM were more than three times higher than those who were not entitled to FSM. In the same year, the number of pupils known to be eligible for

FSM also had more than double the percentage of persistent absence rates than those who were not eligible for FSM.

Table 3.5: Pupil absence by characteristics in state-funded secondary schools in England, academic year 2018/19, over six half-terms

	Pupil enrolments in state-funded secondary schools in 2018/19	Percentage of session missed (six half terms)		
		Overall absence	Authorised absence	Unauthorised absence
Known to be eligible for FSM	442,835	9.2	5.0	4.3
Not eligible for FSM	2,550,374	4.8	3.5	1.3
Unclassified	20,854	24.1	10.3	13.8
Total	3,014,063	5.5	3.7	1.8

Note. Adapted from *Pupil absence in schools in England 2018 to 2019: National and local authority tables*, by DfE (2020e), Table 5.1.

The links between low family income and school attendance are complex and represent a network of relationships within a multitude of factors. Children from low-income households have lower educational outcomes than their higher-income peers yet it is unclear how much of this difference is attributable to financial resources, household factors or a combination of both (Cooper & Stewart, 2013). There is evidence to suggest that children from low-income families are more likely to experience poorer nutrition (Nelson, 2000), higher levels of residential and school mobility (Crowley, 2003; Machin, Telhaj & Wilson, 2006), mental health problems, behavioural problems, illness and injury, (Currie, 2005) and environmental hazards, such as chaotic, crowded and low-quality housing (Evans, 2004; Evans & Kim, 2007). All the above factors can lead to missing days of school (Morrissey, Hutchison & Winsler, 2013).

Low income is associated with poor diet and nutrition at all stages of life (Nelson, 2000). Medical literature has found a relationship between diet and educational outcomes. A poor diet can lead to young people becoming susceptible to illness and in turn illness can lead to more days of absence from school (Belot & James, 2009). Poor diets can also impact students' ability to concentrate which in turn may impact on their enjoyment of learning and school experience. Children from low-income backgrounds are also more likely to experience illness from home-related factors such as inadequate housing standards, overcrowding, cold living conditions and increased exposure to air pollution (Liddell & Morris, 2010; White, 2018). Living in inadequate housing may influence young people's health by increasing the risk of injury and illnesses through respiratory conditions and the spread of infectious diseases, which can lead to increased school absences (White, 2018).

Disruption caused by pupil mobility has become an area of interest for the government due to the potential impact it could have on pupils' attainment and academic success. A study of student

mobility in the UK found that around a quarter of a million pupils made non-compulsory school moves (Machin et al., 2006). They concluded that pupils from lower social backgrounds were more likely to move school than their peers at all stages of schooling and they were also more likely to move from lower performing schools. London was identified as a key area for school mobility in comparison to other regions. Pupils who moved home and school at the same time were more socially disadvantaged than those who did not. Residential mobility may be closely linked to school mobility as a move from one house to another may also mean moving to a new school. Children from low-income families are believed to be more at risk of residential mobility due to housing instability (Crowley, 2003). Parents on low-incomes may not be able to afford the house-prices to live in catchment areas where school moves result in transitions to higher performing schools (Gibbons & Machin, 2008; Machin, 2011).

Almost half a million underaged school children in England and Wales were engaging in illegal work as reported by Reid (2002), with approximately 100,000 children truanting from school to carry out this work (Ipsos MORI, 2001). More recent statistics suggest that approximately 160 million children were engaging in child labour globally in 2020 (International Labour Organisation, 2021). In the UK context, the work carried out by children may interfere with their formal education and deprive them of the opportunity to attend school, which could lead to students dropping out or forcing them to balance competing pressures of schoolwork and work simultaneously (Ornert, 2018). Engaging with work whilst in formal education may be the case for students from low-income backgrounds to help with household finances and pressures their parents may be experiencing. There are a multitude of reasons why disadvantaged students from low-income families do not attend school.

3.5.2.3: Looked after children (LAC)

In England, a child is defined as 'looked after' by a LA if they meet the criteria under the Children Act 1989. Children may be provided with accommodation for a continuous period of more than 24 hours or be subject to a care or placement order (DfE, 2020b). In 2020, national statistics reported 80,080 LAC (DfE, 2021g). Abuse or neglect (65%), family dysfunction (14%) and families in acute distress (8%) were the three most common reasons for children being given LAC status. Many LAC are placed in a foster placement (72%) where an approved carer looks after them and for some this may be a relative or a friend (14%). National statistics published in 2020 have demonstrated that persistent absenteeism amongst LAC has risen over recent years from 8.9% in 2014 to 10.9% in 2019 (DfE, 2020b). Regarding the percentage of pupils classified as persistent absentees, the gap between the overall population and LAC has lessened over recent years with latest figures suggesting that LAC are equally as likely to be persistently absent than all young people. Over a five-year period, overall absence has continued to rise for LAC from 3.9% in 2014 to 4.7% in 2019, nevertheless, overall absence rates for LAC are similar to the rest of the school population (4.7%). In 2018, LAC were five

times more likely (11.67%) to have a period of fixed-term exclusion than all children (2.33%). LAC were less likely to be permanently excluded than all children in 2018, which has decreased by over half since 2013.

SEMH difficulties are the most common type of SEN reported for LAC. SEMH is an overarching term used to describe a wide range of behaviours and can include several underlying difficulties such as autism spectrum disorder (ASD), attention deficit hyperactivity disorder (ADHD), anxiety disorder and depression. Children with SEMH may be quiet and withdrawn, displaying passive behaviours such as low mood and isolation, or they may be disruptive and challenging displaying active behaviours such as aggression (Dolton, Adams & O'Reilly, 2019). Of all the LAC almost half of those who received SEN support had SEMH needs (DfE, 2020b). Students with these difficulties experience disproportionate rates of exclusion from school, when compared to other pupils with and without SEN (Carroll & Hurry, 2018). A lack of knowledge amongst teachers about how to support children with a wide range of SEMH needs in the school environment could lead to students' dissatisfaction and disaffection from school. This may also provide one explanation for increased rates of persistent absenteeism amongst LAC students.

3.5.2.4: Young carers

There are estimated to be between 700,000 to 800,000 young carers in the UK under the age of 18 who provide unpaid care, assistance, or support, to a family member or friend who has a chronic illness, disability, frailty or addiction (Carers Trust, 2016; ME-WE Consortium, 2019). These children and young people take on responsibilities that are regularly associated with adults. Caring tasks could include practical tasks around the house, physical and personal care, emotional support, managing the family budget, and looking after siblings (ME-WE Consortium, 2019).

Education is a barrier that these children and young people face with frequent lateness, absences and the risk of being forced to drop out to take on their caring responsibilities full-time which they may also combine with paid employment. In a survey conducted by Cheesbrough, Harding, Webster, Taylor and Aldridge (2017) on behalf of the DfE, 55% of parents of young carers reported their child had been absent from school on a few occasions over a period of one year, with 12% of parents reporting that their child between the ages of 12 and 15 had fallen asleep at school. Due to the intense nature of their caring responsibilities young carers are at risk of persistent absence from school.

3.5.2.5: Pupil mobility

Pupil mobility is defined as movement between schools, either once or on repeated occasions during the academic year (Strand & Demie, 2007). For some students, pupil mobility may be due to parental occupation or lifestyle choices, such as parents in the Armed Forces or GRT families. For others

mobility may be linked to changes in family circumstances such as a parental promotion or job relocation, refugee or asylum seeker status, or family break-ups. There is widespread assumption that pupil mobility can have negative consequences on students' educational outcomes due to the disruption caused to their learning by changing schools regularly (Strand et al., 2007). Constant changes in residence can result in distressing disruption and may impact a child's physical, mental, social and emotional well-being (Qin, Mortensen & Pedersen, 2009).

Service children provide an example of mobile pupils. With parents in the Armed Forces these families are likely to move home on a regular basis either within the UK or to military bases around the world. In the UK there are no accurate records of the number of service children as there are many different approaches taken to providing schooling for these children (Danaher, 2021). Students may attend specialised mobile schools, be home educated, receive distance and online education provision, or attend mainstream state-funded schools. Challenges students face may include regular disruption and relocation, disaffection with school due to missing or repeating areas of the curriculum, difficulties with social and emotional development, difficulties forming friendships, potential lengthy periods of separation from parents, and coping with bereavements and physical or mental damage to a parent. The challenges experienced by some service children could have far-reaching consequences for a range of educational outcomes including school attendance (Ofsted, 2011). Service children provide one example of mobile pupils but there are other groups of students with their own unique challenges and needs. Children experiencing frequent mobility may be disadvantaged and require school support services and close monitoring to aid them in achieving the expected educational standards, such as regular school attendance (Hutchings et al., 2013).

3.5.2.6: Gypsy, Roma and Traveller (GRT) families

Research exploring the school attendance of children from GRT families has shown that these students are more likely to become disengaged from their education, particularly during the secondary schooling phase (Wilkin et al., 2010). In instances where GRT pupils do successfully transfer to secondary school, their attendance is unlikely to continue beyond the age of 16 (Reynolds, McCartan & Knipe, 2003). Some reports suggest that their disengagement with school happens earlier around the age of 14, as school is seen by parents as a "threat to their cultural and moral codes" (Bhopal, 2011, p.479). This is because schools represent a mainstream societal value, which for some GRT families is perceived as controlling and may result in the dilution of culture (O'Hanlon & Holmes, 2004). Želinský, Gorard and Siddiqui (2021) consider an alternative stance which supports the idea that Roma students do value their school-based education. From this perspective, it is schools who neglect the cultural backgrounds of GRT students. This makes it difficult for students to feel integrated into mainstream education and can lead to disaffection from school resulting in poor attendance (Lambrev, 2015). There may be other factors to explain GRT students' poor educational

outcomes, which could include an uninviting school climate, poor communication between schools and communities, and prejudice (Želinský et al. 2021).

3.5.3: School factors

There are many school-related factors associated with school absenteeism. Some researchers have highlighted that negative school climates can pose as risk factors to school absenteeism (Brookmeyer, Fanti & Henrich, 2006; Gase, DeFosset, Perry & Kuo, 2016). For example, students who perceive school as unsafe with noisy and disruptive classroom environments may be more likely to avoid school (Havik, Bru and Ertesvåg, 2013; Moore et al., 2019; Teasley, 2004). Low school connectedness, “the extent to which students feel accepted, valued, respected and included in the school”, is also cited as a risk factor for school absence (Shochet, Dadds, Ham & Montague, 2006, p.170). Furthermore, school curriculum, school size, pupil-teacher ratios, teaching intensity and relationships between students and teachers are highlighted as possible risk factors for school absence (Lee & Burkam, 2003; McNeal, 1997). Whilst there are many school factors identified in the literature, this section will explore the curriculum, teacher-pupil relationships and bullying as three leading risk factors of school absence.

3.5.3.1: The curriculum

Despite numerous reforms over recent decades the curriculum continues to be reported as a reason for absence. A report by Kinder, Wakefield and Wilkin (1996) explored pupil’s opinions of the main reasons for behaviour and attendance problems at school and students ranked the curriculum’s content and its delivery as the third highest reason to explain attendance problems. Reid (2002) also reports that the rigidity of the National Curriculum is a reason for high absence rates. In a series of interviews questioning the perspectives of young people about factors which underpin school absence, 23 students suggested that issues relating to the school curriculum and instructional style were contributing factors (Gase et al., 2016). Students cited reasons for their absence which included uninteresting and unenjoyable subject matter, meaningless subject content that was perceived to be irrelevant to their future, difficult subject content, a lack of engagement, and the absence of challenge from their teacher and the lesson’s content.

In 2010, the DfE in England embarked on a reform of vocational qualifications offered in secondary schools to increase their status. Prior to the COVID-19 pandemic, the End of Cycle Report published by UCAS (2019) reported that the number of 18-year-olds in the UK entering Higher Education with vocationally related qualifications had grown. New initiatives such as the Launch of T Levels in 2020 also aim to offer students a mixture of classroom learning and practical industry experience at KS5. Nevertheless, many have reported that there is a perception that vocational education suffers a “lack of prestige” compared to academic alternatives such as GCSEs and A-levels (Richmond, 2019, p.8).

In England vocational pathways have often been considered as second-best to traditional academic education and some may believe that it is aimed at students with lower attainment levels and those from socially disadvantaged backgrounds (Vidal Rodeiro & Vitello, 2021). As a result, many students may be studying subjects for which they do not have the appropriate interest, motivation or aptitude for (Reid, 2003a). Vocational teaching can offer alternatives for students who are disenchanted from school and may not engage with an academic curriculum. Some students may consider vocational education to have more relevance to their long-term employment plans (Reid, 2002). Nevertheless, interesting and relevant curriculum content and delivery may be associated with improved school attendance for some students.

3.5.3.2: Teacher-pupil relationships

Teacher-pupil relationships may also impact students' engagement with school (De Wit, Karioja & Rye, 2010; Roorda, Jak, Zee, Oort & Koomen, 2017). Negative attitudes towards teachers have been associated with higher levels of truancy (Attwood & Croll, 2006). On the other hand, positive social relationships with teachers can incentivise students to attend school even when schoolwork is difficult and expectations are high (Lee et al., 2003). Hallinan (2008) found that students who perceived their teachers to care about them, praise them and respect them were more inclined to like school than those who did not. Kinder et al. (1996) highlighted various teacher characteristics that pupils felt were damaging to their relationships with teachers. These included a lack of respect and consideration for students, a feeling of injustice when students felt unfairly blamed, feeling isolated or excessively punished, and using a negative tone of voice. Lauchlan (2003) also recognises that students who "fear" teachers may be more likely to be absent from school (p.133).

3.5.3.3: Bullying

Peer relationships are an important feature of adolescence (Brown & Larson, 2009). Research regarding social acceptance at school makes links with academic performance and school attendance (Schwartz, Gorman, Nakamoto & McKay, 2006). Bullying and instances of school violence are reported to increase the risk of absenteeism (Dake, Price & Telljohann, 2003). For example, LGBTQ+ youth are reported to be at greater risk of missing school due to fear of peer victimisation (Friedman et al., 2011). Schools may not be able to function efficiently if pupils are frequently absent due to feeling unsafe (Moore et al., 2019).

Whilst schools are not wholly responsible for managing bullying amongst students, they may play an important role. Bullying can take various forms including physical and emotional harm initiated at home, school, or online. Online cyberbullying has increased amongst young people with the rapid rise of new technologies (Long, Roberts & Loft, 2020). Data from the Office for National Statistics' annual Criminal Survey for England and Wales reported that one in six young people had been bullied

in the last 12 months (DfE, 2018b). There were 4% of respondents who reported that they had truanted from school for a day or more in the last 12 months and those students who had truanted were more likely to say they had been bullied. In schools where bullying is reported by students, schools should take action to intervene and support students to ensure that they feel safe within the school environment.

3.6: School attendance problems

School absenteeism encompasses all types of school non-attendance and is defined as pupils who fail to attend school (Thambirajah et al., 2008). The challenges associated with lowering rates of unauthorised absences in schools have been described as persistent and “stubborn” problems (Attwood & Croll, 2015, p.14). Reid (2014) concludes from evidence that improving attendance and reducing school absenteeism can be difficult to achieve and claims that little has changed over thirty years. In England, Davies and Lee (2006) report that the British government have allocated substantial resources to reducing non-attendance in schools, yet there is little evidence to support that these efforts have had a substantial positive impact on patterns of student non-attendance.

Within existing literature, there are a vast array of terms used to distinguish between types of unauthorised student absence from school. Labels such as truancy, school refusal and school phobia are commonly used but they do not represent or describe all problems experienced by youths who have trouble attending school. For some researchers school refusal behaviour is used as an overarching construct to describe child-motivated refusal to attend school for any reason (Kearney & Albano, 2018). Many researchers have attempted to draw clear distinctions between terms relating to unauthorised absence such as truancy, school refusal and school phobia but these terms are often used inconsistently (Heyne, Gren-Landell, Melvin & Gentle-Genitty, 2019). Other types of absenteeism may be parent-motivated such as school withdrawal (Kearney et al., 2018). Tonge & Silverman (2019) also acknowledge that types of authorised attendance can become problematic if they are persistent. To respond to a complex range of “bio-psycho-socio-cultural determinants” of absenteeism, all types of school attendance problems should be understood (Tonge et al., 2019, p.119). This section aims to draw upon existing research literature to differentiate between types of school absenteeism which are commonly experienced in English secondary schools. Researchers have highlighted the barriers that inconsistencies in defining and measuring different types of absenteeism can create in gaining a shared understanding of how best to intervene (Elliott, 1999; Pellegrini, 2007).

3.6.1: Persistent absenteeism

The DfE in England (2019a) define persistent absence in operational terms. Pupils are identified as persistently absent if they do not attend the school at which they are registered for 10% or more of

their own possible sessions. One session is equivalent to half a school day, with two sessions possible each day. Whilst schools work within the same academic year guidelines the number of sessions may be different for each pupil depending on the school that they attend. Table 3.6 demonstrates that in the academic year 2018/19, before statistics were affected by COVID-19 related absences, students that met the government’s threshold for persistent absence had more than twice the percentage of unauthorised absences when compared to all other pupils. Overall, 10.9% of all enrolled pupils were defined as persistently absent in 2018/19 (DfE, 2020f). For the DfE 10% absence is the starting guideline for considering a student’s absenteeism as problematic. Over time this threshold has reduced from 20% in 2005/06 to 10% in 2015/16 onwards to raise standards in schools.

Table 3.6: Pupil absence by reason of persistent absentees compared to other pupils in state-funded secondary schools in England, academic year 2018/19, over six half-terms

		State-Funded Secondary Schools	
		Persistent Absentees	Other Pupils
Percentage of absent sessions due to:	Illness (not medical or dental)	36.2	61.9
	Medical/dental	4.3	7.5
	Religious observance	0.2	1.4
	Study leave	0.9	1.5
	Traveller absence	0.2	0.0
	Agreed family holiday	0.3	0.9
	Excluded, no alternative provision	4.6	1.4
	Other authorised circumstance	8.6	4.8
Total authorised absence		55.5	79.5
Percentage of absent sessions due to:	Family holiday not agreed	3.4	6.7
	Arrived late	1.7	0.6
	Other unauthorised circumstances	37.8	12.0
	No reason yet	1.6	1.2
Total unauthorised absence		44.5	20.5

Note. Adapted from *Pupil absence in schools in England 2018 to 2019: National and local authority tables*, by DfE (2020e), Table 2.3.

The highest reported category to explain why persistently absent students were missing from school was “other unauthorised circumstances”. A lack of understanding about why these students are persistently absent from school makes it difficult for policy makers and educational practitioners to implement targeted interventions. Persistent absentees reported less absences due to illness in comparison to other absent pupils in secondary schools. This highlights a requirement for schools to report students’ reasons for unauthorised absence with further precision and clarity as the current categories do not capture the complexity of reasons for those who are potentially more vulnerable to be absent from school. The following sections consider further explanations for possible difficulties experienced by some persistent absentees.

3.6.2: Truancy

Existing definitions of truancy highlight a lack of consistency surrounding how the term is understood and used by policymakers, educational practitioners and researchers. In England a review was commissioned to inspect the problem of truancy in schools and make recommendations for improving the attendance of the “missing million” who were absent from school for more than three weeks per year (Taylor, 2012b, p.1). The government’s expert advisor on behaviour recommended that there should be less use of the word truancy. Rather than focusing on reducing truancy he advised the British government to focus on positive approaches for improving attendance instead. Davies et al. (2006) highlight that the British Education Acts do not offer a clear definition of truancy. A review of truancy definitions by Gentle-Genitty, Karikari, Chen, Wilka and Kim (2015) highlights descriptions can be divided into two categories: definitions which reflect the school’s perspective of the problem and definitions which reflect the student’s perspective of school absence. From an institutional stance truancy is described as unacceptable behaviour but from the student’s perspective it may be considered as distancing oneself from the school environment.

Dube & Orpinas (2009) describe truancy as a type of excessive absenteeism where students are often absent without their parents’ knowledge. Kearney (2008b) supports this definition by describing truancy as “unexcused, illegal, surreptitious absences, non-anxiety-based absenteeism, absenteeism linked to lack of parent knowledge about the behaviour, absenteeism linked to delinquency or academic problems, or absenteeism linked to social conditions such as homelessness or poverty” (p. 452). Truancy can be total or partial avoidance of school. Truancy could describe intentional absences from school (“blanket truancy”) intentionally leaving school early or missing specific classes without authorisation (“post-registration truancy”; Reid, 2003b, p.42).

Henry (2007) and Barry, Chaney and Chaney (2011) refer to intentional absences as “skipping” or “cutting” school (p.486). Henry and Thornberry (2010) expand on this definition to describe truancy as skipping school “without a valid excuse” (p.115). Some students attend school but miss lessons whilst on the premises for reasons relating to school. Reid (2002) refers to this group of students as “institutional truants” and suggests that these individuals are generally extroverts, prone to engaging in confrontation and are likely to remain on school premises whilst avoiding classes (p.7). This type of school absenteeism is also referred to in the literature as lesson absence or post-registration absence (Kilpatrick, 1998; Reid, 2005, 2010). Students may take part in spontaneous institutional truanting with or without their peers based on the realisation that they have timetabled lessons they do not wish to attend for various reasons. Some students may also miss whole days of school to avoid lessons they do not like. It is likely that these students are not concerned about the outcomes or punishment for their truanting (Reid, 2002).

For Epstein et al. (2002) and Fallis and Opatow (2003) truancy is explored from the student's perspective and authors make a potential link between skipping class and eventual school dropout. Students may skip classes that they dislike, find too easy or too hard, are unprepared for, or to avoid peers and teachers they engage in conflict with. Hallfors et al. (2002) conceptualise truancy as an indicator of low school attachment. Gentle-Genitty et al. (2015) reviewed a wide range of existing truancy definitions and combined this evidence with expert opinions from focus group interviews to propose an enhanced and unified definition of truancy. The reviewers concluded that truancy is "a non-home school student's act of non-attendance evidenced by missing part or all of the school day without it being authorised by medical practitioner or sanctioned by parent(s) and/or legitimately excused by school or per state law" (p.78). The authors acknowledge that this definition requires further iterations and refinement as this broad definition also incorporates and summarises findings from generalised non-attendance literature (Heyne et al., 2019).

3.6.3: School refusal and school phobia

Extended or chronic school non-attendance describes a small proportion of students who do not attend school for prolonged periods of time (Pellegrini, 2007). Literature which focuses on extended non-attendance in schools often uses terms such as school refusal and school phobia to describe and differentiate between the types of behaviours exhibited by students who fail to attend school. *School refusal* describes a "child-motivated refusal" to attend school and may signify a lack of motivation (Kearney & Silverman, 1996, p.345; Kearney, 2008a,b). *School phobia* implies that the student experiences social phobia or anxiety for attending their educational institution (Pellegrini, 2007). *School refusal behaviour* refers to all youth who refuse to attend school and incorporates all students with and without anxiety-based behaviours (Kearney & Albano, 2004, 2018; Kearney & Silverman, 1990). Over time the term school refusal behaviour has been condensed and this has caused some confusion about how terms such as school refusal and school phobic should be applied in practice. Often, pupils who are labelled as school refusers or school phobic display a wide range of character profiles. Contemplating the individual nature of their problems and personal circumstances can also make it difficult to establish whether the student is refusing school or has a phobia of attending school (Archer, Filmer-Sankey & Fletcher-Campbell, 2003).

Definitions which attempt to differentiate between school refusal and school phobia often have commonalities. For example, Kljakovic, Kelly and Richardson (2021) describe school refusal as a reluctance to attend an educational institution accompanied by emotional distress. Furthermore, Baker and Bishop (2015) describe school refusal as a fear of attending and school avoidance. Research carried out by Archer et al. (2003) highlighted that some educational practitioners consider school phobic students as a sub-category of school refusers. They make distinctions between school phobic, where students have rational or irrational anxieties about attending school, and school

refusers, who are motivated and decide not to attend for a variety of reasons. Nevertheless, they acknowledge that these terms are not mutually exclusive as some students who do not attend school may also describe their anxiety towards school-related factors such as bullying. Kearney (2008b) also suggests that it is uncommon for young people to have a phobia of school, which may contribute to the term gradually being phased out of the literature. The behaviours which explain school refusal for students in English schools are complex and research suggests that there is not one clear pathway which leads students to chronically refuse school (Kljakovic & Kelly, 2019).

Ingul, Havik and Heyne (2019) draw upon the works of Berg (1997) and colleagues (Berg, Nichols & Pritchard, 1969) to define school refusal as:

“ [...] a type of school attendance problem defined by (a) a youth’s reluctance or refusal to attend school, often leading to prolonged absence; (b) the youth is usually at home when not at school, and the parents are usually aware of this; (c) the youth experiences emotional distress about going to school (e.g., somatic complaints, anxiety, depressed mood); (d) there is an absence of severe antisocial behaviour, although the youth may show resistive behaviour when parents try to get them to school; and (e) parents have tried to secure the youth’s attendance at school.” (p.46)

This definition is helpful in drawing distinctions and similarities between other types of school attendance problems as school refusal can be differentiated from truancy based on criteria *b*, *c*, and *d*. It is also differentiated from school withdrawal based on criterion *e*. This definition of school refusal may incorporate elements of school phobia as suggested by criterion *c*. The authors also list examples of early signs and risk factors of emerging school refusal relating to the young person, which may include absence or partial absence, anxiety and depression, somatic complaints, age and school transitions, problematic emotion regulation, negative thinking, low self-efficacy, and limited problem solving. With regards to school-based characteristics, early signs and risk factors of school refusal could include problematic student-teacher relationships, unpredictability at school, educational difficulties, and limited cooperation between school and home. Finally, characteristics relating to the family could include parental psychopathology, parental over-protection or over-involvement, and unhealthy family functioning (Ingul et al., 2019).

3.6.4: School withdrawal

School withdrawal is a parentally condoned type of school refusal behaviour, where the parent deliberately keeps their child at home and excuses their absence from school (Kearney et al., 2018). Heyne et al. (2019) provide a chronological overview of terms used in existing literature to refer to phrases which are commonly understood as school withdrawal. Examples included withdrawing the child from school (Kahn & Nursten, 1962), voluntary absence with parental assent (Berg et al., 1969),

parent-motivated school withdrawal (Kearney et al., 1996), and parentally condoned absence (Berg, 1997) amongst others. Reasons for school withdrawal can be categorised into family-, and school-based reasons (Heyne et al., 2019). Family reasons for school withdrawal are varied with examples which include providing care and company for family members, looking after younger siblings, helping with housework, reducing a parent's separation anxiety, helping parents financially by carrying out paid work, and parents allowing all their children to stay off school if one is unable to attend. School reasons may include protecting children from school-based threats such as bullying, parents being uninvested in their child's education, and hiding information from school about a child's physical or mental state (Heyne et al., 2019; Kearney et al., 2018).

Reid (2002) explores reasons for school withdrawal by focusing on different types of parents. He groups parents into five categories: anti-education (belligerent), laissez-faire (weak), frustrated (failed), desperate (anxious), and adjusting (vulnerable). These categories describe different types of school withdrawal and parentally condoned absences. He explains that some schools may assume that parents who condone their child's absence are all the same but exploring variations in parental attitudes can help to understand the complexity of this type of absence and ascertain the most effective ways to intervene.

3.7: School exclusion

As opposed to child- or parent-motivated absenteeism, school exclusion can be thought of as school-motivated absenteeism. Heyne et al. (2019) describe school exclusion as a problematic type of absenteeism which stems from school-based decision making on behalf of the student. Exclusions can be permanent or temporary. Temporary exclusions may be internal, where students attend school but not their regular classes, or external, where students are removed from school for a specified period. Good discipline in schools is believed to be important for numerous reasons. For the individual, it may encourage them to make the most of educational opportunities and achieve good educational outcomes. For the wider school population a calm and safe environment where teachers can effectively deal with disruptive behaviour could facilitate children in accessing a high-quality education and encourage them to fulfil their potential (Timpson, 2019). In England, head teachers are supported by the government if they decide to exclude students as a sanction for poor behaviour (DfE, 2017b). The decision to exclude students must be lawful, reasonable and fair and ensure that students have not been discriminated against based on protected characteristics. It is also outlined in policy guidance that schools should carefully consider exclusion in instances where students are vulnerable, for example children with SEN, LAC and disadvantaged pupils. A pupil can be excluded for one or more fixed periods, up to a total of 45 days in one academic year, or on a permanent basis. Permanent exclusion is only warranted as a final course of action where a student has seriously violated school rules or has persistently disobeyed the school's behaviour policy.

Pupils who are fixed-term or fixed-period excluded from school are absent for a specified period of sessions. It can be short, for example, part of the school day, or it could be continuous. Exclusions for the same student from other schools are also included in the 45-day maximum exclusion period in a single academic year. Over recent years the number of fixed-period exclusions across all schools in England has increased. The total number of students excluded in 2018/19 was 438,300 (GOV.UK, 2020a). The rate of fixed-period exclusions are calculated as the total number of fixed-period exclusions divided by the total number of pupils and displayed as an overall percentage. In secondary schools the rate of fixed-period exclusions increased to 10.75 (1,075 per 10,000 pupils) in 2018/19 from the 10.13 in the previous year.

As defined by the DfE permanent exclusion refers to pupils who are excluded from school and will not return to the same school unless the decision is overturned (GOV.UK, 2020a). In the academic year 2018/19 permanent exclusions remained stable at 0.10%. This is calculated as the number of permanent exclusions divided by the number of pupils and presented as a percentage. This equates to 10 per 10,000 pupils in England. The rate of permanent exclusion in state-funded secondary schools in 2018/19 was 0.20% or 20 per 10,000 students, as compared to state-funded primary schools which was 0.02% (or 2 per 10,000 students) in the same academic year.

Gill et al. (2017) report that children excluded from schools are most vulnerable. They are twice as likely to be under state care, four times more likely to live in poverty, seven times more likely to have SEN, and ten times more likely to experience poor mental health. Exclusion from school may be a precursor to exclusion from society (Daniels, 2011). On an individual level, students who have been excluded are believed to be more at risk from social exclusion and educational failure (Smith, 2009). Literature reports that school exclusion has short-term consequences for students' academic attainment and long-term impacts on factors such as anti-social behaviour, criminal involvement, unemployment, poverty and poor mental health (Bagley & Hallam, 2015; Gill et al., 2017; Michail, 2011). The long-term costs of exclusion for the individual, their families and society more widely make lowering rates of school exclusions a priority for raising standards.

Once headteachers and school governors believe it is within the child's best interest to be educated somewhere other than their school, there are various types of exclusion which Gill et al. (2017) categorise as official and unofficial. Official exclusions can be fixed-term or permanent and are officially registered and reported as part of local and central government data collections. Pressure from the British government to reduce exclusions figures, in addition to schools being judged by their capacity to compete with other local schools, perform well in league tables and maintain an outstanding reputation, has led to an increase in unofficial exclusion strategies being implemented in

schools (Bagley et al., 2015). Unofficial exclusions are not recorded in national data collections and may include approaches such as managed moves, offsite Alternative Provision (AP) or illegal exclusions such as off-rolling. The following sections explore different types of unofficial exclusions.

3.7.1: Managed moves

As an alternative to permanent exclusion managed moves are voluntary agreements between schools, parents and pupils which can provide students on the verge of expulsion with a “fresh start” (Welsh Assembly Government [WAG], 2011, p.3). Managed moves can prevent a permanent exclusion from being officially documented on a student’s school record. During a managed move students attend another school that are willing to provide them with access to their curriculum in a classroom setting. Transfers can be beneficial for students who are at risk of permanent exclusion but may succeed in a new environment, pupils who refuse to attend their current school, pupils with behavioural difficulties who have not had positive outcomes from previously implemented strategies, or pupils who feel that attendance at their current school is negatively affecting their emotional wellbeing (WAG, 2011).

There are few evaluations of managed moves but there is limited evidence to suggest they have the potential to be successful where adequate support is offered (Bagley et al., 2015; Vincent, Harris, Thomson & Toalster, 2007). Nevertheless, managed moves do not come without their challenges, such as inter-school tensions, transparency of information communicated between schools, inaccurate diagnosis of individual needs, and negative narratives around young people (Bagley et al., 2015). Furthermore, the difficulties that these moves can have on schools have highlighted inequalities within the English schooling system. In areas of high socio-economic disadvantage where schools are under capacity, they are not able to refuse students who require to be transferred on a managed move by the LA (Power & Taylor, 2020). In these instances, the transfer may not be considered voluntary on behalf of the school. Managed moves are intended to promote social inclusion in schools, which in turn may improve the attendance of those most likely to be excluded from education. Further research is required to understand the impact that managed moves can have on students’ attendance who are most likely to be permanently excluded from school.

3.7.2: Alternative provision (AP)

AP is defined as “education arranged by LAs for pupils who, because of exclusion, illness or other reasons, would not otherwise receive suitable education; education arranged by schools for pupils on a fixed period exclusion; and pupils being directed by off-site provision to improve their behaviour” (DfE, 2013, p.3). AP is a blanket term which incorporates all provision outside of mainstream and special needs schools for children who are unable to attend a mainstream school. AP may be state maintained which incorporates PRUs, AP academies (PRU academy), or AP free schools (PRU alternatives). These establishments offer provision for permanently excluded students but may also

offer provision for fixed-term exclusions or students who require off-site education which is not provided by their mainstream school (Gill et al., 2017). Non-maintained AP can include independent schools, further education colleges, charities, businesses and the public sector (Tate, & Greatbatch, 2017; Taylor, 2012a). These options may become available to LAs if there is insufficient space in local PRUs or provision in local PRUs is poor quality (Gill et al., 2017). Pupils may also be dual registered, attending both their mainstream school and the PRU on a part-time basis. AP offers support to students through a combination of therapeutic teaching approaches, small group teaching, tailoring lessons to individuals' needs and vocational teaching methods (Tate et al., 2017).

In 2020/21 there were approximately 12,800 students recorded as attending PRUs, AP academies and AP free schools, which was a drop from 15,396 in 2019/20 (GOV.UK, 2021a). The total number of PRUs in 2020/21 was 348 in England. In total 72.9% of students attending PRUs were boys and over half (53.1%) were eligible for FSM. There were a further 9,200 students who had dual registration as they were enrolled at a PRU but their main registration was at another school. In total there were 32,436 pupils attending other LA funded AP in England which had increased by nearly 10% from the previous year. Taylor (2012a) the government's advisor on behaviour in schools identifies that the best AP providers address SEMH difficulties, improve attendance and help students to reach their academic potential. Students attending AP are likely to have had poor attendance at school and are known to social services and the police. Anecdotal evidence provided by an AP provider in this report highlighted the potential that APs could have in improving students' attendance if they are successful in meeting the needs of individual pupils.

3.7.3: Off-rolling

Off-rolling is described as the "practice of removing a pupil from the school roll without a formal, permanent exclusion or by encouraging a parent to remove their child from the school roll, when the removal is primarily in the interests of the school rather than the best interests of the pupil" (Ofsted, 2019). This is an illegal form of exclusion as schools are not legally permitted to encourage parents to take their child out of school (Gill et al., 2017). A survey carried out by YouGov (2019), on behalf of Ofsted, explored the opinions of teachers and their experiences of off-rolling in schools. This is an issue which many teachers confidently reported is carried out to fix statistics for the benefit of their school and there are concerns that the practice of off-rolling is increasing. Teachers believe that off-rolling is largely triggered by a requirement to maintain high-standards for Ofsted inspections, sustain a high position in league tables and avoid adding to their schools' exclusion records. Behavioural problems such as persistent disruptive behaviour (68%) were cited as the most common explanations for off-rolling pupils. Poor attendance or prolonged absence (31%) were offered as other reasons. Some teachers also provided anecdotes to suggest that schools were temporarily removing pupils from the school roll during Ofsted inspections to improve school absence data.

Off-rolling is explored in the Timpson (2019) exclusions review and further anecdotal evidence is provided by a parent to highlight that schools may be pressuring parents to remove their child from school in advance of a permanent exclusion by implying that an exclusion on their child's school record would make it difficult to find another school willing to enrol them. In these circumstances, some parents are agreeing to permanent managed moves, moving their child from a mainstream school to AP, and in some cases they are agreeing to home educate their child whilst balancing their own full-time jobs, which is inevitably a task they are unable to perform.

In a recent analysis conducted by Ofsted (Bradbury, 2018), 19,000 (4%) Year 10 students did not progress to Year 11 in the same state-funded secondary school. Many of these pupils were reported to have moved to a different state-funded school, but half did not re-appear in the School Census and their destination remained unknown. Reasons for their disappearance may have included moving to independent schools, such as special schools and AP, or becoming home schooled. It is also possible that these students ended up in unregistered schools or dropping out of education entirely during a critical stage of their education. Children with SEN, eligible for FSM, LAC and some minority ethnic groups are more likely to represent this group of missing students. It is recommended that concerning patterns of school absence are investigated further during Ofsted inspections to ensure schools are accountable for all decisions made concerning fixed-term and permanent exclusions (Timpson, 2019).

3.8: Home education

Whilst school attendance is common for most children in England, it is also possible for young people to be educated at home either part- or full-time. Home education is sometimes referred to as elective home education or home schooling within existing literature (GOV.UK, 2021c). In an educational context the term parent is used to refer to any person who has legal parental responsibilities for a child, which also includes legal guardians and carers (DfE, 2018e). Elective home education describes a choice made by a parent to educate their child at home, or in combination with alternative methods of their choice, instead of sending them to full-time schooling (DfE, 2019g). In some cases, parents may choose to flexi-school their child and register them to receive part of the total school provision. There are no legal requirements which specify what the content of home education should be which means that parents are not required to include specific subjects, teach the National Curriculum, enter children for standardised examinations, follow a typical school day structure, or follow the same academic calendar as schools. LAs can make informal enquiries about what children are learning at home and can serve school attendance orders (see section 3.9.1) if they believe a child should be educated at school.

There is no statutory requirement for home schooled families to register with their LA. Consequently, it is difficult to determine how many students make up the home educated population in England and the quality of the education they receive (Smith & Nelson, 2015). Early research estimated that around 1% of the school population was either full- or part-time educated at home. Smith et al. (2015) report a wide variety of reasons for why home educated families select this option. These included bullying, disaffection with school, school refusal, moving abroad or to the UK, health reasons, SEN, and philosophical or religious reasons.

More recent figures report doubled numbers of pupils leaving school to be educated at home, having seen an increase over the past six years (Staufenberg, 2017). This data was based on a Freedom of Information request whereby 86 of 152 councils provided information. This reflects the uncertainty around accuracy of numbers. Reasons for the rise in home schooling may include dissatisfaction with the school system, greater awareness of home education, receiving a place at a non-preferred school, bullying, child welfare, unresolved difficulties relating to behaviour or attendance, and risk of court action and prosecution for poor school attendance, and avoiding permanent exclusion. In reverse, reasons for a rise in home educated students returning to schools, following a period of home education, could include financial implications, children's needs not being met, or because the LA has ordered them to (Staufenberg, 2017).

Parents can legally choose to educate their child at home, however, in some instances schools may be encouraging parents to home educate their child to avoid a permanent exclusion. This would be an example of off-rolling if the reason provided for parents to home educate their child is to improve outcomes for the school's benefit. Without an official register of children who are being home educated, this is a strategy that some schools may use to hide exclusions data from national statistics (Gill et al., 2017). A recent government consultation asked members of the public to provide their views on matters regarding registration of children who are home educated, monitoring the suitability of parents' home provision, and provision of support for home educating families (DfE, 2019f). There was a lack of consensus about suggestions made by the government to alter the framework for home education in England and the attention this consultation received highlighted that home education is a widely debated topic. The consultation process resulted in a further consultation to explore the possibility of establishing a LA registration system for children who do not attend state-funded or registered independent schools and how to increase support for families.

During a unique period of history 77% of parents reported to home school their children between April and May 2020 due to the coronavirus (COVID-19) pandemic (Williams, Mayhew, Lagou & Welsby, 2020). A timeline of events pertaining to the pandemic are discussed further in section 3.11. During this period only 49% of parents agreed that they were confident in their abilities to educate

their children. Parents reported that their children were commonly using school-provided digital resources that were accessed via online learning platforms but the availability of digital technologies for disadvantaged families was problematic (Cahoon, McGill & Simms, 2021). Experiences of school-assisted online learning are believed to have played a role in a spike in elective home education (Fensham-Smith, 2021). The BBC reported a 75% increase, with 40,000 children, registering for home-education in the UK from September 2020 to April 2021. During this time, every region in the UK saw at least a 50% rise based on data reported by local councils (Hattenstone & Lawrie, 2021). It was identified by the Chief Inspector of Education that students who did not return to school in September 2020 were disproportionately represented by students with “various kinds of problem or need” (Spielman, 2021). The long-term impacts of the recent spike in home educated pupils on students’ educational outcomes is currently unknown and should remain an area for further research in years to come.

3.9: Legal action to enforce school attendance

In England, local councils and schools have various legal powers to ensure students are receiving a suitable education and their parents are acting lawfully. It is possible that councils can issue more than one action at once (GOV.UK, 2022a). Legal action can be enforced through School Attendance Orders (SAO), parenting orders and contracts, Education Supervision Orders (ESO), penalty notices and prosecution.

3.9.1: School Attendance Orders

In England, LAs can issue SAO in cases where they believe school-aged children are not receiving a suitable education, possibly highlighted due to irregular school attendance. This order requires parents to register their child at a named school. Failure to comply with the SAO could lead to the parent being fined or prosecuted (GOV.UK, 2022a). When in receipt of a SAO, parents have 15 days to provide evidence that they have registered their child at a named school or provide evidence that they are registered for home education. If prosecuted, parents may incur a fine of up to £2,500, a community order or a jail sentence up to a period of 3 months. The court will also issue parents with a parenting order.

3.9.2: Education Supervision Orders

ESOs are applied for by the LA prior to prosecuting parents and can be applied for instead of, or as well as, prosecution. The LA are appointed by the court to supervise the child’s education, either at school or home, for a specified period. The latest Parental Responsibilities Measures (DfE, 2020c) suggest that there were 34 ESO reported in the 2018/19 academic year.

3.9.3: Penalty notices

In instances where parents fail in their legal duties to ensure that their child has regular school attendance, LAs and other designated bodies have legal powers to issue penalty notices. These penalty notices are monetary fines which are issued to parents whose children are regularly absent for unauthorised reasons or are late to school (DfE, 2020c). A fine of £120 is owed if the penalty is paid in full within 28 days and it is halved if paid within the first 21 days. If a parent fails to pay the penalty notice within 28 days, LAs can prosecute them in the Magistrates' Court for failing to ensure their child attends school regularly. Receiving a penalty notice requires parents to pay a fixed amount of money in a single transaction to avoid court action.

Prior to issuing parents with a penalty notice it is likely that the school will write to parents and provide them with a warning to explain what the penalties and consequences are for failing to ensure their child attends school on a regular basis. There may be instances where schools issue a fixed penalty notice without warning if leave of absence is taken during term time without permission from the headteacher or other parentally condoned absences. It is written within the law that headteachers may grant absence from school during term time for exceptional circumstances. Prosecution can result in a fine of up to £2,500, a community order or a jail sentence up to 3 months. The court will also issue a parenting order.

DfE (2020c) statistics indicate that there were 333,400 penalty notices issued to parents in the 2018/19 academic year. An increase in issuing penalty notices over recent years may be associated with changes made to regulations in 2013 and media attention focusing on high-profile court cases such as *Isle of Wight v Jon Platt* (see section 3.10). A total of 86% of penalty notices were issued in 2018/19 for unauthorised holidays, 0.3% were issued for lateness and 13% for other unauthorised reasons. Of all penalty notices issued in the same academic year, 76% were paid within 28 days which meant that prosecution was avoided. In total, 10% of penalty notices were withdrawn, 7% resulted in prosecution and 8% remained unresolved at the point of data collection. The region with the highest number of penalty notices issued was Yorkshire and the Humber at 7.2% and the lowest rate was in Inner London at 2.3%. During the COVID-19 pandemic the former Education Secretary Minister Gavin Williamson reported that parents in England who did not send their children back to school following extended periods of national lockdowns would face penalty notice fines (Coughlan, 2020). This may have been perceived as a heavy-handed approach by the government who aimed to encourage all children back into schools following unprecedented times in attendance history. Official parental responsibility measure statistics have not yet been released for academic years impacted by the pandemic.

3.9.4: Parenting orders and contracts

Parenting orders are issued after prosecution by the courts and require the student's legal guardian to attend counselling or guidance classes. Parents must do what the court instructs to improve their child's school attendance. Parenting contracts are voluntary formal written agreements between parents and the school's governing body or LA. A statement is signed by parents who agree to comply with the contract requirements, and a statement is also made by the school or LA agreeing to provide support to parents to ensure they can comply with the contract. In 2018/19 the number of parenting orders were recorded as 117 cases, which was a reduction from the preceding year. In the same year 18,300 parenting contracts were offered and 69% were accepted by parents (DfE, 2020c).

3.10: Prosecution by Local Authorities

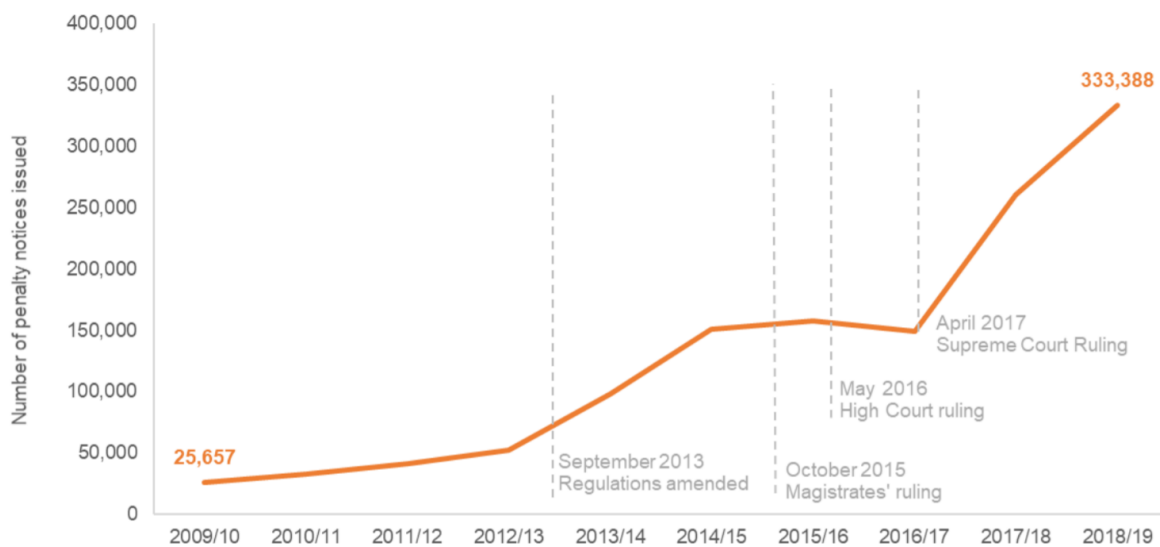
If a child of compulsory school age fails to attend the school at which they are registered regularly, or at an AP as arranged, parents may be guilty of a criminal offence and can be prosecuted by their LA (Education Act, 1996, Section 444[1]). The wording of this legislation has been the focus of various court cases in the UK which have debated what the word "regularly" means with regards to school attendance (Crump v Gilmore [1969] 68 LGR 56; London Borough of Bromley v C [2006] ELR 358; Isle of Wight Council v Platt, 2015).

The most recent high-profile case to catch the attention of the media was Isle of Wight Council v Platt (2015) as this case emphasised the powers that LAs hold to prosecute parents if their child has poor school attendance and they do not pay a penalty notice (Coughlan, 2017). In this case, the Isle of Wight Council brought criminal proceedings in the Magistrate's Court against Jon Platt for taking his six-year-old daughter out of school for a holiday to Florida during term-time. Mr Platt refused to pay the £120 penalty notice for a holiday without the headteacher's approval which caused her to miss seven days of school. At the Magistrate's Court Mr Platt pleaded not guilty to an offence of Section 444(1) as he believed that his daughter still had a good attendance record following the holiday with 90.3% of possible sessions attended. The Magistrates ruled that there was no case to answer as they did not find evidence to suggest Mr Platt's daughter had failed to attend school regularly. The initial outcome was ruled in Mr Platt's favour.

Unsatisfied with the outcome, the Isle of Wight Council appealed to the High Court in May 2016. Justices dismissed the challenge, with a ruling that magistrates had not erred in law when reaching their decision. A further appeal was brought to The Supreme Court by the Isle of Wight Council in April 2017 for a ruling on what was meant by the word "regularly". The Supreme Court debated that the word regularly had three possible meanings: (1) evenly spaced, (2) sufficiently often; or (3) in accordance with the rules. Evenly spaced was rejected as the definition as this could suggest that attendance once per week would be considered regular. For a full-time education, daily attendance is

required by the rules. Sufficiently often was also rejected based on the disruptive impact that sufficiently often attendance would have on a student’s education and the learning of other pupils. As a result, the Supreme Court ruled that in the context of school attendance, the word regularly should mean *in accordance with the rules*. The Supreme Court acknowledged that a penalty notice was issued to Mr Platt and he did not pay it. Having clarified the definition of regular, the Supreme Court ruled that Mr Platt did have a case to answer, unless he was able to establish one of the statutory exceptions. The Supreme Court returned this case to the Isle of Wight Magistrates Court to proceed with the case.

Figure 3.1: *The number of penalty notices issued to address poor attendance*



Note. Extracted from DfE (2020c). *Parental Responsibility Measures in England: 2018 to 2019*, p.1.

In 2013, as reported in Figure 3.1, the Secretary of State for Education Michael Gove tightened restrictions around school attendance by removing headteachers’ powers to grant a leave of absence for up to ten school days during term time (Long & Bolton, 2017). Currently, it is possible for head teachers to authorise absences at their discretion for exceptional circumstances only, which does not include family holidays. The number of penalty notices issued to address poor attendance since 2013 has risen significantly. Penalty notice data is recorded in the Parental Responsibility Measures in England Report for 2018/19 (DfE, 2020c). Despite these changes, the most common reason for penalty notices being issued is still due to unauthorised family holiday absences. There is some speculation that these penalty notices are having less impact on better-off parents who are taking advantage of cheaper holidays during term-times and factoring in the penalty per child into the cost of their holiday (Defty, 2018).

3.11: Pupil absence in English schools during the COVID-19 pandemic

In March 2020 the World Health Organisation declared a global pandemic due to a newly detected strain of coronavirus spreading around the world. The impact of the COVID-19 pandemic has triggered a unique period in global history. Governments and administrations around the world implemented a series of control policies and measures to slow down the transmission of the virus to save lives at a time where a vaccination did not exist. These measures have directly or indirectly impacted all aspects of society causing disruption and affecting citizens' daily lives. Within educational settings, closing schools for the wider student population was a decision the UK government made to limit the number of social contacts within the population and slow down onward transmission of the virus.

A timeline of Coronavirus lockdown periods and government restrictions highlight disruption caused to school attendance for most of the student population across state-funded schools in England. In March 2020, the Prime Minister announced the first lockdown in the UK and instructed individuals to stay at home. It was in the same month that lockdown measures were legally enforced, and the public were ordered to stop non-essential contact and travel. This introduced a sustained period of remote learning and working from home for children and adults with the closure of schools and workplaces across the country. Schools remained open for a select few, including the children of critical key workers and those considered most vulnerable. In June 2020 a phased re-opening of schools in England was announced with key year groups invited to attend. Reception and year groups preparing for important assessments and examinations (Years 1, 6, 10 and 12) were welcomed back into schools. Meanwhile vulnerable students and children of key workers were still expected to attend school. Remote learning was expected to continue for all other National Curriculum year groups until the end of the academic year. From September 2020, all primary and secondary schools in England were instructed to attend school with an updated return-to-school policy outlining the recommended procedures for how to attend school safely. Measures included staggered drop-off and pick-up times, mandatory mask wearing in schools and classrooms, and bubbles to keep children contained within social groups and minimise large-scale contact with others. If one pupil or teacher tested positive for the virus, all students in the bubble were required to self-isolate for 14 days.

Again, in line with rising infection levels and detection of a more transmissible variant of the virus a second national lockdown came into force in November 2020 and continued over the Christmas period. During this time schools were permitted to remain open as there were concerns about the risks associated with further school closures and a range of educational and health outcomes for students. In January 2021 the Prime Minister warned that with further increased cases of infection in England restrictions would become tougher and a third national lockdown was announced. During the third period of lockdown schools were closed to most students, however, vulnerable children and

those with key worker parents were able to attend. All other students were required to continue with remote learning and home schooling, which for the majority required schools to produce online resources to ensure students could learn from home.

Following the government's announcement of a roadmap for exiting the third period of national lockdown in England, schools were permitted to re-open in England from March 2021. On their return, many secondary schools were reported to stagger the start dates for different National Curriculum year groups over the first few weeks of the term to allow for mass virus testing amongst students. During the summer term twice-weekly lateral flow testing at home became an important measure implemented by the government to reduce transmission in secondary schools (DfE, 2021c). Measures such as mask wearing were relaxed in schools from May 2021 and the bubbles policy was removed from September 2021, at the same time as introducing a single-vaccine roll out for 12- to 17-year-olds, to reduce the number of pupils required to self-isolate in the event of a positive case (DfE, 2021e).

During the 2019/20 and 2020/21 academic years school attendance has been a highly reported topic with weekly government statistics published to document the fluctuating infection rates locally and nationally. Additional attendance codes were added to official guidance to account for pandemic-related absences and acknowledge the unprecedented nature of coronavirus-related absences. At the start of the pandemic, the role that children played in the transmission of the virus was widely debated and the effect that closing and reopening schools would have on the reproduction number of the virus was also unknown (Independent SAGE, 2020). In time it became clear that the infection was rapidly growing amongst the school age population potentially due to mild clinical symptoms and asymptomatic infections (Independent SAGE, 2021; Lu et al., 2020; Snape & Viner, 2020). The DfE have reported official attendance figures in all state-funded schools since September 2020 (GOV.UK, 2021b).

In advance of the third national lockdown in January 2021, attendance statistics in December 2020 dropped to their lowest at 76.9% during a period when schools were open to all students. There were considerably higher rates of absence in deprived areas and children living in these areas were identified to be disproportionately more disadvantaged than their peers due to a lack of access to resources to support their learning at home (Children's Commissioner, 2020b). The pandemic has disrupted learning for all students in state-funded schools in academic years 2019/20 and 2020/21. As such, the government agreed to cancel the summer exam series for students in these cohorts and changes were made to the way GCSE grades were awarded to students using teacher assessed grades. A further contingency plan has been put in place for KS4 and KS5 exams to be taken in 2021/22 (DfE, 2021b).

Attendance in schools may continue to fluctuate in line with virus infection rates in local areas, yet there is speculation that overall attendance rates are improving in schools during the 2021/22 academic year. In November 2021, statistics report 99.9% of state-funded schools who responded to the Education settings survey (55% of schools) are open, with 91.5% of students attending. There has also been a reduction in coronavirus related absence outlining that only 1.6% of illnesses reported were relating to COVID-19. A reduction on teacher absences due to virus related reasons has also been noted (GOV.UK, 2021b). The Education Secretary appointed in September 2021, Minister Nadhim Zahawi, announced his pledge not to stand back and allow attendance to fall because of COVID-19, whilst highlighting the importance of attending school on students' education, mental health, wellbeing and development (Turner, 2021). During his time as Education Secretary, he has vowed to tackle persistent pupil absences by understanding the root of the problem and tackling issues head on. He describes persistent pupil absence as a "key priority" as those who are most vulnerable and disadvantaged are less likely to attend school (Morton, 2021).

3.12: Chapter Summary

This chapter is a review of school attendance legislation, policy documents, official statistics, media articles and research literature. It has highlighted that school absence is often the result of a complex mixture of individual, familial and school factors. Interacting determinants can generate different types of problematic school absenteeism amongst children. A variety of predictor variables highlight the need for early identification of patterns and problems, and individualised and tailored strategies to re-integrate students and support their complex needs (Reid, 2002).

CHAPTER FOUR: MINDFULNESS IN EDUCATION

4.1: Introduction

This chapter focuses on the psychological construct of mindfulness and explores research evidence relating to mindfulness-based interventions (MBIs) delivered in educational settings. The chapter begins by exploring two leading conceptualisations of mindfulness to consider how the construct will be defined in this thesis. The next section focuses on mindfulness measures for use with young people. Four scales which are validated for use with young people are discussed to consider their strengths and limitations, and ascertain which scale may provide the most reliable and valid measure of mindfulness in a sample of early adolescents. This is followed by an overview of prior systematic reviews and meta-analyses that have summarised and synthesised existing evidence focusing on the effects of MBIs in school settings with young people. The final section outlines what the Mindfulness in Schools Project (MiSP) “.b” (pronounced dot be) includes, explores existing evidence to ascertain what effects this curriculum may have on student outcomes, and presents a rationale for why .b was selected as an appropriate MBI to evaluate in the proposed study in phase three. The chapter ends with a summary.

4.2: What is mindfulness?

Since the 1970s there have been many attempts to conceptualise, operationalise and practice mindfulness across clinical and non-clinical settings (Chiesa & Malinowski, 2011). Two dominant schools of thought have emerged which approach mindfulness from distinct cultural perspectives. The first was developed by Jon Kabat-Zinn and his colleagues who are inspired by Eastern Buddhist traditions and meditative practices. The second is the work of Ellen Langer and her colleagues who draw upon Western, or “secular”, scientific literature and explore the dual states of mindfulness and mindlessness (Ditrich, 2017, p.3). Langer’s conceptualisation also draws comparisons between mindfulness and creativity. Like academic buoyancy, mindfulness has been linked with aspects of positive psychology theory by highlighting its positive links with increased mental wellbeing and fostering positive emotions such as happiness, optimism and life satisfaction (Fredrickson, 2001). Kabat-Zinn (2015) defines mindfulness as paying attention. It is “the awareness that emerges through paying attention on purpose, in the present moment, and non-judgementally” (Kabat-Zinn, 2003, p.145). This approach draws upon Eastern Buddhist philosophy and traditions around meditation and applies the key concepts to develop mindfulness practices. Historically, in Buddhism the term mindfulness is translated from the Pāli word *sati* which means paying attention and remembering (Burnett, 2009). Hart, Ivztan and Hart (2013) refer to Kabat-Zinn’s conceptualisation of the construct as “meditative-mindfulness” (p.2). He developed a meditation-based clinical intervention called Mindfulness Based Stress-Reduction (MBSR) which was inspired by Buddhist meditation retreats. Originally designed as an eight-week training programme for adults, this course was created to assist

with symptoms of chronic pain for patients who were not responding to traditional treatments. MBSR encourages daily practice of mindful meditation to develop self-regulation skills to relieve psychological and physical conditions.

Studies which adopt Kabat-Zinn's conceptualisation can support the idea that mindfulness is a psychological construct which may help to promote healthier self-regulation. It may also be associated with improved functioning across a range of psychological health and wellbeing outcomes (Baer, Smith, Hopkins, Krietemeyer & Toney, 2006; Dunning et al., 2019; Kristeller, 2019). Meditative practices may induce a cognitive "mindful mode" which describe a type of mindfulness which is cultivated intentionally and is sometimes referred to as *deliberate mindfulness* (Hart et al., 2013, p.11). When mindfulness spontaneously arises, which may happen the more it is practiced and intentionally cultivated, it may be referred to as *effortless mindfulness*.

The second conceptualisation of mindfulness derives from Western scientific literature and takes a socio-cognitive approach to mindfulness (Pirson, Langer, Bodner & Zilcha, 2012). It is defined as "a mindset of openness to novelty in which the individual actively constructs novel categories and distinctions" (Langer, 1989; Pirson et al., 2012, p.3). In other words, "Langerian mindfulness" requires the individual to actively engage in the present moment, notice new things and remain sensitive to their environment (Bercovitz, Pagnini, Phillips & Langer, 2017, p.194).

Langer describes mindfulness as a cognitive state which is distinct from Buddhist traditions of mindful meditation. This conceptualisation of the mindful condition enables an individual to view objects and situations from different perspectives and encourages them to shift their perceptions based on the context. Accepting Langer's definition of mindfulness, Bercovitz et al. (2017) report that a person is mindful when they realise that everything is "constantly changing, even subtly, and adapts accordingly" (p.194). Langer's (1989) operational definition of mindfulness refers to four interrelated dimensions (1) seeking novelty, (2) engagement, (3) producing novelty, and (4) flexibility. This means that an individual is aware of the changes taking place, is sensitive and open to their environment, constructs new meaning and adapts to multiple perspectives. Creativity is considered a central component of Langerian mindfulness as, like mindfulness, it is directly related to cognitive flexibility, novelty producing and seeking, and openness (Pirson et al., 2012).

Hart et al. (2013) propose that Langer's version of mindfulness should be called "creative-mindfulness" as some of the key features overlap with concepts such as creativity and creative problem-solving (p.2). Mindfulness describes a state of mind which includes flexibility, engagement, openness and creativity (Pirson et al., 2012). This could be considered as the ability to contemplate multiple perspectives and shift flexibly between them and may be aligned with the creativity construct

which requires individuals to consider novel solutions for problem-solving and think flexibly (Bercovitz et al., 2017). In Langer's model, creativity is an important component of mindfulness as it involves openness to novel situations, cognitive flexibility, modifying actions and reflecting on external and contextual situations.

There are a growing number of mindfulness-based interventions (MBIs) in schools which reflect a multitude of different conceptual and operational definitions of mindfulness that exist. Evidence from systematic reviews suggest that many MBIs in schools are adopting and adapting core components of adult MBSR and Mindfulness-Based Cognitive Therapy (MBCT) courses (Maynard et al., 2017; Zenner, Herrnleben-Kurz & Walach, 2014; Zoogman, Goldberg, Hoyt & Miller, 2014). MBCT is an 8-week training course which was created to help individuals with depression and prevent them from relapsing (Segal, Williams and Teasdale, 2001). It is based on Kabat-Zinn's MBSR training and uses cognitive techniques to disrupt patterns of rumination by helping the individual to notice that they are just thoughts (Zoogman et al., 2014). Mindfulness practices also vary within different MBIs since there is not one conclusive definition of mindfulness. Mindful practices are sometimes described as *formal* and may include sitting meditations, body scan exercises, yoga and mindful movement, or *informal* practices which aim to bring mindful presence to daily life (Holopainen, 2019). With many MBIs in schools adopting and adapting the works of Jon Kabat-Zinn and colleagues, the Eastern Buddhist tradition school of thought and Kabat-Zinn's aforementioned definition of mindfulness will underpin this thesis.

4.3: How is mindfulness measured in young people?

Over recent years several mindfulness measures have been created to quantify the level of mindfulness that is self-reported by adults. Some examples of commonly used self-report mindfulness questionnaires originally developed for adult samples include:

- The Freiburg Mindfulness Inventory (Buchheld, Grossman & Walach, 2001);
- The Mindful Attention Awareness Scale ([MAAS] Brown & Ryan, 2003);
- The Kentucky Inventory of Mindfulness Skills ([KIMS] Baer, Smith & Allen, 2004);
- The Five-Facet Mindfulness Questionnaire (Baer et al., 2006);
- The Cognitive and Affective Mindfulness Scale – Revised (Feldman, Hayes, Kumar, Greeson & Laurenceau, 2007);
- The Philadelphia Mindfulness Scale (Cardaciotto, Herbert, Forman, Morita & Farrow, 2008);
- The Southampton Mindfulness Questionnaire (Chadwick et al., 2008);
- The Toronto Mindfulness Scale (Davis, Lau & Cairns, 2009); and

- The Comprehensive Inventory of Mindfulness Experiences ([CHIME] Bergomi, Tschacher & Kupper, 2014)

Each scale utilises self-reported methods to assess one or more skills that are often described as features of mindfulness such as observing present-moment experiences, being aware of current actions and acting non-judgmentally towards experiences such as cognitions, emotions and sensations in the body (Greco, Baer & Smith, 2011). Within existing research literature distinctions are also made between trait and state mindfulness, which has presented challenges for operationalising mindfulness. Trait mindfulness describes a stable and dispositional mindfulness quality, whilst state mindfulness refers to the capacity of an individual to nurture a state of mindfulness through meditative practice (Goodman, Madni & Semple, 2017). Some scales, such as the MAAS have been adapted to assess both trait and state mindfulness (Brown et al., 2003; Lawlor, Schonert-Reichl, Gadermann & Zumbo, 2014).

As interest in the potential physical and psychological benefits of mindfulness has grown, the application of interventions across clinical and non-clinical samples has also increased to test mindfulness amongst samples of varying ages and within different settings. This has seen interventions applied in health centres, schools and universities (Hart et al., 2013). With an increase in MBIs amongst samples of young people there is a need for reliable and valid self-report measurements, in addition to objective measurements, to assess mindfulness amongst a younger population. Within existing literature, there is limited evidence of interventions with young people that test mindfulness directly with some studies relying on measuring indirect outcomes of mindfulness instead (Goodman et al., 2017). Where mindfulness is measured directly, it has been noted that robust measures of mindfulness in children and adolescents are lacking (de Bruin, Zijlstra & Bögels, 2014). Scales with poor reliability and validity make it challenging to understand the direct effects that MBIs can have on students' mindfulness and inhibit the overall rigour of mindfulness research with young people.

Some measurement scales originally created for use with adult samples have been further developed to be used with samples of young people. This section discusses four measurement scales which have been identified in existing published research, which measures mindfulness in samples of children and adolescents. As a rapidly developing area of research, it is feasible to assume that there may be further scales and measurements in existence and undergoing development at present. The three scales discussed in this chapter have been selected as they have published validation studies to support their use with samples of children and adolescents. They are also commonly cited within existing research literature.

4.3.1: Child and Adolescents Mindfulness Measure

Greco et al. (2011) created the Child and Adolescent Mindfulness Measure (CAMM) to measure mindfulness in young people. CAMM has been adapted from the adult KIMS self-report scale and is stated to be compatible with contemporary interventions such as Dialectical Behaviour Therapy (DBT; Linehan, 1993), MBSR and MBCT (Baer et al., 2004; Goodman et al., 2017). Items on the CAMM are adapted from the KIMS taking three facets of mindfulness from this scale. The CAMM includes items relating to observing, acting with awareness and accepting without judgement. Observing describes the degree to which individuals notice internal thoughts, feelings and bodily sensations. Acting with awareness describes an individual's awareness of the present-moment and how engaged they are with a current activity. Accepting without judgement describes an individual's ability to demonstrate their awareness and openness to enhance a full range of internal events. The KIMS scale also includes "describing" as the fourth aspect of mindfulness, but this factor is not included in the CAMM as it requires individuals to verbalise their experiences (Baer et al., 2004). CAMM is targeted at young people between the ages of 10 and 17. A young person's ability to describe an internal phenomenon is likely to be highly variable by age with a wide range of cognitive and verbal capabilities and ongoing language development within the population of young people (Greco et al., 2011). Following their work, a further scale was dropped because of developmental comprehension concerns. Johnson, Burke, Brinkman and Wade (2017b) describe a tension that exists within mindfulness literature about developing a measurement instrument for children which is age appropriate and easily comprehensible, whilst also complex enough to detect the construct as it is conceptually defined.

The CAMM scale includes 10 items to measure "present-moment awareness, and non-judgemental, nonavoidant responses to thoughts and feelings" (Greco et al., 2011, p.610). It aims to measure individuals' awareness of the present moment by rating how true each item is to them using a 5-point Likert scale from 0=never true to 4=always true. Each item on the scale is negatively worded and is reverse scored. This means that higher scores on the CAMM indicate a higher level of mindfulness. The items on this scale were adapted from the KIMS (Baer et al., 2004) which was developed for adults and three of the four facets of mindfulness from the original scale were included within the CAMM: observing, acting with awareness and accepting without judgement. Describing, the fourth facet of the KIMS, was not adapted for the CAMM due to the varying cognitive and verbal capabilities of children (Goodman et al., 2017). The items on the CAMM include:

1. "I get upset with myself for having feelings that don't make sense."
2. "At school, I walk from class to class without noticing what I'm doing."
3. "I keep myself busy so I don't notice my thoughts or feelings."
4. "I tell myself that I shouldn't feel the way I'm feeling."

5. “I push away thoughts that I don’t like.”
6. “It’s hard for me to pay attention to only one thing at a time.”
7. “I get upset with myself for having certain thoughts.”
8. “I think about things that have happened in the past instead of thinking about things that are happening right now.”
9. “I think that some of my feelings are bad and that I shouldn’t have them.”
10. “I stop myself from having feelings that I don’t like.”

In a validation study by Greco et al. (2011) the CAMM was tested with children and adolescents in schools in the USA ($n=319$). The scale showed good internal reliability ($\alpha=0.81$) in this study. The CAMM also demonstrated evidence of validity showing correlations with favourable outcomes such as quality of life and academic competence and was distinct from outcomes such as internalising symptoms and externalising behavioural problems. Another validation study undertaken by de Bruin et al. (2014) tested the CAMM in samples of Dutch children ($n=275$; internal reliability $\alpha=0.71$) and adolescents ($n=560$; internal reliability $\alpha=0.80$). The internal consistency of the scale was higher for adolescents aged 13 to 16 years old. It was highlighted in this study that adolescents who have prior experience of practising meditation and yoga may score lower on the scale than those who have not had any prior experience, but this finding was not consistent for children. Nevertheless, establishing prior experience with meditation should be carefully considered for those who use CAMM in an adolescent sample. The CAMM has also been validated with adolescents in Spain ($n=696$) between the ages of 11 and 16. Again, the scale demonstrated good internal reliability ($\alpha=0.80$). This scale has been validated across various populations internationally and in non-clinical settings such as schools.

Greco et al. (2011) highlight a further concern about the CAMM scale is that the items are reverse scored. Previous research has suggested that items which are indirectly worded may not measure the same construct as items that are directly worded. The MAAS created by Brown et al. (2003) assessed how reverse scoring impacted the validity of their scale when tested with adults. They found that their scale had higher validity when negatively worded than positively worded. Based on this study, three of the scales developed for children discussed in this section take an indirect approach to wording scale items.

4.3.2: Mindfulness Attention Awareness Scale for Adolescents

The MAAS (Brown et al., 2003) was initially designed for measuring mindfulness in adults from normative and clinical populations. The Mindfulness Attention Awareness Scale for Adolescents (MAAS-A) is a 14-item Likert scale designed and validated to be used by adolescents from 14 to 18 years old (Brown, West, Loverich & Biegel, 2011).

The MAAS-A includes items such as:

1. "I could be experiencing some emotion and not be conscious of it until some time later."
2. "I break or spill things because of carelessness, not paying attention, or thinking of something else."
3. "I find it difficult to stay focused on what is happening in the present."
4. "I tend to walk quickly to get where I'm going without paying attention to what I experience along the way."
5. "I tend not to notice feelings of physical tension or discomfort until they really grab my attention."
6. "I forget a person's name almost as soon as I have been told it for the first time."
7. "It seems I am "running on automatic", without much awareness of what I am doing."
8. "I rush through activities without being really attentive to them."
9. "I get so focused on the goal I want to achieve I lose touch with what I am doing right now to get there."
10. "I do jobs or tasks automatically, without being aware of what I am doing."
11. "I find myself listening to someone with 1 ear, doing something else at the same time."
12. "I find myself preoccupied with the future or the past."
13. "I find myself doing things without paying attention."
14. "I snack without being aware that I am eating."

The scale conceptualises mindfulness as "a receptive state of attention that, informed by awareness of present experience, simply observes what is taking place" (Brown et al., 2003; Brown et al., 2011, p.1024). The MAAS-A also accentuates the component of being present in the moment, another quality which features across descriptions of mindfulness within existing literature. The scale also defines mindfulness as a unidimensional construct which can be measured using one scale. To adapt the original MAAS scale, Brown et al. (2011) kept 14 items and removed one statement which asks individuals to reflect on their experiences of driving to places on automatic pilot. The items are answered on a six-point scale from 1=almost always to 6=almost never. A high score on this scale indicates high trait mindfulness. In Brown et al. (2011) study the MAAS-A demonstrated high internal reliability (sample A $\alpha=0.82$, sample B $\alpha=0.84$) in a non-clinical sample of adolescents ($n=595$) between the ages of 14 and 18. It has also demonstrated higher internal reliability ($\alpha=0.86$) in a smaller clinical sample of adolescents with anxiety and mood disorders ($n=102$) between 14 and 18 (Brown et al., 2011). The original MAAS (Brown et al., 2003) adopted an indirect approach to measuring mindfulness as the creators found that this approach was more accessible for individuals who had not experienced mindfulness training before and demonstrated a higher criterion validity than a direct assessment approach. This means that the scale evaluates the absence of mindful attention across different scenarios.

The MAAS-A has correlated positively with the CAMM suggesting this scale may show evidence of construct validity. On the contrary, the original MAAS scale has been criticised for its indirect assessment approach and assessing individuals on their inattentiveness, which questions the scale's construct validity. There has been some concern that the MAAS scale measures lapses of attention and experiences of general inattentiveness, as opposed to the positive qualities associated with mindfulness (Grossman & Van Dam, 2011; Van Dam, Earleywine & Borders, 2010). As the MAAS-A takes 14 of the original items from the MAAS, it is possible that these limitations also apply within adolescent samples. De Bruin, Zijlstra, Van de Weijer-Bergsma and Bögels (2011) highlighted that prior meditation experience was correlated with lower scores on the MAAS-A. It could be argued that individuals with prior meditation experience may be more aware of mind wandering and lapses in attention and the indirect wording on the MAAS-A suggest individuals are more mindful as opposed to having greater insight and awareness. Goodman et al. (2017) warn that researchers should be cautious when administering the MAAS-A in samples where some students, but not others, have had prior meditation or yoga experience.

4.3.3: Mindfulness Attention Awareness Scale for Children

The MAAS was further developed for use with younger samples of children and is known as The Mindful Attention Awareness Scale for Children (MAAS-C; Lawlor et al., 2014). The language used to describe items on the MAAS-C is age appropriate for children that are 9 to 13 years old. Items are measured on a six-point Likert scale from 1=almost never to 6=almost always. Like the MAAS-A all items are indirectly worded and are reverse scored. This means that a higher score on the MAAS-C indicates a higher level of trait mindfulness. The MAAS-C includes the same 14 items as the MAAS-A with one additional item, "I walk into a room, and then wonder why I went there". A study by Lawlor et al. (2014) validated the scale with a sample of school children ($n=286$) which showed high internal reliability ($\alpha=0.84$). As the MAAS-C uses the same theoretical foundations as the MAAS and MAAS-A it poses similar limitations as previously discussed, particularly in relation to content and construct validity concerns (Grossman et al., 2011).

4.3.4: Comprehensive Inventory of Mindfulness Experiences for Adolescents

Johnson et al. (2017b) carried out a series of studies which tested the adult CHIME scale in four early adolescent samples. The first study tested how well the CHIME was understood by young people ($n=292$). The second study piloted a child-friendly version of the CHIME which adapted the language used for adolescents ($n=48$). Studies three, four and five tested the CHIME-A, a refined and child-friendly version of the CHIME, in further samples of adolescents. The CHIME-A is a multi-factor mindfulness measure which has been developed and validated for early adolescents. It has 25-items which cover an eight-factor model of mindfulness. Validated factors and subscales of mindfulness include awareness of internal experiences, awareness of external experiences, acting with

awareness, accepting and non-judgemental orientation, decentering and non-reactivity, openness to experience, relativity of thoughts and insightful understanding. Johnson et al. (2017b) acknowledge that many MBIs and mindfulness measures developed for children derive from adult interventions. In developing a multi-factor scale, this presents a challenge as there is limited understanding about how mindfulness interacts with developmental changes. Only 25 of the original 37 items on the adult CHIME were supported in an adolescent sample. Nevertheless, the original eight factors on the adult CHIME were present at the early adolescents' stage of neurocognitive development. Including factors which the authors predicted may have been challenging for this age group such as insightful understanding. Whilst the CHIME-A may provide a multi-dimensional measure of mindfulness there is still further work required to develop this scale further to understand how the eight factors interact with students at different stages of neurocognitive development. Single-factor measures such as the CAMM and the MASS-A may be considered more appropriate where a shortened version of the scale is required to lower the overall burden on students and an overall mindfulness score is the desired measurement. Johnson et al. (2017b) support that when single-factor scales are used, the core domains of mindfulness measured by these scales should be reported for clarity, for example, acting with awareness and non-judging.

Existing research has highlighted several limitations relating to existing measures of mindfulness which are important considerations for future research. For example, de Bruin et al. (2014) insists individuals should be cautious when measuring mindfulness as Westernised conceptualisations deviates from the original Buddhist traditions and conceptualisations of mindfulness. A lack of consistency about how to define mindfulness conceptually and operationally is also a current limitation of the existing literature as it is possible to score highly on one scale and differently on another. Core concepts such as awareness and attention may be experienced differently by individuals who have prior experience with meditation, in comparison to somebody who has not. Whilst these studies have provided some initial evidence of how effectively mindfulness can be measured in students, there is still further work to be done to improve the quality of research in this area.

The CAMM will be utilised to measure mindfulness in phase three of this thesis. As the project will measure mindfulness in early adolescents aged 13 and 14 the CAMM is believed to be more appropriate than the MAAS-A and MAAS-C based on the age groups for which they have been designed. As there is a cross-over between the MAAS-A and MAAS-C scales for 13- and 14-year-olds it was not clear which scale should be utilised with a sample of early adolescents, specifically Year 9 students in English schools who are on the cusp of the intended audience for both MAAS scales. As students' levels of academic buoyancy will also be measured during the RCT using the 4-item ABS, the 10-items on the CAMM scale is also considered to be less of a burden on students and

the time taken to answer both scales is likely to be slightly reduced. Existing research has highlighted that the CAMM has been tested internationally across non-clinical samples of students based in school settings. When used in these contexts' studies have shown that the scale has good internal reliability ($\alpha=0.71$ to 0.81). Furthermore, this scale was designed to be compatible with contemporary interventions and was created with MBSR training in mind. The MiSP curriculum which will be tested in phase three of this research is an adaptation of the adult MBSR training for children and therefore, items on this scale align with the intended programme outcomes for students.

As with the MAAS-A and MAAS-C, the CAMM scale faces many of the same challenges which should be clearly acknowledged. For example, indirect wording of items on the CAMM and reverse scoring are a potential limitation. Arguments have been presented for and against reverse scoring and this is an area for further research with samples of young people. It is possible that students who have engaged with previous meditative practice may have higher awareness of thoughts, feelings and bodily sensations. Previous experience will be assessed in students and explored in the analysis in the RCT in phase three of this thesis to understand how prior engagement with meditation could be interacting with student's self-reported levels of mindfulness.

The CAMM, MAAS-A, MAAS-C and CHIME-A have been adapted from scales originally designed for use with adults. Aside from re-wording items to be age appropriate, it appears that little attention has been paid to the developmental and neurological changes that occur during different life stages and how they interact with mindfulness and its core components such as active awareness. Further research is required to understand how these differences impact the way that mindfulness is experienced and expressed by individuals across different age groups. It is possible that a new scale, as opposed to a revised scale originally designed for adults, which recognises the developmental and cognitive changes in young people would be a more reliable and valid measure of mindfulness than those which currently exist. When treating trait mindfulness as a single dimension, the CAMM scale provides a reliable measure of mindfulness in adolescents. The CAMM scale does have limitations which are recognised, and further research should aim to address these ongoing challenges. When treating trait mindfulness as a multi-faceted construct there is currently a lack of measures with sufficient validity to support the use of scales such as the CHIME-A in samples of adolescents (Pallozzi, Wertheim, Paxton & Ong, 2017). Further research is required to create a robust measure of mindfulness for use with adolescents before researchers can be confident that the effects seen in MBIs have been measured correctly.

4.4: Mindfulness-based interventions in schools

This section provides an overview of several systematic reviews and meta-analyses published since 2009 which have analysed, summarised and synthesised evidence relating to mindfulness-based

interventions (MBIs) with young people in school settings. Over the last decade, the number of MBIs implemented in schools has increased significantly with the marketing of numerous curriculums designed to be delivered in classrooms. MBIs such as *MindUP*, *Learning to BREATHE*, and the *MiSP .b* differ in their underlying theories, content, dosage, and evidence of effectiveness (Klingbeil et al., 2017). It is well documented that the enthusiasm for implementing mindfulness-based approaches in young people has been generated by research with adults and discovering the benefits that this population have observed across clinical and non-clinical settings. Maynard et al. (2017) conclude that young people may not benefit to the same extent as adults or in the same ways.

The reviews included in this section specifically focus on mindfulness interventions delivered in schools. There have been other systematic reviews focusing on the effects of MBI on youth, but these have focused on a broader range of settings (Klingbeil et al., 2017; Meiklejohn et al., 2012). To refine existing and create new MBIs in schools, which could have the potential to positively impact psychological and educational outcomes in young people, it is beneficial to understand the effects that MBIs have already demonstrated in children and adolescents (Zenner et al., 2014). It is also advantageous to ascertain which outcome measures have responded to MBIs and which sub-groups of students may benefit from training of this kind in schools (Zoogman et al., 2015). Systematic reviews and meta-analyses are reported chronologically to summarise how evidence relating to the effects of MBIs in youth has progressed over time. Table 4.1 provides an overview of study characteristics. This section will end with a discussion about the limitations of existing MBIs, many of which continue to present challenges for researchers.

Early narrative reviews by Black, Milam and Sussman (2009) and Burke (2010) summarised emerging literature on MBIs with children and adolescents. Black et al.'s (2009) review focused on the effectiveness of sitting-meditation interventions in young people in schools, clinical and community settings. They focused specifically on mindful meditations in a variety of forms such as transcendental meditation (TM), MBSR and MBCT. The concentration practice of TM includes sitting upright with closed eyes and silently repeating a mantra when thoughts occur. The individual meditates for 20 minutes in the morning and 20 minutes in the evening (Transcendental Meditation, 2004). Medium effect sizes were reported on physiological, psycho-social, and behavioural conditions amongst youth. Nevertheless, the samples utilised in the included studies primarily consisted of youth with pre-existing conditions such as high blood pressure, ADHD, learning disabilities and behavioural conduct problems. With the similar nature of studies included within this review in mind, the application of findings to the wider student population are limited.

Table 4.1: Characteristics of systematic reviews and meta-analyses focusing on MBIs in schools

Authors (Year)	SR/MA	Objective	Study N	P/U	Design type	Sample	Outcome measures	ES	General Findings
Black, Milam & Sussman (2009)	SR	Impact of sitting-meditations in youth.	16	P	RCT PP No control	6 to 18 <i>n</i> =860	Physiological Psychosocial Behaviour		“Because of current limitations, carefully constructed research is needed to advance our understanding of sitting meditation and its future use as an effective treatment modality among younger populations.” (p.532)
Burke (2010)	SR	Impact of mindful-meditation MBIs in youth.	15	P U	PP between PP within Observational Few with controls or random assignment	4 to 19 <i>n</i> =620	No attempt to categorise domains. Examples: anxiety, attention, compliance, depression, externalising, internalising, executive function, sleep quality, social skills, weight etc.		“No generalized empirical evidence of the efficacy of these interventions.” (p.133)
Zenner, Herrleben-Kurz & Walach (2014)	SR MA	Impact of MBIs on psychological outcomes for students.	24	P U	RCT QE Two-armed cohort study	5 to 19 <i>n</i> =1348	Cognitive performance Stress and coping Factors of resilience Emotional problems Third-person ratings	0.80 0.39 0.36 0.19 0.25 Hedge’s <i>g</i>	“Mindfulness-based interventions in children and youths hold promise, particularly in relation to improving cognitive performance and resilience to stress.” (p.14) Should be treated with caution.
Zoogman, Goldberg, Hoyt & Miller (2015)	MA	Impact of mindfulness meditation on youth and identify which sub-groups and populations could	20	P	RCT Treat. only OCT	≤ 18 at initial assessment <i>n</i> =1914	Psychological symptoms General functioning Mindfulness	<i>del</i> = 0.23 Becker’s <i>del</i>	“A significantly larger effect size was found on psychological symptoms compared to other dependent variable types (0.37 vs. 0.21, <i>p</i> = .028), and for

		benefit most from MBIs.							studies drawn from clinical samples compared to non-clinical sample (0.50 vs. 0.20, $p = .024$).” (p.290)
Felver, Celis-de Hoyos, Tezanos & Singh (2016)	SR	To identify research limitations and inform the direction of future research around MBIs.	28	P	RCT QE multiple-baseline single-subject	6 to 18 $n=3414$			Caution required when interpreting the evidence that supports benefits of MBIs in school settings.
Maynard, Solis, Miller & Brendel (2017)	SR MA	To examine the effectiveness of MBIs in schools on students’ cognition, behaviour, socio-emotional outcomes and academic achievement in pre-school, primary and secondary school students.	61 SR 35 MA	P U	RCTs QE Single group PP Single subject	12.64 $n=6207$	Cognitive Socio-emotional Behaviour Academic	$g = 0.25$ $g = 0.22$ $g = 0.14$ $g = 0.27$ Hedge’s g	MBIs may be effective in improving cognitive and socio-emotional outcomes, but this review did not find evidence to support their ability to improve behaviour or academic achievement.
Dunning, Griffiths, Kuyken, Crane, Foulkes, Parker & Dalgleish (2019)	MA	To establish the efficacy of MBIs for children and adolescents that have adopted an RCT design.	33	P U	RCT	≤ 18 years $n=3666$	Executive functioning Depression Negative behaviours Mindfulness Attention Anxiety/stress Social behaviour All measures	$d = 0.30$ $d = 0.27$ $d = 0.27$ $d = 0.24$ $d = 0.19$ $d = 0.16$ $d = 0.16$ $d = 0.19$ Cohen’s d	MBIs might impact some aspects of cognition (executive functioning), behaviour (negative behaviour) and emotional outcomes (depression) in young people.
Carsley, Khoury & Heath (2018)	MA	To explore the effectiveness of mindfulness interventions in	24	P		6 to 18 $n=3977$	Mental health Wellbeing	$g = 0.24$ Hedge’s g	MBIs may be helpful for improving mental health outcomes in students, demonstrating small to

		schools for mental health outcomes.							medium effects for treatment groups when compared to control groups. MBIs were most effective on mental health and wellbeing outcomes for late adolescent students and least effective for early adolescents.
McKeering & Hwang (2019)	SR	Impact of MBIs on the mental health and well-being of early adolescent students.	13	P	RCT QE Mixed-methods	11 to 14 <i>n</i> =2277	Positive Mental health (optimism, coping, self-compassion & emotion regulation) Negative Mental health (anxiety, depression & stress) Physiological Cognitive functioning Home practice Parental involvement		MBIs are better suited as a preventative measure to decrease negative mental traits when used with early adolescent school-aged students, than as a reactive measure to improve positive mental traits in students between the ages of 11 and 14 years old.
Segal, Vyas & Monson (2021)	SR	To review the effectiveness of MBIs delivered in low-income schools on psychological functioning	7	P	RCT PP	6 to 18 <i>n</i> =780 Low SES	Psychological functioning (internalising or externalising symptoms)		The impact of MBIs on psychological outcomes was inconsistent for students from low-income schools but some improvements were reported for externalising and internalising symptoms, emotional regulation, and perceived stress.

Key: SR systematic review; MA meta-analysis; P published; U unpublished; RCT randomised controlled trial; QE quasi-experimental; PP pre-/post- test;

OCT open controlled trial (no randomisation); ES effect size

Burke (2010) also focused on mindful meditation practices but included MBSR and MBCT models only. This review concluded that there was no generalisable empirical evidence about the efficacy of mindful meditation interventions for the wider student population. Burke focuses on the methodological issues that prevent generalisable conclusions being made. She encouraged researchers to focus on large, well-designed studies with robust methodologies and standardised interventions which would allow for replication and comparison studies to be carried out.

Zenner et al.'s (2014) systematic review and meta-analysis synthesises evidence regarding the effects of school-based mindfulness interventions on psychological outcomes for students. Based on their prior knowledge of MBI outcomes for adults, they grouped ES into four domains: cognitive performance, stress and coping, factors of resilience, and emotional problems which were all measured by self-report scales. They found that MBIs with young people showed some promise, particularly in relation to improving cognitive performance ($g=0.80$), stress ($g=0.39$) and resilience ($g=0.36$). These three overriding categories of cognitive performance, stress and resilience are potentially misleading as each category represented a wide range of constructs and components within them. For example, within the factors of resilience category, there were only two studies (Hennelly, 2011; Huppert & Johnson, 2010) reported to measure resilience directly using the Ego-Resiliency Scale (ERS; Block & Kremen, 1996) and the Warwick-Edinburgh Mental Well-being scale (WEMWBS; Tennant et al., 2007). Other studies measured constructs that were not resilience. There were smaller effects for emotional problems ($g=0.19$) and third-person ratings ($g=0.25$). Some studies also used scales which were not validated for use with young people. This review concluded that the precise role of MBIs on psychological outcomes in young people remained unknown as the extent to which effects could be attributable to non-specific intervention factors remained undetermined.

Zoogman et al. (2015) analysed literature on mindfulness meditation with youth to identify which sub-groups would benefit from mindfulness interventions. The dependent variables measured across included studies ranged from psychological symptoms, such as anxiety and depression, to measures of general functioning, such as social skills and quality of life, as well as components of mindfulness, such as attention. To compute comparable ES for the eight studies without an active control group, the authors utilised Becker's *del* (1988) to assign an active control ES. *Del* is described as a measure of pre- and post- ES between groups, which in this instance was mindfulness interventions and alternative active treatments. Zoogman et al. (2015) state their rationale for utilising Becker's *del* was to include studies in their analysis which lacked a control group. The overall ES is reported as $del=0.23$, which indicates that the MBIs included in this review might have had a greater effect on outcomes when compared to other active control comparison conditions. In this review, clinical samples demonstrated higher effects over non-clinical samples and measures of psychological symptoms showed higher effects over other dependent variables. Based on these moderators,

mindfulness interventions may be more effective when aimed at clinical samples who are demonstrating psychological symptoms. The reviewers consider the possibility that clinical samples by nature may have the potential to show greater improvements if they begin with a more severe baseline.

Maynard et al.'s (2017) meta-analysis examined the effectiveness of MBIs on students' cognition, behaviour, socio-emotional outcomes and academic achievement in pre-school, primary and secondary school students. In this study, cognitive outcomes included measures such as executive function, memory, cognition or attention. Academic performance outcomes included measures like standardised achievement tests, measures of content mastery, reading or grades. Behavioural outcomes included disciplinary referrals, externalising behaviours, time on task, compliance and school attendance. Socio-emotional outcomes included measures of anxiety, stress, engagement, social skills, self-esteem, emotion regulation, grit, and internalising behaviours. Physiological outcomes included measures such as cortisol, heart rate and brain activity. Meta-analytic findings from 35 studies indicated small effects on cognitive outcomes ($g=0.25$) and socio-emotional outcomes ($g=0.22$), behaviour outcomes ($g=0.14$) and academic outcomes ($g=0.27$). Due to a moderate to high risk of bias and a moderate to low quality of evidence findings should be interpreted with caution and the widespread adoption of MBIs for young people in school settings should be subjected to further rigorous testing and evaluation.

Dunning et al. (2019) reported that many of the existing systematic reviews and meta-analysis focusing on MBIs in young people demonstrate considerable overlap relating to the studies they include, yet the ES they report are different. The authors exclusively evaluated RCTs either with passive or active conditions. They hypothesised in MBIs with active control groups, the mindfulness treatment would demonstrate greater effects over the active control arm for their specified outcomes. With 33 RCTs included in the meta-analysis, MBIs demonstrated improvements in measures of executive functioning ($d=0.30$), depression ($d=0.27$), and negative behaviours ($d=0.27$), relative to control conditions. In this study ES were determined using Cohen's d (1977) calculations. When RCTs with active controls were included in the analysis only, MBIs demonstrated improvements in measures of mindfulness ($d=0.42$), depression ($d=0.13$), and anxiety/stress ($d=0.07$), relative to control conditions. The overall ES reported by Dunning et al. (2019) for all RCTs is $g=0.19$, which is smaller than is reported by previous meta-analyses (Maynard et al., 2017; Zenner et al., 2014; Zoogman et al., 2015). The reviewers suggest that the inclusion of study designs which did not utilise randomisation procedures or control groups may have inflated previous ES estimates.

More recently, reviewers have turned their attention to understanding the effects of interventions in schools for sub-groups of students. Carsley, Khoury & Heath (2018) published a meta-analysis of 24

studies to explore the effectiveness of mindfulness interventions in schools for mental health outcomes. They concluded that MBIs may be helpful for improving mental health outcomes in students, demonstrating small to medium effects for treatment groups when compared to control groups ($g=0.24$). Their review examined whether individual differences such as age had the potential to impact effectiveness and students' response to mindfulness training. Within- and between-group analyses demonstrated that studies conducted with late adolescents (ages 15 to 18; within-group $g=0.28$; between-group $g=0.35$) revealed effects when compared to middle childhood (ages 6 to 10; within-group $g=0.20$; between-group $g=0.22$). In comparison, studies conducted with early adolescence (ages 11 to 14) were not as effective for within- ($g=0.11$) or between-group ($g=0.30$) analyses. The reviewers suggest that MBIs with a focus on improving mental health or well-being outcomes were least effective for students during early adolescents. It is interesting to consider how changes occurring during the early adolescent developmental period could have impacted their ability to focus their attention and engage with complex cognitive processes which are required for MBIs to work successfully.

McKeering et al. (2019) suggest that differences in students' development of self-concept and neurocognitive maturity may influence the effects of MBIs for early adolescents. This review also conducted an analysis of effects based on gender, however, the review only included mixed gender and female-only studies which revealed similar effects on mental health and well-being outcomes for both groups at the post-test stage. Due to the absence of male-only studies, the meaningful conclusions that can be drawn from this analysis are limited.

McKeering et al. (2019) systematically reviewed MBIs in schools with early adolescent students to explore outcomes on health and well-being. Across 13 papers included in the review, emotional well-being was the most targeted intervention outcome for early adolescents. It appeared that MBIs were more effective in decreasing negative mental traits, such as anxiety, than improving positive mental traits. The results of this review may suggest that MBIs are better suited as a preventative measure to decrease negative mental traits when used with early adolescent school-aged students, rather than a reactive measure to improve positive mental traits in students between the ages of 11 and 14 years old. Students reported anecdotal evidence of decreases in stress and anxiety and increases in concentration. McKeering et al. (2019) conclude that whilst MBIs could have the potential to benefit some early adolescent students, they do not appear to be a suitable intervention choice for all students. This supports the findings of Zoogman et al. (2015) who found larger effects for clinical samples than non-clinical samples.

Segal, Vyas and Monson (2021) published a systematic review of literature to summarise the effectiveness of MBIs administered in low-income schools. They support the idea that children from

lower socio-economic status backgrounds are at greater risk of poverty, stress and poor psychological functioning, and consequently MBIs may offer a fitting intervention to improve the psychological outcomes of underprivileged young people. Psychological outcomes were measured differently across seven studies and the reviewers concluded that the impact of MBIs on psychological outcomes was inconsistent. They identified some evidence of improvements for externalising symptoms, such as attention, and internalising symptoms, such as anxiety and depression. There was also some evidence of improvements in emotion regulation and perceived stress. However, findings were not consistent between studies with varying designs. The two studies which measured changes in mindfulness (Sibinga et al., 2013; Sibinga, Webb, Ghazarian & Ellen, 2016) did not see a change in this outcome measure following the intervention when compared to the active control groups. This could indicate that mindfulness as a construct is difficult to capture via self-report scales, which supports an existing critique of the literature (Grossman, 2011).

Early systematic reviews and meta-analyses published by Black et al. (2009), Burke (2010), Zenner et al. (2014), Zoogman et al. (2015) and Maynard et al. (2016) were conducted during the emerging stages of MBI research with young people. As a consequence, there is considerable overlap with the studies that they include within their reviews and this has resulted in frequent repetition of the limitations that early MBIs studies report. Felver, Celis-de Hoyos, Tezanos and Singh (2016) contributed a systematic review of MBIs for youth in school settings to identify these research limitations and inform the direction of future research around MBIs. Their rationale for publishing this review was to avoid further studies that would not contribute to the advancement of MBIs in school settings. They state that caution is required when interpreting the evidence base which supports the benefits of MBIs in school settings (Greenberg & Harris, 2012).

The quality of MBI studies in school settings vary substantially. Maynard et al. (2017) report a moderate to high risk of bias in the studies they included within their review and a moderate to low quality of evidence. There are fundamental issues regularly discussed within existing MBIs in relation to their research designs and methodologies. In many examples, MBIs with young people have recruited small sample sizes. For example, Burke (2010) included a study in their review that included one participant. Whilst this highlights an extreme example, small sample sizes are a limitation across all reviews. Whilst some MBIs have explored effects within small clinical samples, their ability to make generalisations beyond the individuals involved and outside of the intervention context is limited. Furthermore, early MBIs reported a distinct lack of studies which used random allocation. Dunning et al. (2019) was the only review that exclusively included RCT design studies in their meta-analysis. There are also many MBIs which did not utilise comparison groups. Absence of comparison groups and lack of random allocation are noted as primary limitations across numerous reviews. Many studies also utilised self-report measures across a wide range of outcomes. Felver et

al. (2016) highlight the lack of objective data as a major limitation within existing MBI literature. Teacher, parent and multiple informant reports may be more beneficial than student self-reports for measuring educational outcomes such as student attainment and behaviour.

Regarding intervention characteristics, MBI studies with young people covered a wide variety of intervention types. Some reviews focused exclusively on interventions where mindfulness was the primary component and included elements of MBSR and MBCT. Others included multi-component interventions where mindfulness was included as one element of the intervention such as Acceptance and Commitment Therapy (ACT; Hayes, Luoma, Bond, Masuda & Lillis, 2006) and DBT. Black et al. (2009) also included studies with concentration-based components such as TM. There were many examples provided of mindfulness-based activities included within programmes such as breath awareness, working with thoughts and emotions, psychoeducation, awareness of senses, group discussion, body-scans, home practice, kindness practice, body practices like yoga, mindful movement, and other additional components (Zenner et al., 2014). It is possible that a lack of consensus about how to conceptually define mindfulness influences perceptions about what MBIs ought to include. Another methodological limitation of included MBIs was the addition of home practice and the lack of experimental control that this introduced into the research design. MBIs that included elements of home practice were believed to lower the acceptability of these interventions. Segal et al. (2021) commented on the low adherence to at-home practice within some studies where issues of feasibility and acceptability were reported. Zenner et al. (2014) also list factors such as voluntary participation, scheduling, administration, late arrivals and children's lack of enthusiasm as further barriers to the successful implementation of MBIs.

In general, MBI methods are poorly documented, and a limited number of papers report on their implementation integrity. Felver et al. (2016) state that the lack of detail in the reporting of MBI studies is problematic. Many studies fail to report their methods clearly and others also fail to report simple student characteristics such as SES or SEN. This information is crucial for understanding how interventions are designed and administered for replication purposes. In Zenner et al.'s (2014) review the majority of MBIs had existed for less than five years and the exploratory nature of MBIs in schools meant that many researchers were implementing novel and ad hoc programmes without handbooks. Maynard et al. (2019) explore the number of interventions which were fully manualised or partially manualised in their study. Almost half were partially manualised and 14% of studies did not provide any information to determine either way.

A further methodological limitation relates to the individuals who are responsible for delivering the programmes as they often demonstrate a range of experience with mindfulness training and personal practice. Some MBIs were delivered by classroom teachers, others by experts and outside trainers

and some were delivered by a mixture of both. Carsley et al.'s (2018) review found that studies facilitated by a trained teacher had a small effect on students' mental health and well-being outcomes when compared to those delivered by outside facilitators at the end of the intervention. These results may imply that the type of facilitator could have an impact on the outcomes of MBIs in school settings (McKeering et al., 2019). Furthermore, intervention durations, number of sessions and frequency of meetings varied considerably. Maynard et al. (2017) included studies which ranged from 4 to 28 weeks, from 6 to 125 sessions and meetings ranged from once every two weeks to five times per week. Depending on the MBIs included in the reviews the ranges varied but all reviews reported similar findings. These differences have continued to spark discussion amongst reviewers, however, McKeering et al. (2019) claim that intervention dosage may not be as important as other design elements for impacting the effects seen on mental health and wellbeing outcomes.

Whilst the enthusiasm for implementing MBIs with youth has originated from successful outcomes with adult samples, it is recognised that mindfulness may be experienced differently by children and it may not benefit them in the same ways (Maynard et al., 2017). Overall, MBIs may not be suitable for all young people across the wider student population (McKeering et al., 2019; Zoogman et al., 2015). In samples of early adolescents, MBIs may be best implemented as preventative measures for decreasing negative mental traits, such as anxiety, rather than reactive interventions for improving positive mental traits. Not all reviews included studies with clinical samples, and few reported on the characteristics of "special populations" (Maynard et al., 2017, p.36). Zoogman et al. (2015) provided limited evidence to support the idea that clinical samples may see larger effects than non-clinical and normative samples in school settings. Further research is required to investigate if MBIs in school settings could provide preventative strategies for students with certain types of SEN.

Psychological outcomes were the most tested dependent variables across all the studies included in these reviews. There is some early evidence to suggest that mindfulness could benefit psychological outcomes in students. From these review studies, it appears that MBIs may be operating as hypothesised to directly target and improve psychological processes which in turn may impact distal outcomes such as socio-emotional processes, mental health and wellbeing outcomes (Dunning et al., 2019; Maynard et al., 2017). Nevertheless, there are constant reminders in existing literature about the limited quality of evidence relating to MBIs with young people in school settings. This is due to persistent design and methodological limitations and lack of attention to detail in the reporting of studies. Whilst enthusiasm for MBIs in school settings continues to grow, further robust and reliable research is required, which draws on the strengths and limitations of existing research literature. Whilst existing literature provides valuable insight and a baseline from which researchers can improve, higher quality research is required to progress this area of study and report with confidence the effects that MBIs in schools might have on a range of outcomes in young people.

4.5: Mindfulness in Schools Project (MiSP)

4.5.1: MiSP “.b” curriculum

The .b curriculum is short for *Stop, Breathe and Be*. It is a psycho-educational 10-lesson MBI purposely designed to be delivered to secondary age students aged 11 to 18 [<https://mindfulnessinschools.org/teach-dot-b/dot-b-curriculum/>]. The curriculum draws strongly on Williams and Penman’s (2011) practical guide which is inspired by elements of the MBSR adult training course, but this school curriculum has been adapted to include a range of age-appropriate teaching methods, shortened formal mindfulness exercises for adolescents, and informal practices to bringing mindfulness into students’ daily life (Holopainen, 2019; Sanger & Dorjee, 2016). Lessons are designed to be delivered between 40 to 60 minutes on a weekly basis. Prior to teaching the .b curriculum, prospective teachers must attend an 8-week MBSR course or equivalent, successfully complete a four-day intensive teacher training course and commit to continued personal mindfulness practice (Norton & Griffith, 2020). The programme developers also recommend that course facilitators are fully qualified classroom practitioners or individuals who can work alongside qualified practitioners to assist with classroom management.

The .b curriculum is intended as a beginner’s course to mindfulness delivering lessons which focus on core concepts like attention and awareness. This course is based on the theory of secular mindfulness and is informed by a scientific framework rather than spiritual Buddhist traditions (Burnett, 2009; Langer et al., 2021). Table 4.2 provides an overview of the curriculum outlining the themes and key practices explored in each lesson. The .b curriculum is highly structured and fully manualised. Each session is supported by PowerPoint presentations, a booklet of teacher’s notes with examples of scripted activities, animations and audio clips, and a booklet of student worksheets including home practice activities (Crane et al., 2020).

Table 4.2: Summary of 10-week .b curriculum lesson objectives and activities

Lesson Theme	Activities
Introduction to mindfulness	<ul style="list-style-type: none"> • “.b” (stop, breathe and be) practice • Anchoring attention and focusing on breathing
Playing attention	<ul style="list-style-type: none"> • Body scan • Directing attention around the body • Breath counting
Taming the animal mind	<ul style="list-style-type: none"> • Anchoring attention in the lower body • “Feet on floor and bum on chair”, a seated body scan and breath awareness exercise • Fostering an attitude of curiosity, kindness, acceptance, and openness
Recognising worry	<ul style="list-style-type: none"> • Identifying signs of ruminating and catastrophising • The 7/11 breathing exercise • Learning the “beditation”, a lying down body scan and relaxation practice to help with sleep
Being here now	<ul style="list-style-type: none"> • Learning how to be present • Understanding automatic and reflective modes of functioning • Learning how to respond to emotions rather than react • The mindful mouth exercise – tasting food items to explore their physical and mental experiences (anticipation, tasting and eating)
Moving mindfully	<ul style="list-style-type: none"> • Learning about mindful movement • Learning how to be in the present moment during movement
Stepping back	<ul style="list-style-type: none"> • Understanding how to ‘step back’ when thoughts become difficult or overwhelming
Befriending the difficult	<ul style="list-style-type: none"> • Learning how to manage strong emotions
Taking in the good	<ul style="list-style-type: none"> • Learning about gratitude
Pulling it all together	<ul style="list-style-type: none"> • An overview of the lessons, skills and techniques learned on the course

4.5.2: Research evidence

There is a growing evidence base which explores the impact of the .b curriculum on a wide range of outcome measures. In recent years there has been an increase in the number of unpublished master’s and doctoral dissertations which have evaluated .b in secondary schools (De Voy, 2019; Hailwood, 2020; Hennelly, 2011; Holopainen, 2019; Kempson, 2012). The quality of existing .b evaluation studies vary, and their limitations often mirror the same MBI research design and methodology challenges as discussed in the previous section. This section will exclusively report the findings of RCT studies to evaluate the .b curriculum. Studies which are often cited, some of which are linked to the programme developers, are excluded (Hennelly, 2011; Huppert et al., 2010; Kempson, 2012; Kuyken et al., 2013). Whilst several of these studies compared treatment and control groups, their lack of random allocation is a primary limitation of the research and the reporting of results, where small effects were identified, should be treated with caution. This section aims to summarise several

published and unpublished RCT studies to explore the effects that the .b curriculum has had on educational outcomes in young people.

Johnson, Burke, Brinkman and Wade (2016) conducted a cluster RCT across four participating secondary schools in Australia. The sample consisted of adolescent students ($n=308$) with a mean age of 13.63. Measurements were taken before the intervention, immediately after and 11 weeks later at the end of the school year. Classes were randomised to their condition but attrition was especially high in this study. There was 29% attrition in the control group and 21% attrition in the intervention group prior to the intervention starting. The control group lost a further 15.9% and the intervention group lost a further 16.5% before the follow-up measures. The .b curriculum was taught by an outside facilitator and condensed into eight lessons to finish at the end of the school term. Students were also encouraged to practice outside of school lessons and were provided with a homework manual. Primary outcome measures included anxiety and depression (DASS-21; Lovibond & Lovibond, 1995), weight and shape concerns (EDE-Q subscales; Fairburn & Beglin, 1994), and wellbeing (WEMWBS; Tennant et al., 2007). Secondary outcome measures included mindfulness (CAMM; Greco et al., 2011), emotion dysregulation (DERS; Gratz & Roemer, 2004), and self-compassion (SCS; Neff, 2003) and home practice. Follow up questionnaires about the course's acceptability were distributed to students and teachers and post-hoc interviews were also undertaken. The researchers found no improvements in any of the outcome variables post-intervention or at three-month follow-up, despite high acceptability of the programme amongst students and teachers. They also found an increased awareness of students' emotional states and increases in negative affect measures (anxiety and depression) following the intervention. The research team discuss the possibility that the CAMM single factor youth measure of mindfulness was not sufficient to detect complex changes in adolescents. Adherence to the manualised programme was also highlighted as a limitation as changes were made such as condensing the number of lessons to remain in keeping with the school's calendar. The same authors undertook a second study to improve these limitations.

The second RCT by Johnson et al. (2017a) taught the full nine lesson curriculum across three groups. Groups either received their usual curriculum ($n=178$), the .b curriculum ($n=186$) or the .b curriculum with additional parental involvement ($n=191$). Parents in the parental involvement arm attended an introductory meeting and once a week received an email with a link to a ten-minute YouTube video which summarised the key points of the lesson, guided parents through an activity, explained the child's home practices for the week and invited email feedback and questions. Attendance at the pre-intervention meeting and return rates for the post-course feedback forms were low, especially from the lowest socio-economic group. Parental involvement was measured by the number of hits on the YouTube channel per lesson, interpreting one hit as one parent engaging with the content. Using this

measurement, parental involvement started high at approximately 40% and dropped to 9% by the end of the programme.

Measures were taken three to four weeks before the intervention, post-intervention and twice again six- and 12-months after the intervention. Primary outcome measures included depression and anxiety (DASS-21), weight and shape concerns (EDE-Q) and wellbeing (WEMWBS) to replicate measures in the first RCT. This time the researchers used their own CHIME-A to measure mindfulness, which is validated for use with young adolescents (Johnson et al., 2016; 2017b). Secondary measures also included fidelity to the .b curriculum based on an adaptation of the Mindfulness Based Interventions Teaching Assessment Criteria (MBI-TAC; Crane et al., 2012), homework practice, course acceptability and parent feedback. This RCT was designed to ensure tighter adherence to the curriculum and additional measures were added to increase student dosage between lessons with involvement from parents and classroom teachers. Despite their efforts to increase the rigour of this RCT, there were no improvements on any outcome measure post-intervention or during the 12-month follow up period. There were no differences between mindfulness groups with and without parental involvement on any outcome variable. From the 12 outcome variables, “acting with awareness” was the only outcome variable where an effect was found.

Holopainen (2019) also carried out a cluster RCT in Finnish schools with students aged 12 to 15 as part of the larger Healthy Learning Mind project (Volanen et al., 2020). Overall, there were 56 randomly selected schools, 209 classes and 3519 students who participated in the project. Schools were randomly allocated to the .b MBI ($n=1,646$), a relaxation-control intervention ($n=1,488$) or a non-treatment group ($n=385$) and the classes were clustered. The Strengths and Difficulties Questionnaire (SDQ; Goodman, 2001; Goodman Meltzer & Bayley, 1998) was answered by students (self-rated) and parents (informant-rated) in each trial arm to measure emotional and behavioural problems, pro-social behaviour and overall psychological wellbeing. The author concludes that within the mindfulness group there was some evidence to support that .b training may be effective to decrease attention problems, emotional symptoms, problem behaviour and enhance pro-social behaviour. However, the study did not find any differences between the three groups in a change of students’ psychological wellbeing from baseline to post-intervention or follow-up. More research is needed to gain insight into the effectiveness of .b training which can lead to specific outcomes and to identify the mechanisms behind possible well-being improvements.

De Voy (2019) carried out three RCTs with Year 10 students to explore the effect of .b on a range of psychological and academic outcomes. In each study the experimental group received the .b mindfulness training and the two active controls either received a study skills intervention or a

progressive muscle relaxation intervention. Study one was carried out in a co-educational school. The results of the first study found that exposing students ($n=49$) to the .b mindfulness training resulted in a very small increase in levels of mindfulness ($p=0.02$) but did not indicate differences in levels of well-being, resilience or academic performance. Study two was delivered in an all-female school. In a scaled-up version of the first study, they found that exposing students ($n=150$) to mindfulness training, did not result in any changes to levels of mindfulness ($p=0.88$). They also revealed that children who were exposed to the .b intervention did not score higher on psychological outcomes or measures of academic performance. The final study was conducted in a co-educational school with a higher-than-average number of students with SEN. This study revealed that exposing students ($n=17$) to .b training did not result in any changes to levels of mindfulness ($p=0.16$). They did not score differently to the control groups on measures of psychological function, academic performance or attention. Across the three studies they conclude that the .b curriculum did not impact levels of well-being, resilience, anxiety, attention or overall academic performance. They conclude that the .b nine-week intervention did not impact children's levels of mindfulness in an "educationally meaningful way" (p.200). There are limitations outlined in the study relating to its design and methodology, for example, their use of the CAMS-R scale which was originally designed for use with adults with mental health issues and is not validated for use with children.

Finally, a cluster RCT undertaken by Volanen et al. (2020) was undertaken with young people from Finland ($n=3,519$) aged between 12 and 15 years and from 56 schools. This data was also collected as part of the Healthy Learning Mind project (Holopainen, 2019). Schools were randomly assigned to either the .b intervention group ($n=94$ classes), an active control group ($n=85$ classes) to receive a relaxation programme, or the inactive control group ($n=31$ classes) to continue with learning as usual. In the intervention group the percentage of attrition was higher for pre-intervention and follow-up outcome measurements, in comparison to the active and inactive control groups. The outcomes measured included the Resilience scale (RS14; Wagnild & Young, 1993), the Beck Depression Inventory (RBDI; Beck, Steer & Garbin, 1988) and the Strengths and Difficulties Questionnaire (SDQ; Goodman et al., 1998) to measure the socio-emotional functioning. The study focuses on the impact of MBIs on components relating to student wellbeing.

Their results showed slight positive effects in the .b mindfulness group in comparison to the relaxation active control on completion of the intervention. Positive intervention effects also occurred for 7th grade students (12- and 13-year-olds) in socio-emotional functioning in the mindfulness group compared to the relaxation active control group. The authors conclude that the .b mindfulness practice may be effective in improving resilience in adolescents. This short 9-week MBI implemented in schools once per week demonstrated slight mental well-being benefits for early adolescents. Volanen et al. (2020) recommend future trials should invest in a process evaluation to

obtain information about the most optimal ways to adapt and deliver the .b curriculum in school contexts.

To summarise, these RCT studies have showed some early evidence to suggest the .b curriculum could have positive impacts on outcome measures such as attention, awareness, problem behaviour, socio-emotional functioning, enhancing pro-social behaviours, mindfulness and resilience. Studies to date have shown no effect on outcomes including anxiety and depression, weight and shape concerns, emotion dysregulation and compassion. The extent to which these outcome variables were measured with valid and reliable instruments is a potential area for further research. The effects seen on students' mindfulness have not always been consistent (DeVoy, 2019). In a sample with a high proportion of students with SEN this curriculum did not have an impact on students' mindfulness outcomes. This suggests that there may be some differentiation required to tailor the .b resources and delivery of the curriculum to be inclusive and supportive of children with SEN. There were a range of ages included within these studies, but adolescents aged 12 to 15 have been the primary focus of the .b RCT studies conducted so far.

Likewise, there have been a range of measures used to capture mindfulness within these studies ranging from scales validated for use with children such as CAMM and CHIME-A, to the CAMS-R scale which is validated for use with adults. Identifying or creating a valid measure of mindfulness which closely aligns with the curriculum's aims is crucial to ensure the reporting of results are not biased. The range of measures utilised in existing studies are highlighted as limitations of the research. Whilst there has been some conscious effort to implement studies with robust randomised designs, research design and methodology issues remain with studies like Johnson et al. (2017a) replicating their original study to adhere more closely to the curriculum's handbook as it is intended to be delivered. There are some very early indications to suggest that the .b curriculum might be an appropriate intervention for improving student wellbeing, mindfulness and resilience, but further robust evaluation work is still required.

4.5.3: Rationale

This section presents a rationale for why .b was selected as the curriculum to test in phase three of this thesis. First and foremost, an annual Impact Report states that since 2009, 6,003 practitioners have been trained to deliver the flagship mindfulness curricula that MiSP have created (MiSP, 2020). They state that 3,959 practitioners have trained to teach the .b curriculum to secondary aged students and 2,044 have received training to teach the *paws b* curriculum to primary aged students. The charity is also in the process of creating and developing new curricula and projects such as the *.breathe, dots* and *Mindfulness in Alternative Provision* to further their reach and offer training courses to more practitioners. To date there is limited evidence to support the effectiveness of the .b curriculum in secondary age students based on studies which utilise RCT designs (De Voy, 2019; Holopainen,

2019; Johnson et al., 2016, 2017a; Volanen et al., 2020). Nevertheless, Volanen et al., (2020) have alluded to the .b curriculum's potential to increase mental well-being benefits for early adolescents, even if the effects they saw were small. Many of the RCTs which evaluate the .b have discussed the limitations of their research and Johnson et al. (2017a) question if the right "recipe" has been achieved due to several design and methodological factors that could be responsible for previous null results. It has been suggested that the mechanism of mindfulness in adults and adolescents may differ due to neurocognitive development. As the .b curriculum is an adaptation of the adult MBSR programme further modification may still be required to ensure that the curriculum is age-appropriate for secondary age students (Holopainen, 2019). Other factors such as adherence to the manualised curriculum, intervention dosage and the role of home practice also require improvement (Johnson et al., 2016, 2017a). Maynard et al. (2017) urge caution in the enthusiasm for, and widespread adoption of, school based MBIs for youth where the interest exceeds the evidence base. It can be argued that there is still further work to be done to evaluate this curriculum with robust research designs and methodologies that ensure high levels of experimental control are maintained whilst working within the limits and practicalities of field research in educational settings.

Maynard et al. (2017) support that little is known about the direct costs of delivering MBIs in school settings and urge practitioners to consider whether the costs of implementing these interventions are justified. It is crucial for researchers, school practitioners, policy makers and stakeholders to assess reliable and valid evidence to understand the effects that MBIs like .b can have on student outcomes to make informed decisions about important academic, curricular and budgetary decisions. Maynard et al. (2017) support the notion that if psycho-educational interventions like .b can have positive effects on a range of outcomes then they may be considered a valuable use of academic time and limited school resources to implement them during the school day. There is a need for further robust evaluation of .b if the evidence base is ever going to be able to support the current overstated levels of enthusiasm for teaching this curriculum in schools.

This curriculum has been purposefully designed for students aged 11 to 18 with adolescents in mind. The lessons are designed to be fully accessible to students across the secondary age phase and accommodate their levels of maturity for understanding core concepts of mindfulness. As a fully manualised curriculum, teachers who pass the necessary training are granted access to a centralised online hub which stores a large bank of resources to support each lesson. The inclusivity of the course is an added strength as they provide additional resources for students with SEN to support their needs. The .b curriculum was created by teachers, for teachers, with the UK education system as the primary inspiration and focus.

Whilst the RCT is presented as a research proposal in this thesis, accessible UK-based training opportunities were important factors in deciding which MBI to select as I embarked on my mindfulness journey without any prior training. I completed the MiSP .begin course online, an adaptation of the 8-week MBSR programme, and I attended the .b training in-person over four days in London. From an ethical perspective, achieving certification for attending mindfulness courses was deemed helpful to aid discussions with Head Teachers in schools and demonstrate that the programme was accredited. As a qualified teacher in the secondary age phase, the courses' pre-requisites to engage with the training had already been achieved. Finally, .b was considered an affordable option to deliver in schools as there would be no budgetary costs incurred by schools for participating in and receiving this intervention.

4.6: Chapter summary

This chapter provides an overview of how mindfulness will be defined and measured moving forward in this thesis. With many MBIs in schools modifying adult MBSR and MBCT courses to be delivered to young people, the works of Kabat-Zinn and his colleagues will underpin the conceptual understanding of mindfulness in this thesis. Mindfulness will be defined as, “the awareness that emerges through paying attention on purpose, in the present moment, and non-judgementally” (Kabat-Zinn, 2003, p.145). Furthermore, evidence suggests that the CAMM scale provides a reliable measure of mindfulness in young people and is validated for use with adolescents. Whilst there is some evidence to support its use with adolescents, its limitations are also acknowledged. Existing literature highlights several strengths and limitations of existing MBIs in schools with young people which will influence how the RCT will be designed in phase three. The content of the .b MiSP curriculum is described in detail and existing research evidence that has evaluated the effects of .b on student outcomes is explored. There is one RCT study to date which has identified a small effect on students' resilience at the end of the .b intervention, however, there were no consistent effects of resilience, socio-emotional functioning or depressive symptoms. A rationale is provided for evaluating the .b curriculum further in a proposed RCT for further research.

CHAPTER FIVE: DESIGNS AND METHODS

5.1: Introduction

This chapter outlines the designs and methods applied at each stage of the PhD research. Research designs and methods are fully described throughout to enhance the transparency and replicability of the research process (Hedges, 2012). There is a description of the research questions and methods which underpin each stage.

5.2: Research designs

As previously described in chapter one, this thesis is divided into three stages to answer the overriding research question, can improving the academic buoyancy of secondary school students improve their school attendance? Each stage of this research project is partitioned by different research designs and methods to generate robust evidence and answer the underlying research questions in each phase “as unambiguously as possible” (De Vaus, 2001, p.9).

Stage one is a systematic review of the academic buoyancy construct which systematically searches for, selects, and synthesises existing research evidence on academic buoyancy, whilst adhering to a design founded on “accountable, replicable, updatable and sustainable” methods (Newman & Dickinson, 2012, p.141). A systematic review was considered the most appropriate design to summarise and synthesise how academic buoyancy has been defined and measured across existing research literature. It also provides an original contribution to the field of research as the first review of its kind to systematically assess the quality of newly emerging intervention research and evaluate its trustworthiness. Alongside understanding how academic buoyancy is defined and measured, this review establishes whether the construct is malleable and identifies a promising intervention for improving academic buoyancy in secondary school students. A systematic review was selected to minimise bias, promote rational evidence-based decision making and improve the accuracy of recommendations for future research (Mulrow, 1994).

Stage two implements a longitudinal cohort design and uses secondary data analysis methods to “re-analyse data [from the NPD] that has already been gathered or compiled” for another primary purpose to answer, “new research questions with old data” (Dale, Arber & Procter, 1988, p.3; Glass, 1976, p.3). All questions to be answered in this section have been carefully considered to select the most appropriate design and analysis methods to answer each one. One carefully selected cohort is the focus of this analysis with access to data across each National Curriculum year during their time in compulsory schooling.

Finally, stage three presents a research proposal for a cluster RCT, to test the relationship between mindfulness, academic buoyancy and school attendance. This RCT is designed to explore whether a mindfulness-based intervention (MBI) could lead to measurable changes in levels of academic buoyancy and school attendance for those who participated in the programme, on average (Connolly, Biggart, Miller, O'Hare & Thurston, 2017). Due to unforeseen circumstances emerging from the COVID-19 Pandemic and intervals of long-term closures across secondary schools in England, over two academic years, the proposed RCT was paused following the recruitment stage.

5.3: A systematic review of studies exploring the academic buoyancy construct

A systematic review was selected as the most appropriate design to identify, appraise and synthesise all relevant literature on the academic buoyancy construct and provide an objective and comprehensive summary of available evidence (Mulrow, 1994; Petticrew & Roberts, 2006; Torgerson, 2003). A scoping review rapidly synthesised existing academic buoyancy literature and identified that this review is the first of its kind to be undertaken in this topic area.

This systematic review aims to provide researchers, educational practitioners and policy makers with a non-biased, accessible summary of existing evidence to establish how academic buoyancy is defined and measured. It will also assess what is currently known about the construct to make evidence-based and evidence-informed decisions about whether academic buoyancy is malleable to intervention. Finally, it will identify promising directions for future academic buoyancy research.

To ensure this systematic review was undertaken rigorously, items from the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement were followed (Moher, Liberati, Tetzlaff, Altman & The PRISMA Group, 2009). PRISMA is an evidence-based checklist of the minimum recommended items for rigorous reporting of systematic reviews and is particularly relevant in the reporting of intervention evaluations. To minimise bias in the conduct of the review, inclusion and exclusion criteria were predefined in a protocol. This protocol was created *a priori* to identify how all stages of the systematic review would be conducted, from search strategy to synthesis, to minimise potential bias at each stage of the review.

5.3.1: Systematic review research questions

This systematic review answered four research questions:

1. How is academic buoyancy defined?
2. How is academic buoyancy measured?
3. Is academic buoyancy malleable?
4. What is the evidence from existing RCTs of a promising intervention for improving academic buoyancy?

5.3.2: Protocol

A protocol was developed *a priori* to ensure that the review explicitly stated its rationale and outlines the pre-planned methodological and analytical approach, as well as the inclusion and exclusion criteria (Appendix A). The protocol was drafted using the Preferred Reporting Items for Systematic Reviews and Meta-analysis Protocols (Moher et al., 2015).

5.3.3: Search strategy

An electronic literature search of eight electronic databases was conducted by the first reviewer on 12/02/2022. Databases included:

- EBSCOhost:
 - British Education Index
 - Educational Resource Information Centre (ERIC)
 - Education Abstracts
 - Educational Administration Abstracts
 - APA PsychInfo
 - APA PsychArticles
- Web of Science
- Scopus

The search strategy was built around two groups of key words: the construct (“academic* buoyan*” OR “educat* buoyan*” OR “daily resilien*” OR “everyday resilien*”) AND setting (academic* OR school* OR college OR universit* OR educat* OR schola* OR pedagog* OR pupil OR student OR learn*). Key words were limited to full text. Boolean operators were used to logically combine search terms with the purpose of narrowing and broadening the search as appropriate. Quotations were used to locate exact phrases and asterisks truncation symbols were used to account for related words (for example, buoyan*, buoyancy, buoyant, etc.). The same search strategy was used to locate potentially relevant studies for all four research questions.

5.3.4: Inclusion and exclusion criteria

The focus of the search was to identify papers which included academic buoyancy. Studies were included with all research designs, across all age phases and in all academic settings. Ensuring studies were undertaken in academic settings was specified to help to identify buoyancy in the appropriate context. Published and unpublished texts in the public domain were included if they had been written between 1998 and 2022 to minimise the potential for publication bias. A scoping search had previously identified an academic buoyancy text published in 2008 and, therefore, a wider boundary of 1998 was set to explore if any development work had been published in advance.

Studies that focused on teachers or parents, or anybody other than the learner, were excluded. Studies that did not take place in academic settings, such as youth centres, were excluded. Finally, papers which pre-dated 1998 were excluded.

The screening criteria used to answer research questions one and two were broad and inclusive to ensure that any mention of academic buoyancy was captured by the search strategy and retained by the inclusion criteria. Papers identified as eligible for inclusion to answer research questions three and four were narrower in scope and used RCT designs only. RCT design studies that had been delivered in academic settings to any age phase were included. Papers with all other research designs that were not RCTs and did not utilise random allocation were excluded as they were not considered robust enough to answer research questions about the malleability of the construct or make confident suggestions for further intervention research. A review of all papers that had been excluded to answer research questions one and two, as they did not include academic buoyancy, were revisited and reviewed to ensure that RCT studies had not been excluded prematurely and confirm that the search strategy was fit for purpose.

5.3.5: Screening at first and second stages

All potentially relevant studies were exported into EPPI Reviewer Software and de-duplicated. EPPI Reviewer is a software used for managing and analysing data to include in the synthesis stage of a systematic review (<http://eppi.ioe.ac.uk/cms/>). All “hits” from the electronic searches were independently screened on title and abstract by the first reviewer using the pre-defined inclusion and exclusion criteria. Where abstracts were missing from the database, the first reviewer located them through manual searching. The second reviewer independently double screened 100% of papers on titles and abstracts and differences were reconciled. At the second stage, the first reviewer independently screened all papers using the full text. The second reviewer double screened an allocation of 20% and any disagreements were reconciled. Implications for going forward to data extraction phase were also discussed.

For RCT studies, all papers eligible for data extraction were independently screened again on full text by the first reviewer. The second reviewer independently double screened 100% of the same papers on full text. Once eligible RCT design studies had been identified by the first reviewer, 100% of RCT studies were double screened by the second reviewer to check for agreement.

5.3.6: Data extraction

Two data extraction templates were created to extract data which could answer the four research questions. The first data extraction template was created to answer questions one and two. Detailed information was extracted from each article including: bibliographic information (author, year and reference), definition and measurement instrument (measurement name, items, Likert Scale levels and

Cronbach's alpha). Whilst carrying out the data extraction of research questions one and two, papers eligible to answer research questions three and four were identified.

A second data extraction template was designed to carry out a detailed analysis of the RCTs eligible to answer research questions three and four. This template included bibliographic information and study characteristics based on the PICOS guidelines. Information extracted included: bibliographic details, research questions, study characteristics, participant characteristics, setting, intervention and comparison characteristics, outcome measures, quantified outcomes of the main intervention effects, results, and conclusions. Again, the second round of data extraction was completed by two independent reviewers.

5.3.7: Synthesis

A narrative synthesis of evidence was performed, implementing a textual approach to synthesising the evidence across multiple studies, for the first two research questions. Definitions of academic buoyancy were extracted and presented as a list. These definitions were then clustered into groups based on the following criteria:

- Directly quotes Martin et al. (2008);
- Paraphrases Martin et al. (2008);
- Cites early texts (e.g. Martin et al., 2008; 2009); or
- Not linked to early texts

These were based on how closely they compared to Martin et al.'s 2008a original definition. These clusters were designed to analyse how definitions of academic buoyancy had evolved. Where definitions appeared to be paraphrased from Martin et al.'s 2008a definition, a further thematic analysis was conducted to identify which words and phrases were most frequently used to describe academic buoyancy. For research question two, measurement scales were grouped into categories based on their title. Once grouped, descriptions about variations in levels of measurement, number of scale items and reliability data were also explored to understand variations in how the measurement scales had been applied.

A narrative synthesis was also conducted for the in-depth review of RCTs. A meta-analysis was not considered appropriate as the interventions and outcome measures contained in the two RCTs were not sufficiently alike to provide a meaningful summary (Deeks, Higgins & Altman, 2019). The narrative synthesis focused on the interventions evaluated and outcomes reported, calculated effect sizes where they were not provided and took overall quality judgements into account to provide evidence of trustworthiness.

5.3.8: Quality Appraisal

Quality judgements were made on RCT studies using Gorard’s (2014) sieve to determine the trustworthiness of their findings. Gorard’s (2014) quality judgement framework is made up of six elements: design, sample size (scale), dropout, quality of outcomes, fidelity and threats to validity. Each component of the framework is rated on a 0★ to 4★ scale. A 4★ rating would indicate the best kind of evidence and a 0★ rating would contribute little to the evidence base. This sieve works by starting in the design column and reading down the descriptions to find the most relevant statement to describe the study’s design. Moving across columns read the description until the study is at least as good as the descriptor in that row. Continue to repeat the process for each column moving downwards until the study is at least as good as the descriptor in that row. The final rating column provides an estimation of how trustworthy the study is. Table 5.1 outlines the framework that was used by reviewers to judge the quality of the RCTs. Quality appraisal was completed independently by the first reviewer and checked by two further independent reviewers.

Table 5.1: Method for judging the overall quality of RCTs.

Design	Scale	Dropout	Outcomes	Fidelity	Validity	Rating
Fair design for comparison	Large number of cases per comparison group	Minimal attrition, no evidence of impact on findings	Standardised pre-specified independent outcome	Clear intervention, uniform delivery	No evidence of diffusion or other threat	4★
Balanced comparison	Medium number of cases per comparison group	Some initial imbalance or attrition	Pre-specified outcome, not standardised or not independent	Clear intervention, unintended variation in delivery	Little evidence of diffusion or other threat	3★
Matched comparison	Small number of cases per comparison group	Initial imbalance or moderate attrition	Not pre-specified but valid outcome	Unclear intervention with variation in delivery	Evidence of experimenter effect, diffusion or other threat	2★
Comparison with poor or no equivalence	Very small number of cases per comparison group	Substantial imbalance and/or high attrition	Outcome with issues of validity or appropriateness	Poorly specified intervention	Strong indication of experimenter effect, diffusion or other threat	1★
No report of comparator	A trivial scale of study, or N unclear	Attrition not reported or too high for any comparison	Too many outcomes, weak measures or poor reliability	No clearly defined intervention	No consideration of threats to validity	0★

5.4: Secondary data analysis of attendance data from the National Pupil Database

Stage two of this PhD research is a secondary data analysis of the NPD. The NPD is assembled by the DfE in England for administrative purposes. Access has been approved by the DfE’s Data

Sharing Service to carry out this analysis as a topic of public interest. The analysis will address new research questions that were not originally reported by the data (Glaser, 1963). Gaining access to the NPD and evaluating large quantities of data facilitates the analysis of high-quality population-level data on a scale that is not replicable first-hand by an independent researcher (Cohen, Manion & Morrison, 2018; Connelly, Playford, Gayle, Dibben, 2016; Smith, 2012). It is used and shared by the DfE for the purposes of funding, school performance, policy making and research (Jay, McGrath-Lone, Gilbert, 2019). With extensive attendance, exclusions, attainment and background characteristics data, the NPD was considered the most suitable dataset to answer the research questions which underpin this stage of the research.

After the initial data cleaning process, the analysis will begin with a descriptive analysis of missing data over the academic career of one selected cohort to ascertain background characteristics of pupils who are missing from the NPD. Missing data presents several challenges for the analysis, but it is unusual to find a dataset in the social sciences in which every case has a complete set of values. Missing data requires careful handling and transparent reporting of the methods used to analyse the dataset (Gorard, 2020; Gorard, See & Siddiqui, 2017; Siddiqui, 2019). Section 5.4.4 provides a detailed account of how missing data has been treated and incorporated within the analysis.

The primary aim of analysing data from the NPD is to gain insight into potential contributing factors and patterns of school non-attendance in state-funded schools in England. Following the analysis of missing data, a longitudinal descriptive analysis of pupil-level characteristics data will ascertain which students are absent and excluded from schools. Combined with school characteristics variables from the Get Information About Schools (GIAS) dataset, descriptive analyses of geographic region and LAs are also explored to expose which students might benefit from a school attendance intervention, in addition to when and where it might be best placed (GOV.UK, 2020c). Furthermore, as an original contribution to research on absenteeism in English schools, various regression models have been designed and tested to further estimate the relationships between predictor variables to understand which students are most likely to be absent for unauthorised reasons or persistently absent from English secondary schools at KS3. Whilst the data is extracted from English schools, the outcomes of this analysis may have implications for schools across the UK and internationally.

5.4.1: Secondary data analysis research questions

1. To what extent is data on students' characteristics missing from NPD?
2. What patterns of absence and exclusions exist in the selected cohort according to students' background characteristics?
3. Who would benefit from an attendance intervention according to students' school-level background characteristics?

4. To what extent do pupil characteristics, school characteristics and students' prior attainment predict unauthorised absence and persistent absence from school at KS3?

5.4.2: The National Pupil Database

The NPD is a population-level administrative dataset assembled by the DfE in England. It is comprised of numerous data collections which store information about students across all age phases in state-funded education. The School Census is a statutory data collection completed by all state-funded schools under the Education Act 1996 and forms part of the NPD. As a statutory requirement, schools are not obligated to gain parental or pupil consent to share students' personal information and they are accountable for completing and returning the required data to the DfE each term (DfE, 2019c). Data collected by the School Census includes a large quantity of information about individual pupils and schools. The school census is collected on a termly basis with three collections per calendar year in the spring, summer and autumn.

To gain access to the NPD, a data application request was submitted to the DfE in December 2017. A basic Disclosure and Barring Service (DBS) check certificate was also submitted alongside the application. To receive access to extracts of the NPD, researchers must agree to comply with strict terms and conditions relating to confidentiality, handling data, security arrangements and use of the data. Researchers must also comply with all relevant requirements of the Data Protection Act 2018 and General Data Protection Regulation (GDPR). Safe Researcher training and assessments were undertaken with the Office for National Statistics (ONS) prior to accessing the dataset. Longitudinal attendance, exclusion, attainment, school and background information for one cohort of students was requested for every year they were in compulsory schooling, from Reception to Year 11. Details identifying the cohort will remain anonymous to ensure individual students, schools and data relating to variables of the most sensitive tier cannot be identified through the analysis.

This cohort were selected with the rationale that their educational experiences, influenced by changes to government policy, may have caused students to experience occurrences of academic adversity within a school setting. As a result of national policy reforms during this cohort's academic careers, students may have experienced typical academic challenges and setbacks which may have required them to enhance their levels of academic buoyancy to cope in situations that they encountered at school. Therefore, this cohort was of general interest for this project. A variable which measures students' levels of academic buoyancy does not exist as part of the NPD. This highlights a limitation of secondary data analysis, which only allow research questions to be answered for which the data already exists. The rich attendance and exclusions data contained within the NPD outweighed this limitation and research questions which explored a potential relationship between academic buoyancy and school attendance would be answerable within stage three of this PhD thesis. Instead, the focus

of this analysis was to understand which determinants were likely to predict different types of school absence to inform the design of the RCT in the final stage of this PhD research.

Pupil-level variables with differing levels of sensitivity were requested and justifications for accessing tier one and two variables were provided, where the same research outcomes could not be achieved by analysing less sensitive or disclosive tier three or four variables. For example, reasons for absence and exclusion variables are the primary focus of this analysis and are classified as the highest tiers of sensitivity. Without this sensitive data the intended analysis focusing on school attendance could not be performed. The persistent absentee indicator is classified as tier two sensitive, and this is the least disclosive form of this data item. Therefore, it was not always possible to restrict data requests to tier three and four only. In instances where this was possible, a conscious effort was made to ensure less sensitive and disclosive options were requested.

Accessing data of the most sensitive tier required the data application request to be approved by a Data Sharing Approval Panel. Access was granted by the panel and permission given for the data to be used for its intended outputs. Accreditation under the ONS's approved researcher scheme was also achieved prior to gaining access. Ethical approval was granted by the School of Education's Ethics Board at Durham University (Appendix B). Access to the dataset through the ONS's Secure Research Service was available from March 2019.

The NPD was linked in August 2019 to another DfE administrative dataset GIAS using schools' Unique Reference Numbers (URN), a shared variable across both datasets. GIAS is a publicly available dataset which presents a register of all school and college establishments, open and closed, in England. It provides detailed information about all schools in England and includes data such as geographic region, LA name and school addresses, amongst many other variables. Using the URN variable, GIAS information was linked to individual students for every NC Year. Combining these datasets enabled analyses to be undertaken to answer research questions relating to geographical regions and LAs that would benefit most from an intervention, in areas where school absence is high. Approval to link the two datasets was granted by the DfE's Data Sharing Team and a principles-based threshold of 10 cases in each cell was adhered to. For variables where cells had counts of less than 10, such as number of boys and girls on roll, these were removed from the GIAS dataset before the DfE uploaded the file to the secure network.

5.4.3: Cleaning the data

Cleaning is required to ensure that the dataset is coherent and functional. In this project, the cleaning process entailed becoming familiar with variables and how data were collected, checking for possible administrative errors such as duplicate cases, merging files where one document contained missing data which was available in another, merging files where variables of interest were divided (for

example, attendance, exclusions and attainment variables were provided across separate spreadsheets), re-coding variables to ensure they are fit for purpose to answer research questions for which they are intended, and creating a plan for handling missing data.

As part of the initial cleaning process, it was imperative to understand how data for key variables were gathered through the School Census. Information for schools about how to collect data for all variables is documented in the School Census Manual (DfE, 2019c). The methodology involved in collecting data for variables can offer explanations for how best to manage and re-code variables. It may go some way to explain why data could be missing from the NPD. For example, ethnicity is measured as a categorical variable and classified according to the 2001 National Pupil Census. A student's ethnic group must be specified by a guardian or pupil directly, not assigned to them by their school. A pupil's ethnic group cannot be assigned to a student based on how others perceive them, it is a construct which reflects how the student feels and is a subjective measure based on their own beliefs. Where ethnicity has not yet been recorded by a guardian or student, this is coded as, "information [is] not yet obtained". In instances where guardians or students do not provide their ethnic group, this is coded as "refused". In contrast, gender is measured directly by schools and students are assigned to a binary construct, as either M (male) or F (female). In circumstances where schools are unsure how to record a pupil's gender, the individual and/or their guardian will be asked how they want to be recorded. The responsibility for coding pupil-level characteristics differs between schools, guardians, and students depending on the variable.

To begin, the spreadsheet with the least amount of missing data on key variables was selected as the primary file. Duplicate cases were searched for and removed each time files were merged. The merging process entailed combining attendance, exclusions, attainment and GIAS spreadsheets together as these were given as individual files by the Data Sharing team. The exclusions files required re-structuring to group individual pupil's periods of fixed-term exclusions together. This enabled the spreadsheets to be easily merged by pupils' anonymous matching reference numbers. Merging GIAS was achieved by matching unique reference numbers for every NC Year group which tracked changes in schools, for example transitions from primary to secondary schools was most common. A descriptive analysis of key indicators across all files highlighted that some contained data for individuals that was missing in the primary file. To ensure there was the least amount of missing data within the analysis, key variables such as age, gender, ethnicity, first language, FSM, SEN, and others, were combined across files into the primary dataset. In total there were $N=536,530$ students included in the analysis. The utmost care was taken to ensure that the quality of the dataset was enhanced throughout this process. Continual spot checks were carried out as a form of quality control (Gorard, 2001).

Whilst maintaining the original variables, several key variables were re-coded for the purpose of preparing the data for various types of analysis. In certain cases, cleaning the data entailed combining variables together, standardising measurements across NC Years, creating binary dummy variables, and creating a missing data flag variables to indicate whether data was available or not. Examples of all re-coded variables are outlined in Table 5.2. Firstly, a continuous variable was created to measure students' ages in months by merging data from two variables, month of birth and year of birth. This variable was computed using the date arithmetic formula to calculate the student's age in months on 1st September, the start of the academic year in English schools, for each NC year. This coding was carried out to make distinctions between those who were eldest and youngest in the year group. A new flag variable was also created for all variables to record whether data was present (coded 1) or missing (coded 0) for each case in the dataset. Table 5.3 outlines how this age was calculated in months. This method was considered most appropriate for calculating students' age as it would calculate the true age of outliers that were not in the average NC year group for their chronological age.

Where the measurements of categorical variables changed over the course of the selected cohort's academic career, a standardised approach was taken to keep the coding consistent. For example, in England the government recommends 18 ethnic groups when asking an individual about their identity (GOV.UK, 2020b). Under government instruction these groups can be condensed into five headline groups: Asian, Black, mixed or multiple ethnic groups, other ethnic groups and White. Therefore, this condensed approach was adopted across all NC years in the dataset for consistency. For a descriptive analysis, a further category was also created for missing data to explore what impact missing data could have on the findings.

With regards to ethnicity, further deliberation was given to how condensing categories could impact conclusions drawn from the results. For example, research has suggested that Chinese students often demonstrate higher educational outcomes, such as attainment, when compared to other ethnic groups (Archer & Francis, 2006; Stokes, Rolfe, Hudson-Sharp & Stevens, 2015). Preserving this as an independent group could reveal interesting and explanatory findings that merging categories would not elucidate. Where further exploration of data is required the original coded variables have also been preserved for analysis. Ofsted (1999) describe Gypsy, Roma and Traveller pupils as "the group most at risk in the education system", particularly in relation to attendance in the secondary age phase (Wilkin et al., 2010, p.7). It is important to understand how outcomes for these minority ethnic groups within the larger category of White differ in comparison. As these minority White ethnic groups are more likely to be missing from the dataset, it is crucial not to over-emphasise outcomes for this ethnic group. To be clear about the impact of this kind of missing data, a descriptive analysis is required.

Table 5.2: Summary of codes for key variables

Variable Name	Original Measures	Standardised Measures Across NC Year Groups	Regression Dummy Variable Codes	Missing Data Flag Variable Codes
Pupil-Level Variables				
Age	New variable created to combine original variables month of birth (1 = Jan to 12 = Dec) with year of birth.	Age is re-calculated as a continuous variable in months. See Table 5.3.		0 = Missing Data 1 = Available Data
Ethnicity <i>Note: measurement of the ethnicity variable changes during this cohort's time in compulsory schooling. Ethnicity group codes were standardised across all NC years.</i>	<p>Any other ethnic group</p> <ul style="list-style-type: none"> • Any other ethnic group <p>Asian</p> <ul style="list-style-type: none"> • Any other Asian background • Bangladeshi • Chinese • Indian • Pakistani <p>Black</p> <ul style="list-style-type: none"> • African • Any other Black background • Caribbean <p>Mixed ethnic backgrounds</p> <ul style="list-style-type: none"> • Any other mixed backgrounds • White and Asian • White and Black African • White and Black Caribbean <p>Unclassified</p> <ul style="list-style-type: none"> • Refused • Information not obtained <p>White</p> <ul style="list-style-type: none"> • Any other White background • Gypsy/Romany • Irish • Traveller • White British 	<p>1 = Any other ethnic group</p> <p>2 = Asian</p> <p>3 = Black</p> <p>4 = Chinese</p> <p>5 = Mixed ethnicities</p> <p>6 = White</p> <p>7 = Missing</p>	<p>0 = Not known to be white</p> <p>1 = Known to be white</p>	<p>0 = Missing Data</p> <p>1 = Available Data</p>

<p>First Language</p> <p><i>Note: measurement of the first language variable changes during this cohort's time in compulsory schooling. Language group codes were standardised across all NC years.</i></p>	<p>English ENG = English ENB = Not known but believed to be English</p> <p>Other than English OTH = Other than English OTB = Not know but believed to be other than English</p> <p>Unclassified NOT = Information not obtained REF = Refused INV = Invalid code</p>	<p>0 = Other than English 1 = English 2 = Missing (including unclassified)</p>	<p>0 = Not known to speak English 1 = Known to speak English</p>	<p>0 = Missing Data 1 = Available Data</p>
<p>Free School Meals</p>	<p>1 = True 0 = False</p>	<p>0 = Not FSM 1 = FSM 2 = Missing</p>	<p>0 = Not known to be FSM 1 = Known to be FSM</p>	<p>0 = Missing Data 1 = Available Data</p>
<p>Gender</p>	<p>M = Male F = Female</p>	<p>0 = Female 1 = Male 2 = Missing</p>	<p>0 = Not known to be male 1 = Known to be Male</p>	<p>0 = Missing Data 1 = Available Data</p>
<p>Residential Mobility</p> <p><i>Note: Variable to show if the pupil's postcode had changed since the previous Spring Census</i></p>	<p>0 = Postcode unchanged 1 = Postcode change between Spring censuses 2 = Incomplete address details in previous census 3 = Incomplete address details in current census</p>	<p>0 = Postcode unchanged 1 = Postcode changed between Spring censuses 2 = Missing data</p>	<p>0 = Postcode not known to have changed 1 = Postcode changed</p>	<p>0 = Missing Data 1 = Available Data</p>
<p>National Curriculum Year</p>	<p>The year group in which the pupil is taught, regardless of their chronological age.</p>			<p>0 = Missing Data 1 = Available Data</p>

<p>Special Educational Needs</p> <p><i>Note: measurement of SEN variable changes during this cohort's time in compulsory schooling. SEN codes were standardised across all NC years.</i></p>	<p>SEN SNS = SEN without a statement SS = SEN with a statement</p> <p>Not SEN NON = No identified SEN</p> <p>Unclassified</p>	<p>0 = Not SEN 1 = SEN 2 = Missing</p>	<p>0 = Not known to have SEN 1 = Known to be SEN</p>	<p>0 = Missing Data 1 = Available Data</p>
School-level Variables				
<p>Geographical Region Name</p>	<p>East Midlands East of England London North East North West South East South West West Midlands Yorkshire and the Humber Not applicable [<i>missing</i>]</p>		<p>0 = Not known to live in the North East of England 1 = Known to live in the North East of England</p>	<p>0 = Missing Data 1 = Available Data</p>
<p>Local Authority Name</p>	<p>As labelled in the GIAS database (E.g., Barking and Dagenham, York, etc.).</p>			<p>0 = Missing Data 1 = Available Data</p>

North Divide		Re-coded from geographic region name variable North of England North East North West Yorkshire & the Humber Not North of England East Midlands East of England London South East South West West Midlands Missing	0 = Not known to live in the North of England 1 = Known to live in the North of England	0 = Missing Data 1 = Available Data
Attendance Variables				
Authorised Absence	Continuous variable combines total number of authorised absence sessions across three terms/six half terms.		0 = No authorised absences known 1 = At least one session of authorised absence	0 = Missing Data 1 = Available Data
Fixed Exclusions	Total number of fixed exclusions for the academic year.		0 = Not known to have been fixed term excluded 1 = Known to have been fixed term excluded	0 = Missing Data 1 = Available Data
Overall Absence	Continuous variable combines total number of overall absence sessions across three terms/six half terms.		0 = No absences known 1 = Absences known	0 = Missing Data 1 = Available Data
Permanent Exclusion	0 = Not permanently excluded 1 = Permanently excluded		0 = Not known to be permanently excluded 1 = Permanently excluded	0 = Missing Data 1 = Available Data

Persistent Absentee <i>Note: measurement of persistent absence variable changes during this cohort's time in compulsory schooling.</i>	Set to 1 if student's <i>total overall absence</i> is divided by <i>total sessions possible over six half terms</i> and multiplied by 100 is ≥ 15.0 , or else it is set to 0.		0 = Not known to be a persistent absentee 1 = Persistent absentee	0 = Missing Data 1 = Available Data
Unauthorised Absence	Continuous variable combines total number of unauthorised absence sessions across three terms/six half terms.		0 = No unauthorised absences known 1 = At least one session of unauthorised absentee	0 = Missing Data 1 = Available Data
Attainment Variables				
KS1 Average Point Score	Average attainment point score (including Reading, Writing, Maths and Overall Science only).			0 = Missing Data 1 = Available Data
KS2 Total Point Score	Total KS2 point score as used in the valued added calculations.			0 = Missing Data 1 = Available Data

Table 5.3: Student’s month of birth and year of birth calculated as age in months

	National Curriculum Year Group											
	R	1	2	3	4	5	6	7	8	9	10	11
Jan	56	68	80	92	104	116	128	140	152	164	176	188
Feb	55	67	79	91	103	115	127	139	151	163	175	187
Mar	54	66	78	90	102	114	126	138	150	162	174	186
Apr	53	65	77	89	101	113	125	137	149	161	173	185
May	52	64	76	88	100	112	124	136	148	160	172	184
Jun	51	63	75	87	99	111	123	135	147	159	171	183
Jul	50	62	74	86	98	110	122	134	146	158	170	182
Aug	49	61	73	85	97	109	121	133	145	157	169	181
Sep	60	72	84	96	108	120	132	144	156	168	180	192
Oct	59	71	83	95	107	119	131	143	155	167	179	191
Nov	58	70	82	94	106	118	130	142	154	166	178	190
Dec	57	69	81	93	105	117	129	141	153	165	177	189
Missing	54.55	66.52	78.52	90.52	102.52	114.52	126.52	138.52	150.53	162.54	174.56	186.56

Condensed categories may be limited in their ability to investigate patterns fully to provide the complete narrative. Likewise, aggregated groups may be more appropriate to simplify the analysis. An individualised approach will be taken to selecting the most appropriate variables to answer the intended research questions.

For variables like SEN, ethnicity and first language group, the student's major group category was utilised for analysis purposes. For variables such as gender and FSM original categories were easily maintained with a third category added to identify missing data. Where variables were intended for modelling purposes, such as a binary logistic regression analysis, key categorical variables were re-coded into binary variables. For example, students were either eligible for FSM (coded 1) or were not known to be eligible for FSM (coded 0). The latter category included all students who were not eligible in addition to those who had missing data, as it was unknown if they were eligible or not.

Attendance variables were re-coded as binary dummy variables for use in some of the regression models. This meant that students with at least one overall, authorised or unauthorised were given a code of 1, if students did not have any recorded absences they were given a code of 0. School exclusions were treated in a similar way, with only those students who had been fixed term excluded given a code of 1 and all other students a code of 0. Variables like persistent absence and permanent exclusion were coded as binary variables within the NPD. Table 5.2 gives an overview of the key variables and various methods of coding which were intended for use in different kinds of analyses.

5.4.4: Handling missing data

Attention is given to understanding which students are missing from the dataset, as pupils without data can often differ from the average student (Gorard, 2012). There are many explanations for missing data in the NPD and understanding what data is missing initially requires knowledge of how variables are collected and measured. If schools are not in control of providing responses to key variables, such as ethnicity and first language, it is understandable that issues such as parental refusal and non-response could leave missing data for some students. An analysis of children with missing FSM data in the Pupil Level Annual School Census (PLASC) has highlighted children with missing FSM scores are more likely than their peers to be mobile (Gorard, 2012). Mobility is another possible reason of dropout or attrition in large social datasets, and this increases the potential for entire cases to be missing from the data (Gorard, 2020). Mobility can be problematic for students arriving from outside of the UK and those who transfer from private sector schools in England (Siddiqui, Boliver & Gorard, 2019).

Missing data is problematic if not handled correctly, as it is not possible to assume that data is missing at random (Siddiqui et al., 2019). Transparent reporting procedures will be adhered to, and any personal characteristics known about students with missing data will be reported. The first stage of

this analysis aims to provide further description about which students are missing from the NPD. There are many methods for analysing missing data discussed in the literature, such as complete-case analysis and a variety of imputation methods (Little & Rubin, 1989). Nevertheless, for variables where there is less than 10% missing data, values will be replaced with an appropriate default value, such as the sample mean for continuous variables like attendance. For exclusions, where the student does not have available exclusion data, it will be presumed that they have not been excluded and missing data will be replaced with a code 0. Prior to re-coding, a new flag variable also will be created for all variables to identify which cases had original values and those which were missing from the start. Replacing missing values with an appropriate default allows all cases to be included in the analysis, without disproportionately influencing the outcome. Furthermore, the creation of a flag variable to identify those with and without original values will enable further analyses of missingness to be undertaken to enable interpretation of results.

Limitations of using these methods to handle missing data were considered such as a possible reduction of variance within the sample. This can be overcome by calculating the standard deviation of complete cases when measuring effect sizes. In this instance the reporting of effect sizes will be done so with transparency and caution as not to over-interpret any evidence of effect. In any instances where there is over 10% of data missing from a particular variable, this will be treated as non-feasible and not appropriate to be used in the analysis.

Several methods for handling missing data were carefully considered. Transparent reporting and replacing missing data with default values were deemed the most appropriate and logical methods for this thesis (Gorard, 2020). Gorard and Siddiqui (2019) support that some of these techniques are “not entirely satisfactory”, such as replacing missing values with national averages, but they incorporate less bias than predicting missing values and allow all cases to be retained within the analysis (p.4).

5.4.5: Descriptive analysis

Prior to analysing the dataset, each research question was considered individually to provide a rationale for the most appropriate analysis method. Descriptive analysis methods were utilised to answer the first three research questions. Firstly, a descriptive analysis of missing data helped to ascertain the extent to which it impacted the quality of the NPD data. Simple analysis methods were used to understand what percentage of data was missing for each key variable for every NC year. This included pupil-level, school-level, attendance and exclusions data.

To explain patterns of absence and exclusions in the selected cohort, comparisons of mean attendance scores were analysed between groups of students for all background characteristic variables, such as gender, ethnicity, FSM, and others. These comparisons were undertaken to explore differences between groups in relation to overall, authorised, unauthorised, and fixed term exclusions. Again, this

was carried out across all NC years. To assess which students would benefit from an attendance intervention, different types of absence were assessed over the NC years to highlight which year group should be the target of the intervention. The same descriptive analysis method was utilised in answer to the third research question but this time school variables, such as geographic region and LAs, were the focus of the analysis. This analysis was undertaken to understand which schools would benefit from an attendance intervention with regards to geographic region and LA area.

Following the initial stage of the descriptive analysis, effect sizes were also calculated for all pupil-level variables to ascertain the strength of differences between groups for various types of school absence. For each type of school absence, Cohen's *d* effect sizes were calculated as the mean difference between groups, divided by the pooled standard deviation of both groups. This was also completed for fixed exclusions. As persistent absence and permanent exclusions are measured as binary variables, this does not allow for variation in student's individual scores so calculating effect sizes was not deemed to be appropriate. The outcomes of these analyses give an indication of the size of some effects, but they do not take the effects of other inter-related variables into account. To do this, regression models were conducted to answer the final research question.

5.4.6: Regression modelling

Following the results of the descriptive analysis, regression models were created to explore the extent to which pupil characteristics, school characteristics and students' prior attainment predicted unauthorised absence and persistent absence from school in KS3 students. It is important to note that models of this kind are not "definitive tests, causal pathways, or full explanations of the outcomes" (Gorard et al., 2019, p.5). Causal claims will not be made from these models. Instead, they are intended to make estimations about what characteristics are most likely to predict unauthorised and persistent absence in KS3 students. As KS4 students demonstrated the highest levels of absence, Year 9 students at the end of KS3 were identified as the focus of these regression models. The rationale is to implement an attendance intervention at the end of KS3, as a potential pro-active measure to lower the rates of absence at KS4. KS4 is a period of schooling where students work towards and sit important national examinations, which may be influential in determining their future outcomes. The aim of this analysis was to find the most stable models with the fewest variables to predict selected types of problematic school absences at KS3. Prior to conducting the analysis, a series of tests were undertaken to ensure that basic assumptions of linear regression had been carefully considered. In this study, these tests included normality of regression residuals, linear relationships, multicollinearity and singularity, and homoscedasticity.

5.4.6.1: Multiple linear regression

To understand the interaction effects between several independent variables multiple linear regression models were designed to predict and explain the variance in the dependent variable, unauthorised

absence. To use a multiple linear regression model assumptions which should be met include: all values must be real numbers, variables should be measured without error, independent variables are approximately linearly related to the dependent variable (individually and grouped), and no independent variable should be in perfect linear combination with another (Gorard, 2021). There are a long list of other assumptions which underpin multiple linear regression, such as measurements are to be taken from a random sample and assumptions about the distribution of error terms, to name a few. As with any real-life data it has already been established that missing data is likely to be non-random, and it is anticipated that some of the assumptions of multiple linear regression will be violated. Nevertheless, Gorard (2001) supports the notion that this may not be fatal to the validity of the model. Whilst the intercept may be affected and the co-efficients should be interpreted with caution, the magnitude and quality of the NPD should be able to defend itself against these potential issues. Furthermore, as the standard error and significance are not important in the interpretation of the results in these models, violations of these assumptions were not considered to be problematic and multiple linear regression was deemed safe to use for this analysis (Gorard, 2021).

As linear regression models should use real numbers, dummy variables were created for all categorical variables. Dummy variables were created with two possible categories to describe a characteristic as present or absent. This means that intervals between the two groups were equal, such as, male or not male, FSM or non-FSM, White or not White, SEN or non-SEN, and so on. As the order in which variables are entered into the regression model can impact how important they appear to be within the model. Gorard and Rees (2002) advocate entering variables in blocks in order that life events happen. This means that the chronological sequence in which the regression analysis is performed will model the individual's life course, to differentiate between the relative explanatory power of the different blocks of variables (Smith & White, 2015). Table 5.4 outlines the blocks that independent variables were entered in, the types of variables and how they were categorised.

The focus of this analysis was to identify indicators which explain the greatest amount of variance, using the simplest model and containing fewest variables, whilst explaining a large proportion of variance. A stepwise analysis was carried out initially to ascertain which variables explained the greatest variance in the unauthorised dependent variable as they were added in groups. Constructing the models was an iterative process and variables were either retained or removed according to their contribution to the model. As a categorical variable persistent absence was not a suitable dependent variable to be used in a multiple linear regression, this analysis required a different type of regression model.

Table 5.4: Example of multiple linear regression model to predict unauthorised absence at KS3

Dependent Variable	Block	Independent Variable	Type of Variable	Independent Variable Binary Categories
Unauthorised absence Year 9 (KS3) Numerical variable	Block 1 - Pupil indicators	Age	Numerical	
		Age Missing	Dummy	Missing / Not missing
		Gender	Dummy	Male / Not male
		Gender Missing	Dummy	Missing / Not missing
		FSM	Dummy	FSM / Not-FSM
		FSM Missing	Dummy	Missing / Not missing
		Ethnicity	Dummy	White / Not white
		Ethnicity Missing	Dummy	Missing / Not missing
		First Language	Dummy	English / Not English
		First Lang Missing	Dummy	Missing / Not missing
		SEN	Dummy	SEN / Not SEN
	SEN Missing	Dummy	Missing / Not missing	
	Block 2 – Primary school indicators	KS1 Average Point Score	Numerical	
		KS1 APS Missing	Dummy	Missing / Not missing
		KS1 Authorised Absence	Numerical	
		KS1 Unauthorised Absence	Numerical	
		KS1 Persistent Absence	Dummy	Missing / Not missing
		KS2 Total Point Score	Numerical	
		KS2 TPS Missing	Dummy	Missing / Not missing
		KS2 Authorised Absence	Numerical	
		KS2 Unauthorised Absence	Numerical	
	Block 3 – Secondary school indicators	KS2 Persistent Absence	Dummy	Missing / Not missing
		Region	Dummy	North East / Not North East
		Region Missing	Dummy	Missing / Not missing
		North	Dummy	North / Not North
		North Missing	Dummy	Missing / Not missing
		Change of residence	Dummy	Changed/Not changed
	Change of residence missing	Dummy	Missing / Not missing	

5.4.6.2: Binary logistic regression

Linear regression is “inelegant” to use with categorical independent variables and “impossible” to use with a categorical dependent variable (Gorard, 2001, p.176). A binary logistic regression model was used to predict persistent absence from school in Year 9 students at KS3. Persistent absence is measured as a dichotomous yes/no variable, where the individual is either a persistent absentee or they are not. As above, the same three blocks of variables were entered in the same chronological order and examined to determine if they were of use for predicting persistent absence.

White & Selwyn’s (2013) method for creating meaningful logistic regression models was adopted as the persistent absence variable was unevenly distributed. This meant that there were a small proportion of cases in one category (13.1% persistently absent) and a higher proportion in the other (86.9% not persistently absent). This method utilises the same dataset and re-samples cases at random to create sub-samples, in which both groups included in the analysis have equal numbers. In addition, independent variables such as SEN, FSM and ethnicity are also unevenly distributed in nature.

Therefore, this analysis method was considered most appropriate for creating meaningful models for this dataset which reflected real-world social research.

Like the multiple linear regression model, unauthorised attendance for Year 9 students was used again as the dependent variable. Yet this time the dependent variable was a binary yes/no answer. The same method was repeated taking a series of sub-samples from the data and averaging the models to achieve adequate results as closely as possible. Variables that were retained in the binary logistic regression models contributed to the predictive power of the model, which described the percentage of cases that were predicted correctly. Retained predictors were the strongest predictors of those available to be examined. Comparisons of the multiple linear regression model and the binary logistic regression model were completed to see how closely the predictors were mirrored across models.

5.6: Ethics

Ethical approval for all three stages of the project was requested through two applications to the School of Education's Ethics Board at the University of Durham. The first application achieved ethical approval in December 2017 for the undertaking of the systematic review and secondary data analysis of the NPD (Appendix B). A second application was submitted and approved in November 2019 for carrying out an MBI RCT in secondary schools (Appendix C). As it was not possible to complete the RCT due to COVID-19 Pandemic restrictions in English schools, this feasibility trial is presented as a protocol for future research in chapter eight. This thesis was designed with the British Educational Research Association's 'Revised Ethical Guidelines for Educational Research' (2004) featuring in all decisions made.

5.7: Chapter summary

This chapter has outlined the overall structure of the research project, providing detailed descriptions of the designs and methods underpinning each phase. All research methods used have been outlined with the purpose of making transparent and replicable decisions. Subsequent chapters will present the results and findings from each stage of the research.

CHAPTER SIX: RESULTS AND DISCUSSION FROM A SYSTEMATIC REVIEW OF STUDIES WHICH EXPLORE THE ACADEMIC BUOYANCY CONSTRUCT

6.1: Introduction

This chapter presents the results of a new systematic review of studies that explore the educational construct academic buoyancy. To summarise, research questions underpinning this review are:

1. How is academic buoyancy defined?
2. How is academic buoyancy measured?
3. Is academic buoyancy malleable?
4. What is the evidence from existing RCTs of a promising intervention for improving academic buoyancy?

Research questions one and two are answered in phase one of the review and questions three and four are answered in phase two. In phase one, studies were included if they provided a definition of academic buoyancy. In phase two, studies were re-screened to identify RCT studies. This chapter begins by presenting the results of the searching and screening stages. This section will outline how many papers were included in the review at each stage and provide details about those that were excluded. Section three analyses all definitions that were extracted from the included papers to answer the first research question. This is followed by a further descriptive analysis of academic buoyancy measures. To assess whether academic buoyancy is a malleable construct section five will describe two RCTs (Puolakanaho et al., 2019; Putwain, Gallard & Beaumont, 2019) and will make an assessment based on the quality of the evidence that they present. A quality judgement framework will be applied to each RCT study to assess how trustworthy the studies are for making claims based on their evidence that they present. Further analysis of the two RCTs may also give an indication of a promising intervention to change academic buoyancy. Limitations of the systematic review will be considered and implications for policymakers, educational practitioners and academic researchers will be explored.

6.2: Results of searching and screening

The PRISMA flow diagram in Figure 6.1 highlights how many papers were included at each stage of screening in phases one and two of the review. Phase one includes the initial stages of searching and screening that were undertaken to answer research questions one and two. Across three databases, searches identified 338 potentially relevant papers to screen. After removing the duplicates ($n = 184$) there were 154 papers to screen on titles and abstracts. A total of 52 studies were excluded after screening their titles and abstracts. Agreement between reviewers was very high with only three papers disputed (2%). They were reconciled in favour of the first reviewer who was more inclusive.

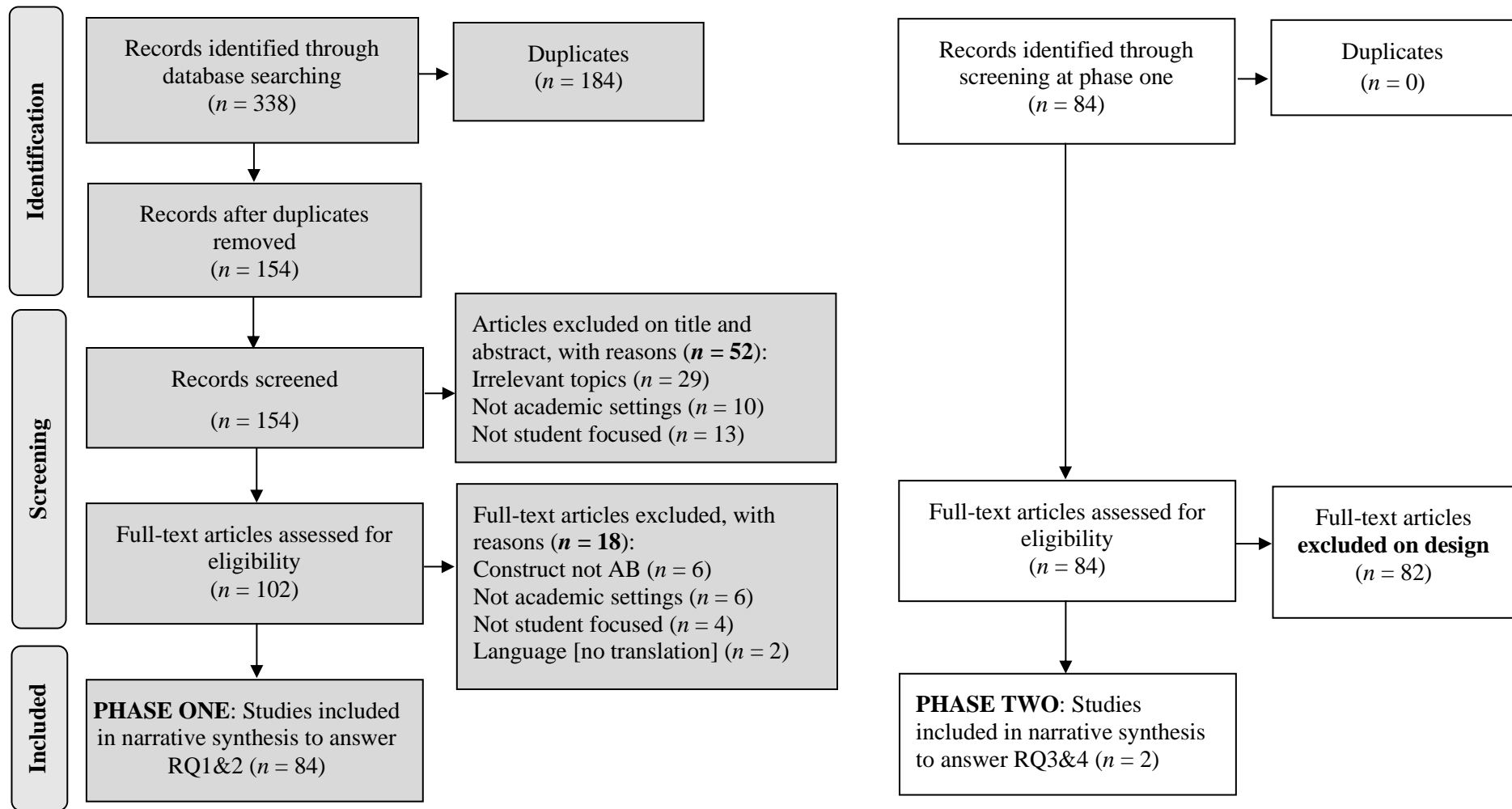


Figure 6.1: PRISMA flow diagram of literature search and study inclusion phases one and two

The first reviewer believed it was not feasible to exclude the three papers based on their titles and abstracts and included them for screening on full texts to be sure.

From the 52 excluded papers, 29 studies focused on irrelevant topics. Examples of these papers included Martin and Evans (2018) who explored a load reduction framework for independent learning and Coaffee (2021) who explored organisational resilience in response to terrorist incidents. Ten studies were excluded based on their settings, for example, Kagwanja et al. (2020) who conducted their study about everyday health system resilience in hospitals in Kenya. There were also 13 studies excluded based on their participants. For example, Wong, Tang, Li and Cheng (2021) and Anderson, Bousselot, Katz-Buoincontro and Todd (2021) both recruited teachers for the samples in their studies.

There was a total of 102 full text papers screened for their eligibility to be included within the review. Full texts were double screened there was 100% agreement between reviewers about which papers to take forward for data extraction. In total, 18 papers were rejected because they did not meet the inclusion criteria. Six studies were excluded as they did not provide a definition of academic buoyancy. For example, Martin, Nejad, Colmar, Liem and Collie (2015b) discuss buoyancy as a construct within the paper, but it is not defined or measured. Six papers were excluded because they were not conducted within academic settings. For example, Martin et al.'s (2015a) study included young people who accessed support services and recruited participants that attended community and youth centres. Four papers were rejected as they did not focus on students as the population of interest, for example, Dong, Li and Ye (2022) focused on teachers' academic buoyancy and Martin and Marsh (2008b) explored academic buoyancy in school personnel in a workplace setting. Finally, two papers were excluded as they were published in Arabic and a translation of the paper could not be obtained. These papers included Farahmand and Fouladchang (2017) and Mahbod and Farhad (2019). In total, 84 studies met the inclusion criteria for the review in phase one. The 84 studies provided a definition of academic buoyancy for the data extraction stage which answered research question one. In total, 74 of the same studies also provided a measure of academic buoyancy to answer research question two.

Phase two is the second stage of screening that was undertaken to answer research questions three and four. From the 84 papers about academic buoyancy, two RCTs were identified through the re-screening process and were deemed eligible to be included in the review. Reviewers were in 100% agreement about which papers should be taken forward to the data extraction stage. In phase two, 82 papers were rejected because their design was not an RCT. The quality of evidence provided by these two RCTs is discussed in section 6.5.

6.3: What is academic buoyancy?

Definitions of academic buoyancy that were extracted from the 84 included papers are presented in Appendix D. Table 6.1 shows the distribution of publications by year. Based on the inclusion criteria for this review, academic buoyancy first appeared in 2008 and there was an initial peak of interest amongst researchers around 2013. Many of the papers published in this year were carried out by Andrew Martin and his colleagues (Martin, 2013a; Martin et al., 2013b,c,d,e). Since 2018 there has been an increase in publications authored by other researchers. There was a second peak in publications in 2019, identifying 17 papers which were eligible for inclusion within this review. With searches completed in February 2022, the single publication recorded in this year is not indicative of the number of publications in 2022. A dip in publications in 2021 may also be explained by school closures and the disruption that this caused for educational research being undertaken in schools during the COVID-19 pandemic.

Table 6.1: Academic buoyancy publications by year

Year of Publication	Frequency
2008	1
2009	2
2010	1
2011	0
2012	5
2013	9
2014	4
2015	6
2016	3
2017	6
2018	11
2019	17
2020	13
2021	5
2022	1
Total	84

The language and structure of the original academic buoyancy definition, as presented in Martin et al. (2008a), has been pivotal to how authors have continued to define the construct in subsequent years. By comparing the definition extracted from each paper with Martin et al.'s original (2008a) definition four categories were formed. These included direct quotations, paraphrased definitions with citations from early texts such as Martin et al. (2008a), citations from early studies with less resemblance to the original (for example, Martin et al., 2008a, 2009b), or definitions that were not linked to early studies.

Table 6.2 provides a description of how definitions were categorised by year. This descriptive analysis revealed that six definitions directly quoted the original definition found in Martin et al. (2008a). Furthermore, there were 62 studies which used paraphrased definitions that closely matched the structure and language used in Martin et al.'s (2008a) original definition, which has continued to dominate publications over time. To provide an example, the original definition as presented in Martin et al. (2008a) is, “students' ability to successfully deal with academic setbacks and challenges that are typical of the ordinary course of school life (e.g., poor grades, competing deadlines, exam pressure, difficult schoolwork)” (p.54). An example of a paraphrased definition from Putwain, Chamberlain, Daly and Sadreddini (2014) is, “academic buoyancy refers to a student’s capacity to overcome the types of setbacks, challenges and pressures that are routinely experienced during academic study and schooling, such as managing work for competing deadlines, receiving a poor grade, or failing a test (Martin & Marsh, 2006, 2008a, 2009b)” (pp.422–423). These definitions also include citations from early texts such as Martin et al. (2008a, 2009b). This suggests that conceptualisations have continued to be influenced by the same early studies over time.

Table 6.2: Category of definition by year

	Quotes Martin et al. (2008)	Paraphrases Martin et al. (2008)	Cites early texts (e.g., Martin et al., 2008)	Not linked to early texts (e.g., Martin et al., 2008)
2008	1			
2009			2	
2010		1		
2011				
2012	1	3		1
2013	1	6	1	1
2014		4		
2015	1	4	1	
2016		3		
2017		5	1	
2018		8		3
2019	1	14	2	
2020	1	10	1	1
2021		4	1	
2022				1
Total	6	62	9	7

From the 62 papers that paraphrased Martin et al.'s (2008a) original definition, a thematic analysis was carried out to group words and phrases into themes. Figure 6.1 demonstrates the results of the thematic analysis. In this visualisation, all words are interchangeable so that the essence and flow of the sentence still mirrors a closely related version to Martin et al.'s (2008a) original definition. In each group, words are ranked by frequency as they appear across the 62 definitions. It is also possible that more than one word or term was used per definition.

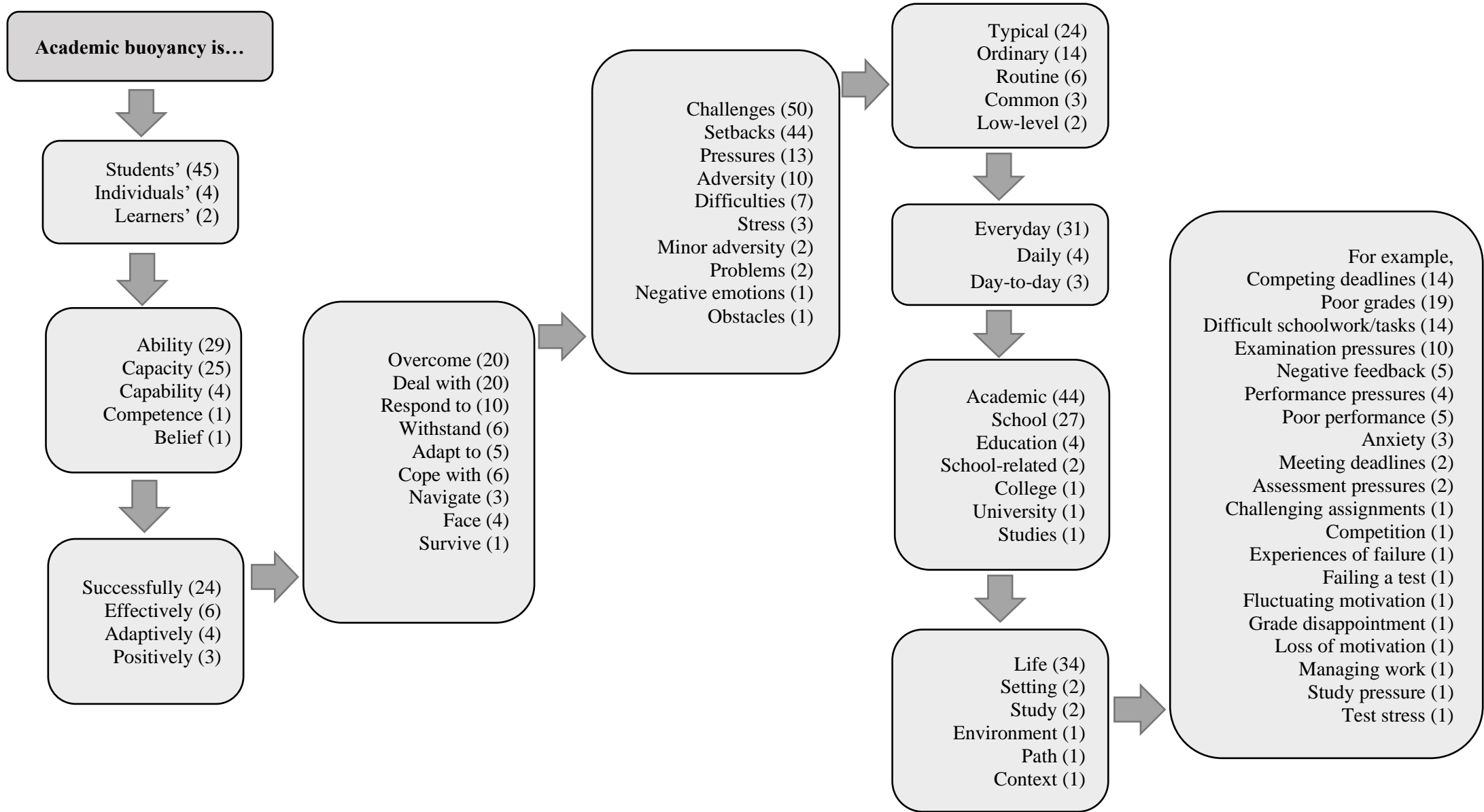


Figure 6.2: Academic buoyancy definition flowchart (paraphrased definition category only)

For example, utilising the most commonly appearing words in each group the sentence could read, “*academic buoyancy is students’ ability to successfully overcome challenges that are typical of everyday academic life. For example, competing deadlines.*” Or alternatively, utilising the second most frequently used words in each group, the sentence could read, “*academic buoyancy is individuals’ capacity to effectively deal with setbacks that are ordinary in daily school settings. For example, poor grades.*” Whilst the terms are interchangeable, the essence of the sentence remains the same and closely mirrors the structure and language utilised in Martin et al.’s (2008a) definition, “students' ability to successfully deal with academic setbacks and challenges that are typical of the ordinary course of school life (e.g., poor grades, competing deadlines, exam pressure, difficult schoolwork)” (p.54).

Nine papers included definitions which cited and acknowledge early texts such as Martin et al. (2008a, 2009b) and Martin (2013a), but the structure of their definition and the language they used were different from the original. For example, Collie, Martin, Malmberg, Hall and Ginns’s (2015) definition of academic buoyancy is, “[...] the personal attribute relevant to navigating everyday adversity (Martin, 2013a)” (p.114).

Finally, seven papers did not cite the original definition, paraphrase or reference early texts. For example, Bakhshae, Hejazi, Dortaj and Farzad (2017) define academic buoyancy as, “maintaining academic competence and positive adjustment against encountered adversities in adolescents in the academic context” (p.1). Table 6.3 provides a list of papers that appear in each category based on first author and year of publication.

All definitions extracted from the papers in this review can be retrieved from Appendix D. From this analysis it is evident that in many studies Martin et al.’s (2008a) original definition has inspired and shaped how subsequent authors have defined academic buoyancy. It could be argued that Andrew Martin is the most influential researcher on the topic of academic buoyancy to date. Nevertheless, interest in the academic buoyancy construct continues to attract the attention of new researchers and studies which explore the construct are increasing. As further empirical work establishes relationships between academic buoyancy and its correlating constructs, the definition of academic buoyancy may continue to evolve. Further work is required to question whether the language presented in early texts, which have continued to dominate the literature, truly describe the essence of what the construct “academic buoyancy” is intending to define. Future research may investigate whether the conceptual definition of academic buoyancy changes as an increase in new authors across different cultural contexts explore the construct.

Table 6.3: Category of definition by first author and year

Category of Definition	First Author (Year)
Quotes Martin et al. (2008)	Martin (2008a); Skinner (2012); Miller (2013); Smith (2015); Calhoun (2019); Simonton (2020)
Paraphrases or strong similarity to language and phrases used in Martin et al. (2008)	Martin (2010); Barnett (2012); Liem (2012a); Martin (2012); Carrington (2013); Martin (2013a,b,c,d); Putwain (2013); Martin (2014a,b); Putwain (2014); Yu (2014); Putwain (2015); Comerford (2015); Strickland (2015); Symes (2015); Martin (2016); Putwain (2016a,b); Bakhshae (2017); Collie (2017); Martin (2017); Ramasubramanian (2017); Tarbetsky (2017); Chong (2018); Dahal (2018); Datu (2018a,b); Holliman (2018); Mammarella (2018); Shafi (2018); Yun (2018); Aydin (2019); Breslin (2019); Colmar (2019); Datu (2019); Fong (2019); Gilfillan (2019); Hirvonen (2019); Jahedizadeh (2019); Mawarni (2019); Martin (2019); Puolakanaho (2019); Rohinsa (2019); Vinter (2019a,b); Azadianbojnordi (2020); Gohorbani (2020); Hirvonen (2020); Middleton (2020); Putwain (2020a,b); Rohinsa (2020); Saalh (2020); Salmela-Aro (2020); Ursin (2020); Khalaf (2021); Lei (2021); Sudina (2021); Zong (2021)
Cites early texts (e.g. Martin et al., 2008)	Martin (2009a,b); Martin (2013e); Collie (2015); Bhardwaj (2017); Putwain (2019); Yu (2019); Thomas (2020); Hoferichter (2021)
Not linked to early texts (e.g. Martin et al., 2008)	Putwain (2012); Malmberg (2013); Bakhshae (2018); Rustam (2018); Verrier (2018); Skinner (2020); Lei (2022)

Bakhshae, Hejazi, Dortaj and Farzad’s (2018) definition introduces the phrase, “maintaining academic competence” against adversities in the academic context (p.1). An understanding of how academic competence relates to academic buoyancy amongst the wider student population could be an interesting area for further research. In the original text by Martin et al. (2008a) they state that academic buoyancy is relevant to the development of academic competence but there is no further discussion about their relationship. Whilst there is no reference to the original text in this definition, it could be possible that Martin et al.’s (2008a) paper had influenced the conceptualisation of buoyancy in this study. Furthermore, Skinner, Graham, Brule, Rickert and Kindermann’s (2020) definition describes academic buoyancy as a “set of behaviours”, as opposed to an “ability” or a “capacity”, which allow students to successfully navigate minor setbacks at school (p.5). Further explanation and exploration of what this set of behaviours include is required.

6.4: How is academic buoyancy measured?

There were 74 papers that included a measure of academic buoyancy. Table 6.4 categorises all scales by their titles. The full data extraction and scale items are retrievable from Appendix E. Martin et al.’s (2008a) Academic Buoyancy Scale (ABS) was the most common measurement utilised in 48 papers. The ABS is a self-report measure which asks students to indicate on a Likert Scale whether they agree or disagree with four statements:

- “I’m good at dealing with setbacks at school (e.g., negative feedback on my work, poor results).”

- “I don’t let study stress get on top of me.”
- “I think I’m good at dealing with schoolwork pressures.”
- “I don’t let a bad mark affect my confidence.”

From the 48 papers that used the ABS, there was variety in how many response levels were used. In total, 16 papers used a five-level Likert scale, and 30 used a seven-level Likert scale as it appears in the original study by Martin et al. (2008a). In two papers the levels were not specified (Datu & Yuen, 2018b; Martin, 2009a). Where a reliability measure of internal consistency was reported for the ABS, Cronbach’s alpha was always $\alpha < 0.7$, apart from in one instance where it was reported as $\alpha = 0.65$ in a sample of ADHD students (Martin, 2014a). When tested on non-ADHD students in the same paper Cronbach’s alpha was reported as $\alpha = 0.75$ (Martin, 2014a).

Table 6.4: Measure of academic buoyancy by first author and year.

Measure of Academic Buoyancy	First Author (Year)
Academic Buoyancy Scale (ABS)	Aydin (2019); Azadianbojnordi (2020); Calhoun (2019); Carrington (2013); Chong (2018); Collie (2015; 2017); Colmar (2019); Datu (2018a,b; 2019); Ghorbani (2020); Gilfillan (2019); Hirvonen (2019, 2020); Hoferichter (2021) Holliman (2018); Liem (2012a); Martin (2008a; 2009b; 2010; 2012; 2013a,b,c,d,e; 2014a,b; 2016; 2017; 2019); Puolakanaho (2019); Putwain (2012; 2013; 2014; 2015; 2016a,b; 2019; 2020a,b); Simonton (2020); Strickland (2015); Thomas (2020); Yu (2014; 2019), Zong (2021)
Adapted ABS	Fong (2019); Khalaf (2021); Lei (2021, 2022); Malmberg (2013); Mammarella (2018); Martin (2009a); Rohinsa (2019, 2020); Saalh (2020); Salmela-Aro (2020); Sudina (2021) Symes (2015); Ursin (2020); Verrier (2018); Vinter (2019a,b); Yun (2018)
Buoyancy Questionnaire	Shafi (2018)
EFL Student Buoyancy Scale	Jahedizadeh (2019)
Husseinchari and Dahghanizadeh’s Questionnaire	Bakhshae (2017; 2018)
Motivation and Engagement	Barnett (2012); Dahal (2018)
Other constructs	Miller (2013)
Student Buoyancy Instrument	Comerford (2015)
No measure	Bhardwaj (2017); Breslin (2019); Mawarni (2019); Middleton (2020); Ramasubramanian (2017); Rustam (2018); Skinner (2012; 2020); Smith (2015); Tarbetsky (2017)

Cronbach’s alpha is reported in most studies as an indicator of reliability, which is intended to determine the extent to which the measurement scale provides a reliable and trustworthy result. To recapitulate, Cronbach’s alpha is an indication of the extent to which the four items on the ABS ask the same underlying information (Gorard, 2001). A score of 0 would indicate that the items are

unrelated and different, and a score of 1 would mean they ask the same question and are identical. Researchers should remain cautious and critical about this measurement when making an assessment about whether the ABS is a trustworthy measure of academic buoyancy. It should be considered alongside other indicators of reliability and validity to assess the scale's trustworthiness (see chapter two, section 2.4.2).

Across 18 papers the original four-item ABS was adapted to fit with the intended outcomes of the study. In some examples this included changing the language to be subject specific or age-phase appropriate (Malmberg et al., 2013; Martin, 2009a; Saalh & Kadhim, 2020; Symes, Putwain & Remedios, 2015; Ursin, Järvinen & Pihlaja, 2020; Yun, Hiver & Al-Hoorie, 2018), changing the voice that was narrating the statement (Verrier et al., 2018), changing the original wording to adapt the scale (Rohinsa et al., 2020), removing items from the ABS (Salmela-Aro & Upadyaya, 2020), or including additional items to use in combination with the ABS (Fong & Kim, 2019; Sudina & Plonsky, 2021; Vinter, 2019a,b). Five studies (Khalaf & Abuela, 2021; Lei et al., 2021, 2022; Mammarella, Donolato, Caviola & Giofrè, 2018; Rohinsa, Cahyadi, Djunaidi & Zulrizka Iskandar, 2019) reported that the original ABS had been adapted and translated into Arabic, Chinese, Italian or Bahasa Indonesia to use cross-culturally. It is noted that attempts to translate the ABS and use the scale with cross-cultural samples has mostly taken place during the last five years. In two studies (Malmberg et al., 2013; Verrier et al., 2018) authors had used both the original ABS and an adapted version of the scale in the same study. In this category, scales varied from three-, five-, six-, and seven-level scales and in all examples Cronbach's alpha was reported as $\alpha < 0.7$. The highest reported internal consistency measure was $\alpha = 0.97$ when the scale had been adapted to use in a specified domain such as listening (Saalh et al., 2020). Reports of Cronbach's alpha were sometimes lower when the ABS had been used in a general domain, compared to other subject specific domains in the same study (Malmberg et al., 2013).

Khalaf et al.'s study (2021) focused on measurement invariance across culture and gender in Egyptian and Omani undergraduate students. This study translated the ABS into Arabic and measured score reliability using omega coefficients, as opposed to Cronbach's alpha. This is an alternative method which claims to be a "practical alternative" to coefficient alpha for measuring the score's reliability (Deng & Chan, 2017, p.185). Estimates of omega for score reliability were $\omega = 0.703$ for the sample of Egyptian students and $\omega = 0.656$ for the Omani students. This study supports the use of the ABS across cultural sub-groups but reflects on the limitations of a short self-report measure like the ABS, which is likely to incorporate biased responses as an inherent constraint. Some researchers may presume that their adapted form of the ABS performs with the same levels of reliability and validity to the original scale, however, this may not be the case and these studies should be treated with caution. For example, re-wording, translating and adding or removing items from the scale have the potential

to introduce errors. Further validation work is required to truly understand if the ABS is a valid and reliable measure of this construct, and to explore whether adaptations of the scale have the potential to maintain the same level of rigour with further validation studies.

In total eight papers did not use the ABS or an adapted form of the ABS. Where applicable, example items can be found in the supplementary materials. The amount of detail provided about the scales and their items varied across studies. Shafi, Hatley, Middleton, Millican and Templeton (2018) measured academic buoyancy using their own “buoyancy questionnaire” which they describe within the study (p.419). They presented students with a mixture of ten open and closed multi-choice questions to generate a combination of quantitative and qualitative responses. The authors piloted the questionnaire before the study but there is no further information about how they designed or selected the items. The first six items on this scale ask students questions about their preferences and expectations for receiving feedback on their schoolwork. The final four questions ask individuals to describe their thoughts, feelings and actions in a written response when they receive a disappointing grade. The final question combines two elements and asks students to consider if feedback helps them to manage their disappointment and if so, how or why not? In this scenario, receiving a disappointing grade represents an incident of minor academic adversity and those students who reported that they were able to manage their feelings following this adversity were believed to be exhibiting academic buoyancy. Data was analysed and described descriptively utilising thematic analysis techniques. Inferential statistical techniques were not utilised within this study. The validity and reliability of the buoyancy questionnaire are also not explored within this study.

Comerford, Batteson and Tormey (2015) used the Student Buoyancy Instrument (SBI) which was initially assembled using 39 items drawn from the self-efficacy, planfulness, anxiety, industry and locus of control scales available from Goldberg et al.’s (2006) International Personality Item Pool. After piloting the scale, 29 items were retained but the precise nature of these items is not documented within this study and the ten items that were rejected are unclear. The authors document that the validity and reliability of the scale was acceptable. Correlations between constructs demonstrate that the SBI’s convergent validity ranged from low to moderate and moderate to substantial. Divergent validity was highest between confidence and persistence items on the instrument, but the correlation was low to moderate. Face validity was established by convening an expert group of university researchers who examined the items that loaded onto each factor and were satisfied that the factors constructed were valid and meaningful. Further investigation to locate this scale was successful and the full scale is outlined in Comerford’s (2017) unpublished doctoral dissertation. The 29-item instrument included items such as:

- “I have excellent ideas” (confidence)
- “I am usually relaxed” (composure)

- “I jump into things without thinking” (planning)
- “I let others decide things for me” (autonomy)
- “I finish things I start, even if there are problems (persistence)

The items on this scale can be categorised into the 5C predictors of academic buoyancy: confidence, composure, planning, autonomy and persistence (Martin, Colmar, Davey & Marsh, 2010). The original IPIP scale from which these items were taken is regularly used to measure individual’s personality traits, which does not embody the notion that academic buoyancy is a dynamic process as opposed to a personality trait. Whilst this scale has more self-reported items than the ABS, further work would be required to test the scale widely across various samples and in different contexts to ascertain if it has the potential to be a promising measure of academic buoyancy.

Jahedizadeh, Ghonsooly and Ghanizadeh (2019) reflected on the use of Comerford et al.’s (2015) SBI and Martin et al.’s (2008a) original ABS across different studies and proposed a need to design a “comprehensive and specific instrument which includes more items and focuses on the EFL students’ academic buoyancy in higher education” (p.166). The authors design the EFL Student Buoyancy Questionnaire, which is a 27-item scale translated into Persian which draws on four main categories. These categories included sustainability items (ability to overcome difficulties towards language learning), regularity adaption items (setting goals in language learning), positive personal eligibility items (positive perceptions of personal competencies) and positive acceptance of academic life items (“delighting the process of language learning” [p.167]). There is limited explanation about how these four domains specifically map onto the academic buoyancy construct. The EFL Student Buoyancy Questionnaire is measured on a five-level Likert Scale and reports an internal consistency statistic of $\alpha=0.83$. Some items included:

- “If I face any failure during my language learning (such as a low grade or teacher negative feedback), I can deal with it very well and never get disappointed, on the contrary I try to learn something from them.” (sustainability)
- “Sometimes in language learning I make myself do things whether I want to or not (I specify a goal for myself, like learning twenty new words this week).” (regularity adaptation)
- “I have enough energy to do what I have to do, for example the homework that the teacher assigns.” (positive personal eligibility)
- “I can usually look at a situation in a number of ways, for example positive aspects of homework, exams, and teacher rigidity, not just the negative sides.” (positive acceptance of academic life).

Based on preliminary validity and reliability tests the authors conclude that this scale may be suitable to measure academic buoyancy in the EFL context. This recommendation should be treated with caution and the context-specific nature of this EFL buoyancy instrument may be limited.

Bakhshae et al. (2017, 2018) state that they used the Dehghanizadeh and Husseinchari's (2012) questionnaire. The authors report that this scale is modelled on Martin et al.'s (2008a) ABS but the scale is not documented in either study. An attempt was made to gain access to this scale through contacting the corresponding authors, but it has not yet been received. The authors report that the Likert Scale was measured from 1 to 7 and $\alpha=0.83$ in both studies. Without accessing the scale further analysis to ascertain whether this is a reliable and valid measure of buoyancy is not feasible.

Barnett (2012) references other studies that use the ABS to measure academic buoyancy but claims to extend the operationalisation of the construct further than the ABS's four items. Instead, Barnett includes elements from all quadrants of the Motivation and Engagement Wheel (Martin, 2007). This study performed a cluster analysis to identify groups of students with high, medium and low academic buoyancy by measuring the variables in the four quadrants of the wheel on a 57-item scale. Quadrant one included expectancy for success, task value and mastery-goal orientations. Quadrant two included cognitive strategies and metacognitive self-regulation. Quadrant three included test anxiety and performance-avoidance. Quadrant four focused on academic procrastination. The Likert Scale was measured from 1 to 7 and $\alpha>0.70$. Barnett indicates that failing to administer the ABS may have been a limitation to the design in her study. As previously identified this scale was created to measure academic motivation and engagement on a wider scale, not exclusively academic buoyancy. Further research would be required to ascertain the extent to which this wider operational definition academic buoyancy matches the conceptual definition of the construct.

Dahal, Prasad, Maag, Alsadoon and Hoe (2018) also embodied a motivation and engagement conceptualisation of academic buoyancy, extracting items from three of the Motivation and Engagement Subscales (Liem & Martin, 2012a). These sub-scales included self-efficacy, control and engagement. This was combined with culture and belief systems questions which were added from the religious coping methods measure RCOPE (Pargament, Koenig & Perez, 2000). The authors comment on the reliability and convergent validity of the original scales and discuss the convergent and discriminant validity of their adapted scale. Their combined and modified 28-item scale was tested on a sample of international undergraduate and postgraduate students ($n=102$) from India ($n=32$), Nepal ($n=30$), Sri Lanka ($n=3$), Bangladesh ($n=5$), Pakistan ($n=7$), China ($n=7$) and "other countries" ($n=18$) (p.1474). Where appropriate Likert Scale responses were measured from 1 to 6 and the scale's internal consistency was reported as $\alpha>0.70$. This study reports that strong belief systems can influence students' academic buoyancy, specifically in terms of students' self-efficacy,

engagement and perceived control. The authors suggest that these three domains, self-efficacy, engagement and perceived control enable students to recover from low-level failure which they define as academic buoyancy. The authors highlight that a limitation of their study is that their combined instruments have not undergone rigorous psychometric testing. Whilst the researchers do provide limited statistical information to examine the combined scale's convergent and discriminant validity, they recommend that this instrument should be tested again with a larger cohort and over time.

Miller, Connolly and Maguire (2013) took a wellbeing approach to measuring academic buoyancy. The authors explore a lack of consensus about how to define wellbeing conceptually and operationally in existing literature. This study applies an "academic buoyancy framework" to define and operationalise student wellbeing. This approach combines psychological factors (self-esteem and psychological health), school engagement factors (school environment and enjoyment of education), and family and peer relationship factors (parent and peer relationships) to provide a combined view of wellbeing that the authors describe as academic buoyancy. Six common measures of wellbeing that are measured in the current study include self-esteem, psychological health, school environment, enjoyment of education, parent and peer relationships. These measures are reported to cover three dimensions of academic buoyancy: psychological, school engagement and relationship factors. The authors of this study combine items from five subscales on the KIDSCREEN measure, the Global Self Worth subscale, and the 'liking school' subscale to measure enjoyment of school (Harter, 1985; KIDSCREEN Group Europe, 2006; Pell & Jarvis, 2001). This created a 37-item scale and the internal consistency for each sub-scale is reported as $\alpha < 0.70$. This paper adopts an operationally different approach to measuring academic buoyancy from many of the other papers that adopt the ABS. It is uncertain if this multi-faceted alternative wellbeing approach to theorising the academic buoyancy construct offers a conceptually and operationally promising way to engage with the construct.

From the original 84 papers included for data extraction, ten papers did not measure academic buoyancy (Bhardwaj, 2017; Breslin, 2019; Mawarni, Sugandhi, Budiman & Thahir, 2019; Middleton, Shafi, Millican & Templeton, 2020; Ramasubramanian (2017); Rustam et al., 2018; Skinner et al., 2020; Skinner & Pitzer, 2012; Smith, 2015; & Tarbetsky, Martin & Collie, 2017). Generally, this was because papers were book chapters or narrative literature reviews rather than empirical works.

To summarise, the most widely used measure of academic buoyancy is Martin et al.'s ABS (2008a). This four-item scale is most often measured using a seven-point Likert Scale ranging from *strongly disagree* to *strongly agree*. A high score using this scale is intended to represent a high level of academic buoyancy. In examples where the scale is used, researchers commonly report the scale's internal consistency with Cronbach's alpha $\alpha > 0.70$. This is a measure of internal consistency within the four items that make up the ABS. This reliability measure is intended to assess the ability of all

items in the scale to measure academic buoyancy consistently. Whilst this statistic can give some information about the scale's reliability, this measure should be treated with caution and should not be relied upon as a single factor for determining the scale's trustworthiness. Tavakol and Dennick (2011) claim that alpha is frequently reported without criticism and without adequate understanding and interpretation of the measurement. Researchers may report that the ABS is a psychometrically robust scale with good internal reliability, factorial, predictive and divergent validity, but for some researchers this claim is made based on previous studies, without focusing on the validity and reliability of the scale within their own specific context (Martin, 2013a; Martin et al., 2008a, 2009b).

A smaller number of researchers included in this review have adapted the items on the scale to understand how successful the ABS can be across different contexts. First, more work should be done to develop, test and evaluate the items that appear on the ABS to ascertain whether this is the most promising measure of academic buoyancy. Further work can then continue to explore the reliability and internal consistency of the ABS when used in subject specific domains. In three instances (Malmberg et al., 2013; Symes et al., 2015; Yun et al., 2018) scales were adapted to contain domain specific vocabulary and the internal consistency measure was high ($\alpha > 0.86$). Malmberg et al. (2013) reported $\alpha = 0.92$ in mathematics and $\alpha = 0.81$ when the scale was domain general. Work of this kind may give some indication of whether buoyancy is more reliable as a domain specific or general construct.

Eight papers reported that they measured academic buoyancy but they did not use the ABS or an adapted form of the scale (Bakhshae et al., 2017, 2018; Barnett, 2012; Comerford et al., 2015; Dahal et al., 2018; Jahedizadeh et al., 2019; Miller et al., 2013; Shafi et al., 2018). In existing academic buoyancy literature, the short four-item self-reported nature of the ABS is often identified as a limitation. Some researchers have attempted to combine items across various validated measurements to operationalise academic buoyancy in a multi-faceted way. Some measures of buoyancy explore several different outcomes that may be motivational and engagement predictors of buoyancy, including self-efficacy, planfulness, locus of control, and engagement. Prior research has identified five motivational predictors of academic buoyancy, referred to as the "5C's". These predictors include confidence (self-efficacy), coordination (planning), commitment (persistence), composure (low anxiety), and control (low uncertain control) (Martin et al., 2010). Whilst some of the studies measured predictor variables as correlates of academic buoyancy, such as anxiety, these constructs are conceptually distinct and may not measure academic buoyancy directly. As such these studies and their operationalisations of academic buoyancy are interpreted with caution. All measurement scales should continue to undergo rigorous testing, development, and evaluation to have the potential to draw meaningful conclusions from the data that they generate (Boateng, Neilands, Frongillo, Melgar-Quinonez & Young, 2018).

In a systematic review of academic resilience measurements, Tudor and Spray (2018) suggested that academic buoyancy research should measure the everyday difficulties, challenges and setbacks associated with daily school life which may impact on student's educational development and outcomes. These daily academic setbacks form part of academic buoyancy's conceptual definition and further knowledge of these may help to assess whether the current four items on the ABS are fit for purpose and closely map onto the construct of interest. With limited knowledge about how the ABS was adapted from the ARS, a rationale for the creation of the ABS, and how the items on the ABS were designed and created, this could be an important area for future researchers to explore and develop.

6.5: Is academic buoyancy malleable to intervention?

Two RCTs are eligible to answer research questions three and four (Puolakanaho et al., 2019; Putwain et al., 2019). The first RCT, undertaken by Puolakanaho et al. (2019), is an Acceptance and Commitment Therapy (ACT) intervention which examines the effectiveness of a web- and mobile-delivered intervention curriculum over five-weeks. This study took a sample of ninth-grade students in Finland and their intervention was called "Youth COMPASS". ACT is described as a third-wave cognitive therapy developed by Hayes, Strosahl & Wilson (1999). It is also described as an "alternative form of cognitive behavioural therapy" (CBT) which places emphasis on the use of acceptance and mindfulness practices (Gillard, Flaxman & Hooper, 2018, p.272). Whilst the mindfulness construct has been explored in chapter four, acceptance refers to a willingness to experience all mental events such as thoughts, feelings and sensations, without avoiding, changing or controlling them (Puolakanaho et al., 2019). ACT does not focus on diagnosis as it assumes that suffering is common to all humans, not just those with clinical symptoms or diagnosable mental health conditions. Unlike CBT, ACT also supports the idea that once something is learned, the individual cannot unlearn it. The aim of CBT is to identify troublesome or inaccurate thoughts and beliefs and change them to replace them with more accurate or positive ones. The overall aim of ACT is not to change the form or frequency of inaccurate thoughts and feelings but reduce the negative impact they may have on an individual's behaviour (Gillard et al., 2018).

The overall aim of the Youth COMPASS (Puolakanaho et al., 2019) online curriculum was to enhance students' psychological flexibility by facilitating them and guiding them to explore their interests, thoughts, emotions and sensations, setting goals, and changing behaviours according to their goals. In week one students learned about acceptance, diffusion, and mindfulness skills. In weeks two to three students learned to broaden these skills into self-compassion. In weeks four to five the students learned how to adapt skills to use them in their personal and social life. Students were

measured on their academic skills (reading fluency and mathematics), overall stress, school stress, academic buoyancy and adherence to the intervention.

The iACTface group received a web- and mobile-delivered intervention curriculum. Before the programme started, students in this intervention group received face-to-face meetings with an individually assigned coach, which included a structured interview and discussion for 45 minutes about the students' current life situation. Oral instructions and an instructions sheet for the intervention were shared with participants, which explained how to work in the web program and when to complete the weekly assignments. Another face-to-face meeting, which followed the five-week intervention, was also arranged for students who were interviewed by their coach about their intervention experiences. During the intervention, students in this group had short weekly contact with their coach over text messages.

The iACT group received the same web- and mobile-delivered intervention program as those in the iACTface group. Unlike the iACTface group, the iACT group did not receive individual face-to-face meetings with their coach. Students in this group were given a brief introduction to the curriculum, an instructions sheet for the web program, and a timetable for weekly assignments. The iACT group also had short weekly contact with their coach over text messages. The control group was not provided with intervention resources or feedback. Students in this group, as well as the iACTface and iACT groups, received normal support from the school. This included the possibility of liaising with school health professionals for psychological and other well-being-related issues or to obtain personal support for learning difficulties.

The second RCT, by Putwain et al. (2019), is a multi-component wellbeing intervention called "BePART" combining elements of school-related wellbeing, academic buoyancy and adaptability. The intervention was delivered over a six-week period to students in their first year of upper secondary education in England. BePART incorporated elements of positive psychology (gratitude), mindfulness (how to down-regulate negative emotions and stressful events) and focused on positive goal setting (including elements of CBT and positive psychology theory). Positive psychology has been defined in many ways, but Gable & Haidt (2005) describe it as, "the study of the conditions and processes that contribute to flourishing or optimal functioning of people, groups and institutions" (p.104). Positive psychology focuses on subjective experiences of "well-being, contentment, and satisfaction (in the past); hope and optimism (for the future); and flow and happiness (in the present)" (Seligman & Csikszentmihalyi, 2000, p.5). Putwain et al. (2019) state that a common and successful positive psychology intervention activity in schools reflects on the psychological strength of gratitude. There is some limited evidence to suggest that gratitude activities, such as writing letters of gratitude, may be successful interventions for up-regulating positive emotions and down-regulating negative

emotions, which may result in enhanced wellbeing (Toepfer, Cichy & Peters, 2012; Watkins, Woodward, Stone & Kolts, 2003). Gratitude was the focus of one lesson within the programme.

Furthermore, elements of CBT were included within the programme as a strategy to demonstrate effective ways to manage academic pressure and not give up when faced with academic difficulties. Tasks included within the programme included recording negative thoughts and challenging them to become more positive in nature. CBT was the theoretical focus of one lesson within the programme. Mindfulness-based principles and techniques of MBSR as defined by Kabat-Zinn were also included, where students were required to identify situations which caused them stress and consider the impact of this on their feelings and behaviours. Students were also trained in how to practice anchoring techniques. A second lesson was included within the curriculum where students were taught relaxation strategies which could help them to sleep. This included a “beditation” practice which is a meditation practice for students to carry out in bed to recognise repetitive thought patterns that may prevent them from sleeping and understand how to increase relaxation. One lesson also focused on the impacts of diet and exercise on maintaining physical and psychological health. Students were asked to keep a food and exercise diary and reflect on how their diet and activity could impact their levels of positivity, clarity of thought, energy levels and happiness. Finally, principles of goal-setting theory were also included for one lesson in the programme where individuals wrote a letter to their future self to offer advice for wellbeing by reflecting on the techniques learnt in the BePART programme.

The data extraction for the experimental studies (Puolakanaho et al., 2019; Putwain et al., 2019) are available in Appendix F. Youth COMPASS and BePART are the first interventions to be evaluated in the field of academic buoyancy research. These interventions use an RCT design which, if robustly designed and implemented, may have the potential to derive causal inference (RCT). Puolakanaho et al. (2019) and Putwain et al. (2019) are recognised for their trailblazing in this field by conducting feasibility trials and utilising RCT designs to determine whether academic buoyancy is malleable to intervention. Before discussing whether academic buoyancy is a malleable construct, the trustworthiness of each RCT will be assessed using Gorard’s (2014) sieve to judge the quality of the trials. Each element of Gorard’s (2014) quality judgement framework (design, scale, dropout, outcomes, fidelity and validity) will be discussed in turn and justifications for the ratings awarded to each category will be explained.

6.5.1: Puolakanaho et al.’s (2019) Youth COMPASS study

6.5.1.1: Design: 3★

The design of Puolakanaho et al.’s (2019) study has some strengths to note. For example, participants were randomly allocated into three study conditions by an independent researcher. As summarised in

the previous section, the first intervention group (iACTface, $n=81$) received both face-to-face and online support from their coaches alongside the intervention. The second intervention group (iACT group, $n=80$) received online support from their coaches alongside the intervention. The third group was the control group ($n=82$) who did not receive the intervention and were only able to access the normal provision of school support that the two intervention groups were also able to access.

Further analysis of how the intervention was designed and delivered highlights differences between groups that might compromise the trustworthiness of the study. The youth COMPASS intervention consisted of short texts, pictures, video clips, comic strips, and audio-based exercises and could be accessed via PC, laptop, tablet, or mobile phone. Each of the five modules were divided into an introduction and three different levels. Each week included a short set of exercises based on different processes of psychological flexibility. Students were required to complete at least two exercises in each level to advance through the intervention. The first exercise in each level was mandatory, but the remaining exercise could be chosen from a selection of between four to seven activities. To complete each week, students were required to pass at least six exercises over the three levels, but it was also possible for students to complete all exercises if they wanted to.

Exercises were offered in both written and audio-recorded formats. Some were reported to demand more mental orientation and self-reflection exercises, and others required behavioural responses which would ask students to complete an exercise, write a response or look for answers. As students had control over which exercises they engaged with each week, the combination of activities could have looked different for each student. The curriculum is reported to include more than 90 exercises, but there was a minimum requirement of passing 30 exercises. Exercises also differed in length between five and 10 minutes and depending on the number of exercises chosen and their length, the amount of time spent learning could have differed between pupils.

With regards to the coaching element of the intervention, coaches followed the progression of their assigned students and provided motivational feedback via SMS once weekly using semi-structured questions. Before giving feedback, the coach was instructed to check via the program's platform whether the student had completed the weekly exercises. Weekly feedback was also obtained through three semi-structured questions. If the student did not reply, coaches were instructed to send an SMS reminder, wait one day, and re-send the SMS message with the feedback questions. If no answers were received, this was repeated on the fifth day with a message stating that the coach would call the student after a day or two. If no reply was received after these three consecutive SMS messages, the coach was instructed to call the student. It is unclear if this interactive form of contact was also used with the online iACT group. It is also unclear if a phone call would be classified as a form of face-to-face contact if this was offered to the iACT group. Furthermore, each coach was assigned three to ten

participants to follow, which may have impacted the quality of their interactions with students. For example, those who monitored ten students may have had less time to dedicate to students than those with three, and as a result the quality of their interactions with students could have differed. There was also a range of prior experience amongst coaches for using ACT programmes. Half of the coaches reported that they had little experience of using ACT regularly in their studies and daily lives. Whilst all coaches were offered a total of 18 hours of ACT training, four hours' worth of weekly supervision from a licensed psychologist and an additional two hours if required, differences in coaches' exposure to ACT and prior training may have had an impact on the delivery of the intervention. Whilst the study has implemented an RCT design, there are differences between groups which would make the design of this study a balanced comparison. For this reason, a rating of 3★ is given to this category.

6.5.1.2: Scale: 3★

This Youth COMPASS intervention study forms part of a larger Stairway longitudinal research project. Stairway aims to explore the individual and environmental factors which promote learning, wellbeing, and successful transitions in education. This RCT was aimed at students in the ninth grade, which is the last year of compulsory schooling in Finland for students aged between 14 and 16. The research team took a non-random sub-sample from the Stairway longitudinal research project ($n \sim 800$) based on pre-specified inclusion and exclusion criteria. The inclusion and exclusion criteria for the target population were as follows: students belonged to the larger Stairway longitudinal study, had written consent for participating in the intervention, was a native Finnish speaker, and had previous data concerning reading and math skills and achievement scores. The selection of the RCT sample and random allocation of students to groups was conducted in two phases. Two subsamples of students from the larger sample ($n \sim 800$) were selected. Firstly, a sub-sample of students with poor academic skills ($n=125$) were identified (see Table 6.5). Secondly, a similarly sized group of students without signs of poor academic skills ($n=124$) were identified from the same classrooms as the participants with poor academic skills. In phase two, the 249 students were further randomly allocated to the three arms of this RCT by an independent researcher (iACTface, iACT, control). A rating of 3★ is given for the study's scale as there is a medium number of cases per comparison group, particularly as this trial utilises a quarter of the overall Stairway sample.

6.5.1.3: Dropout: 2★

Six students could not be contacted or withdrew from the study following random allocation to groups. This included two per group from iACTface, iACT, the control group. No pre-measurement data was available for these six students. The final sample of this study consisted of 243 students. In total, 161 students took part in the Youth Compass intervention, with 81 students participating in the iACTface intervention group and 80 students in the iACT group. The control group consisted of 82

students. Table 6.6 provides data about students' demographics and sample characteristics as they were measured at baseline to explore the balance of characteristics between groups. Pre-data were available from 243 and post-data from 239 students. A further four students dropped out before the post-measurement phase of the study. The four dropout students were all members of the iACTface intervention group. This may have been as it was the group with the highest level of burden, with an added face-to-face component to the intervention.

All students who participated ($n=243$) were included in the intention-to-treat protocol analyses. The per-protocol analyses included students who fulfilled the adherence criterion (such as the number of exercises completed). A total of 64 (79%) iACTface and 58 (73%) iACT participants adhered to the intervention and met the criterion to be included in the per-protocol analysis (see Table 6.5).

Group differences were explored based on the initial pre-measurement scores in overall stress, school stress, academic buoyancy, gender, and academic skills. The results indicated that the participants who were excluded from the analysis reported lower stress ($M=2.43$, $SD=1.4$, $n=35$) than those who continued with the study ($M=2.98$, $SD=1.4$, $n=204$). The authors also discuss a gender imbalance in the number of students who dropped out, identifying that a number of male participants did not adhere to the criterion to be included in the per-protocol analysis. Based on this information, a rating of 2★ is given for dropout as there is some initial imbalance and moderate attrition (see Table 6.5).

6.5.1.4: Outcomes: 1★

This RCT addressed three research questions:

1. To what extent can ninth-grade adolescents' overall and school-related stress be reduced, and academic buoyancy enhanced through the five-week web- and mobile-based acceptance and commitment intervention known as Youth COMPASS?
2. Do the outcomes in the two intervention groups (which differed from each other slightly in the amount of personal face-to-face support) differ from each other regarding their efficacy, and do they differ from the control group's outcomes?
3. Do the adolescents' poor academic skills moderate the efficacy of Youth COMPASS in reducing adolescents' stress and enhancing their academic buoyancy?

The authors hypothesise that, following the intervention, students' levels of stress would decrease, and academic buoyancy would increase more in the two intervention groups when compared with the control group. Due to a lack of research evidence about the influences of poor academic skills on ACT intervention outcomes in young people, the authors did not hypothesise what the outcome would be for the final research question.

Table 6.5: Participants included in groups and analyses

Initial phase characteristics	iACTface (n=81)	iACT (n=80)	Control (n=82)
<i>Participants in the intention-to-treat analyses N (%)</i>			
Female	44 (54.3)	37 (46.3)	38 (46.3)
Male	37 (45.7)	43 (53.7)	44 (53.7)
<i>Poor academic skills N (%)</i>			
Normally developing academic skills	41 (50.6)	40 (50.0)	40 (48.8)
Poor academic skills	40 (49.4)	40 (50.0)	42 (51.2)
<i>Reason for poor academic skills N (%)</i>			
Unknown reason for poor academic skills	18 (22.2)	16 (20.0)	18 (22.0)
Reading problems	9 (11.1)	11 (13.8)	11 (13.4)
Math problems	7 (8.6)	7 (8.8)	8 (9.8)
Both reading and math problems	6 (7.4)	6 (7.5)	5 (6.1)
<i>Participants in the per-protocol analyses N (% from the intention-to-treat protocol)</i>			
	64 (79.0)	58 (72.5)	82 (100)
<i>Included/excluded cases (N) in the per-protocol analyses</i>			
Female	39/5	33/4	38/0
Male	25/12	27/17	4/0

Note. Extracted from *Reducing Stress and Enhancing Academic Buoyancy among Adolescents Using a Brief Web-based Program Based on Acceptance and Commitment Therapy: A Randomised Controlled Trial*, by Puolakanaho et al. (2019), Table 1 (p.292).

Table 6.6: Sample characteristics in the three groups

Baseline characteristics	All (n=243)	iACTface (n=81)	iACT (n=80)	Control (n=82)
Age M (SD)	15.27 (0.39)	15.25 (0.30)	15.27 (0.33)	15.29 (0.50)
<i>Gender</i>				
Female	124 (51%)	44 (54.3%)	37 (46.3%)	38 (46.3%)
Male	119 (49%)	37 (45.7%)	43 (53.8%)	44 (53.7%)
<i>Mother tongue</i>				
Finnish	230 (94.7%)	77 (95.1%)	74 (92.5%)	79 (96.3%)
Other than Finnish	8 (3.3%)	3 (3.7%)	3 (3.8%)	2 (2.4%)
Bilingual (Finnish + some other language)	4 (1.6%)	1 (1.2%)	2 (2.5%)	1 (1.2%)
<i>Living with</i>				
Mother and father	167 (68.7%)	52 (64.2%)	59 (73.8%)	56 (68.3%)
Only with mother or father	20 (8.2%)	12 (14.8%)	4 (4.1%)	4 (4.9%)
Alternately with mother and father	38 (15.6%)	11 (13.6%)	12 (15.0%)	15 (18.3%)
Others ^a	14 (5.7%)	4 (4.9%)	3 (3.8%)	7 (8.5%)
<i>Parental Education (primary caregiver)</i>				
A/B/C (%) ^b		33/25/42 (%)	34/20/46 (%)	41/22/37 (%)
missing cases ^c		21	9	14

Key: ^aLiving with mother and stepfather, father and stepmother, foster care or approved home. Parental education level: ^bA = vocational upper secondary education or lower, B = vocational college degree, C = Bachelor's degree or higher. Information of education level was missing^c in some cases

Note. Extracted from *Reducing Stress and Enhancing Academic Buoyancy among Adolescents Using a Brief Web-based Program Based on Acceptance and Commitment Therapy: A Randomised Controlled Trial*, by Puolakano et al. (2019), Table 2 (p. 293).

Puolakanaho et al. (2019) measure students' academic skills, including reading fluency, math skills and general academic achievement as part of the wider Stairway project and this information was used for selection and randomisation procedures. They also include measures to evaluate the intervention results. These included: overall stress (Elo, Leppänen & Jahkola, 2003), school stress using a scale adapted from the Health Behaviour in School-Aged Children (HBSC) study (Currie et al., 2012) conducted by the World Health Organization, academic buoyancy using the ABS (Martin & Marsh, 2008a), and the adherence to the intervention scale which was completed by the coaches. All outcome measures were used to answer the three research questions which underpin the study.

In their results, the authors do not share the mean scores or calculated effect sizes from the intention-to-treat (ITT) analysis. Instead, they qualitatively describe their findings and explain that they did not find any changes in any of the outcome measures (overall stress, school-based stress or academic buoyancy). They state, "the two different intervention groups did not differ from the control group in their changes during the intervention" (p.297). The per-protocol analysis was also conducted for the sub-sample of participants that successfully completed the programme. But this does not consider the students that dropped out of the study and may present biased results.

The per-protocol analysis combines the two intervention groups (iACTface and iACT) and compares their combined results with the control group. The rationale for combining the two intervention groups in the analysis and reporting of the results is unjustified as the two interventions are presented as separate and different interventions throughout the study. Puolakanaho et al. (2019) present the mean scores for the pre-measurement academic buoyancy $M=3.46$ ($SD=0.83$, $n=123$) and post-measurement academic buoyancy $M=3.69$ ($SD=0.75$, $n=123$). These mean scores demonstrate a change in level of academic buoyancy from before to after the ACT intervention. This is in comparison to the control group's pre-measurement $M=3.73$ ($SD=0.78$, $n=82$) and post-measurement $M=3.74$ ($SD=0.82$, $n=82$) mean scores which show a slight difference. The authors report a between-group Cohen's d effect size of $d=0.27$ for academic buoyancy, but it is unclear how this has been calculated. A re-calculation of effect sizes using the pre- and post-mean scores and standard deviations as originally presented above would generate an effect size of $d=0.06$. This is calculated by taking the post-measurement difference between mean scores ($M=3.74 - M=3.69$), divided by the pooled standard deviation of the combined intervention and control groups ($SD=0.78$). The results as reported in this study should be treated with caution and a rating of 1★ is awarded for outcomes.

6.5.1.5: Fidelity: 1★

As previously discussed in the earlier designs section, there are fundamental features of the study's design and methods that indicate unintended variation. Even though variation in the delivery is likely to be unplanned by the researchers, the fidelity of this intervention receives a 1★ rating from the

sieve. The study's detailed reporting of the methods does not compensate for the fundamental issues that have been described regarding the study's implementation fidelity and the unintended differences between groups that form part of the design.

6.5.1.6: Validity: 1★

With regards to internal validity, judgements can be made on factors such as concealed allocation, blinded assessment of outcome, implementation fidelity and attrition. In this study, random allocation was completed by an independent researcher but attrition from the study was high. It is unclear if a blinded assessment of the outcomes was undertaken and whether implementation fidelity was assessed, as they are not stated within the study. External validity judgements can be made based on the extent to which results could be generalised to other samples within the population. The use of a non-random sub-sample from the larger Stairway project somewhat limits the external validity and generalisability of the results to the wider student population. Clear inclusion and exclusion criteria are documented for the selection of the target population and participants were selected from across two municipalities in Finland. There may be limited generalisability to other samples within the same population, but this should be treated with caution. A rating of 1★ is awarded for validity.

6.5.1.7: Overall trustworthiness rating: 1★

Table 6.7 provides a visual representation of the ratings that are provided for each category. An overall rating of 1★ is given to the trustworthiness of this study. This judgement of quality implies that this study is not trustworthy enough to make confident recommendations that an ACT intervention can improve students' overall stress, school-related stress and academic buoyancy. Puolakanaho et al. (2019) conclude that the two intervention groups, which they combined in the reporting of their results, did not differ from the control group in their changes during the intervention. To estimate the effectiveness of the intervention for those who completed the programme a per-protocol analysis was undertaken. By calculating differences between participants who successfully completed by the programme meeting the adherence criterion, a decrease in overall stress, an increase in academic buoyancy, and no indication of changes in school stress was reported by the authors. Puolakanaho et al. (2019), report a small between-group effect size of $d=0.27$ for academic buoyancy but it is unclear how this figure has been calculated. A re-calculation of Cohen's d using the figures presented within the original paper suggests that the effect size between the intervention groups and the control groups was much smaller (p.298). Clearer reporting of all analyses undertaken would have aided in the interpretation of this data. Nevertheless, for the reasons identified, the results of the per-protocol analysis should be treated with caution.

Table 6.7: Gorard's (2014) sieve to assist in the estimation of trustworthiness of Puolakanaho et al.'s (2019) Youth COMPASS study

Design	Scale	Dropout	Outcomes	Fidelity	Validity	Rating
Fair design for comparison	Large number of cases per comparison group	Minimal attrition, no evidence of impact on findings	Standardised pre-specified independent outcome	Clear intervention, uniform delivery	No evidence of diffusion or other threat	4★
Balanced comparison	Medium number of cases per comparison group	Some initial imbalance or attrition	Pre-specified outcome, not standardised or not independent	Clear intervention, unintended variation in delivery	Little evidence of diffusion or other threat	3★
Matched comparison	Small number of cases per comparison group	Initial imbalance or moderate attrition	Not pre-specified but valid outcome	Unclear intervention with variation in delivery	Evidence of experimenter effect, diffusion or other threat	2★
Comparison with poor or no equivalence	Very small number of cases per comparison group	Substantial imbalance and/or high attrition	Outcome with issues of validity or appropriateness	Poorly specified intervention	Strong indication of experimenter effect, diffusion or other threat	1★
No report of comparator	A trivial scale of study, or N unclear	Attrition not reported or too high for any comparison	Too many outcomes, weak measures or poor reliability	No clearly defined intervention	No consideration of threats to validity	0★

This study concluded that overall stress and school-related stress could be reduced, and academic buoyancy could be enhanced through the Youth COMPASS intervention, based on the outcomes of the per-protocol analysis. These findings were not consistent when an intention-to-treat analysis was performed. Based on the changes in mean scores as reported in the per-protocol analysis, the combined intervention groups demonstrated an increased mean score of $M=0.23$ compared to the control groups which remained the same before and after the intervention. Based on this study there may be some very early and tentative evidence to support the notion that academic buoyancy is a malleable construct, however, the trustworthiness of this study and its limitations restrict the level of confidence with which this claim is made.

6.5.2: Putwain et al.'s (2019) BePART Study

Putwain et al.'s (2019) BePART intervention (an acronym for Be Positive, Ambitious, Resilience and Thoughtful) was aimed at college aged students in Year 12 and carried out in England during the autumn and spring terms of the 2016/17 academic year. Again, each category in Gorard's (2014) sieve has been applied to this study to consider the trustworthiness of the findings in this study.

6.5.2.1: Design: 4★

BePART is a six-lesson multi-component wellbeing programme which formed part of students' PSHE curriculum. BePART was a compulsory programme of study alongside their academic lessons. The researchers report that the primary aim of the curriculum was to enable students to learn and practice personal skills that may be required to be happy, healthy, and academically successful young people. BePART incorporated elements of positive psychology theory (gratitude), mindfulness (down-regulating negative emotions and improving the quality of sleep), CBT (how to re-evaluate negative and stressful events) and focused on positive goal setting (which includes elements of both CBT and positive psychology theory). The strands of this curriculum were tailored to reflect teachers' views of what they believed their students needed. Specifically, poor management of stress, giving up in the face of difficulty, poor sleep hygiene, and poor diet choices. This meant that the teachers were already invested in the delivery of this curriculum and the success of the intervention. Each lesson was one hour-per week, over a six-week period, and they were delivered by college staff alongside a student support role who received training from the developers. Training involved attending a presentation about the curriculum's aims and the psychological theories which underpinned the intervention. The trainees then completed an accompanying manual, and the materials and exercises included in BePART as if they were the student participants.

The study employed a mixed factorial research design and the between-participants factor had two levels. Participants were randomly allocated to either the early intervention group ($n=266$) or wait-list control group ($n=271$), which was referred to within the study as the late intervention group. Blind

block randomisation was managed by college staff to allocate participants to groups that were unknown to the research team. Whilst the study does not provide detailed information about how block randomisation was performed, the use of blinding in the randomisation procedure is likely to be a strength of the study's design which, if performed successfully, may increase the study's internal validity. The within-participants factor had three levels and the outcome measures (school-related wellbeing, academic buoyancy and adaptability) were collected over three time points. Data collection was completed for all participating students at the baseline, after the early intervention group had completed the intervention, and after the wait-list control group had completed the intervention.

The wait-list design could also be considered as a strength of this study's design as all students were eligible to take part in the intervention at some point over the academic year and time-related factors could be considered. A limitation of the waitlist design is that there is no long-term follow-up because once the control group has received the intervention there is no longer a randomised comparison. The researchers conclude that booster sessions may be required to maintain BePART's benefits over time. Furthermore, random assignment of participants to groups was concealed to the research team and performed by a member of college staff. These are factors which increase the study's internal validity and improve the study's overall design. Based on a fair design for comparison, this study receives a rating of 4★.

6.5.2.2: *Scale: 3★*

Students included in the study were Year 12 (first year of upper secondary education) from one school. In the selected cohort there were 668 students (male $n=280$, female $n=388$). A total of 534 students participated in the study (male $n=217$, female $n=317$) and 134 students did not want to take part. The mean age of students taking part in the study was $M=16.71$ years-old ($SD=0.54$). Most students were from white ethnic backgrounds ($n=508$, 95%) with few students from minority ethnic groups (Asian $n=16$, 3%; Mixed $n=4$, <1%; Other $n=4$, <1%; and Black $n=2$, <1%). The percentage of students who were entitled to FSM ($n=37$, 7%) was largely below the national average, which implies poor representation of students from disadvantaged backgrounds. The sample is also reported to be typically achieving with a mean grade of C across the cohort on secondary school exit examinations taken during their GCSE year. The intervention group was waitlisted with the early intervention group ($n=266$) receiving the treatment over the first six weeks. The waitlist group ($n=271$) served as a comparator group in the initial six weeks and received the intervention later in the academic year. A rating of 3★ is given to the scale of the study as there are a medium number of cases per comparison group.

6.5.2.3: Dropout: 1★

All students were required to take part in the intervention as it was delivered in the classroom as a compulsory part of their college curriculum. Nevertheless, they were able to opt out of the evaluation stage so that their results would not be used in the analysis. As mentioned above 20% ($n=134$) of the population for this study, the Year 12 cohort at the selected school, did not want to participate in the analysis. This initial percentage of attrition is very high. Post-randomisation and allocation to groups, a further three students may have dropped-out of the study as there is some discrepancy between reported figures. The authors report that there were 534 students included in the study but the early intervention group is reported to have 266 participants and the waitlist group is reported to have 271 participants. The dropout in this study is high with 20% of students not wanting to participate in the analysis. A rating of 1★ is given to the study based on this criterion.

6.5.2.4: Outcomes: 1★

The authors hypothesise that after completing BePART, students would show enhanced school-related wellbeing, adaptability, and academic buoyancy. School-related wellbeing was measured as the primary outcome and academic buoyancy and adaptability were measured as secondary outcomes. School-related wellbeing was measured using a six-item scale (Loderer, Vogl & Pekrun, 2016) and items were adapted to correspond to the level of education by replacing school with college. Academic buoyancy was measured using the four-item ABS (Martin et al., 2008a). Adaptability was measured using a nine-item scale (Martin, Nejad, Colmar & Liem, 2012).

This study reports change scores in the intervention and control groups. Results suggest that BePART showed reductions in school-related wellbeing and temporarily increased adaptability. From the baseline academic buoyancy increased in the intervention group ($d = -0.062$) and decreased in the control group ($d = 0.058$). During the wait-list intervention academic buoyancy decreased in the control (early intervention, $d = 0.195$) and late intervention groups ($d = 0.174$). For the early intervention group, improvements in levels of buoyancy were short-term and did not last until the end of the study. Based on the information reported by Putwain et al. (2019, p.57) estimations were calculated for between-group effect sizes using Cohen's d calculation, as this information is not offered in the original study. This is determined by the difference between the means of the intervention group (early) and control group (late) divided by the standard deviation of the control group (late). Following the first intervention buoyancy shows a small but positive effect size $d = 0.19$ and at the end of the second intervention buoyancy had a smaller positive effect size $d = 0.13$. In this study there were pre-specified outcomes and the scales used to measure these outcomes were described. There were some minor changes in the wording of the scales, such as changes to ensure they were age-phase appropriate so a rating of 3★ would be given to the outcomes of this study.

Nevertheless, based on the sieve methodology, ratings can either be sustained or decrease so a rating of 1★ is awarded for outcomes.

6.5.2.5: Fidelity: 1★

The authors highlight implementation fidelity as a limitation of their study. They identify that they did not implement a strategy to assess the fidelity or quality of the intervention delivery. They also outline that it was likely that fidelity and quality differed across different intervention groups in such a way that may have influenced outcomes. They recommend that future evaluations of BePART to include methods for establishing fidelity and quality of the intervention delivery. The description of the intervention is also lacking in detail about the exact procedures for delivering the curriculum. As such, the fidelity of this study receives a rating of 1★.

6.5.2.6: Validity: 1★

This study reports high levels of attrition which is an important component in judging the study's internal validity. Attrition of 20.06% had the potential to introduce a source of bias from the study's outset. The researchers also report that fidelity and quality differed across the intervention groups which would have been likely to influence the study's outcomes. Nevertheless, internal validity may have been strengthened using blind randomisation. The procedure used for implementing the blind randomisation is not described.

With regards to external validity, improvement in levels of academic buoyancy did not withhold over time when comparisons were made between the early and late intervention groups. In their report, Putwain et al. (2019) are transparent and cautious about the claims they make about the impact that BePART can have on students' academic buoyancy. Putwain et al. (2019) recommend that it is beneficial to test BePART in other contexts where initial levels of wellbeing, adaptability and academic buoyancy may be different. It may be possible to generalise the findings of this study to other like-for-like samples across the same Sixth Form College and other colleges in England with similar school-level and population-level characteristics. There are fundamental imbalances in the sample, for example, a high proportion of students from white ethnic backgrounds and very few students from disadvantaged backgrounds. There are strong indications of experimenter effect, diffusion and other threats reported within this study and a rating of 1★ is given to the study's validity.

Table 6.8: Gorard’s (2014) sieve to assist in the estimation of trustworthiness of Putwain et al.’s (2019) Be PART study

Design	Scale	Dropout	Outcomes	Fidelity	Validity	Rating
Fair design for comparison	Large number of cases per comparison group	Minimal attrition, no evidence of impact on findings	Standardised pre-specified independent outcome	Clear intervention, uniform delivery	No evidence of diffusion or other threat	4★
Balanced comparison	Medium number of cases per comparison group	Some initial imbalance or attrition	Pre-specified outcome, not standardised or not independent	Clear intervention, unintended variation in delivery	Little evidence of diffusion or other threat	3★
Matched comparison	Small number of cases per comparison group	Initial imbalance or moderate attrition	Not pre-specified but valid outcome	Unclear intervention with variation in delivery	Evidence of experimenter effect, diffusion or other threat	2★
Comparison with poor or no equivalence	Very small number of cases per comparison group	Substantial imbalance and/or high attrition	Outcome with issues of validity or appropriateness	Poorly specified intervention	Strong indication of experimenter effect, diffusion or other threat	1★
No report of comparator	A trivial scale of study, or N unclear	Attrition not reported or too high for any comparison	Too many outcomes, weak measures or poor reliability	No clearly defined intervention	No consideration of threats to validity	0★

6.5.2.7: Overall rating: 1★

Putwain et al. (2019) cautiously conclude that the impact of BePART on levels of academic buoyancy remains unclear. Table 6.8 provides a visual representation of the ratings that are provided for each category in this RCT. An overall rating of 1★ is given to the trustworthiness of this study. The results of Gorard's (2014) quality judgement framework suggest that this study may not be trustworthy enough to make confident recommendations that the BePART intervention can improve students' school-related wellbeing, academic buoyancy and adaptability. Putwain et al. (2019) cautiously conclude that academic buoyancy could be malleable and has the potential to respond to intervention, but the results of the late intervention group suggested that it may not always do so. Therefore, it is possible that BePART is limited in its ability to improve academic buoyancy as results appeared to be equivocal. Based on the findings of this study there may be limited and tentative evidence to support the notion that academic buoyancy is a malleable construct, however, the trustworthiness of this study and its substantial limitations restrict the level of confidence with which this claim is made.

6.5.3: Summary

Reflecting on the findings from the two RCTs discussed in this section (Puolakanaho et al., 2019; Putwain et al., 2019), there is some tentative evidence to suggest that academic buoyancy might be malleable to intervention. The reporting of Puolakanaho et al.'s (2019) study highlighted concerns about the trustworthiness of their study, especially as they combined the results from the two intervention groups. Nevertheless, their findings demonstrated an increase in mean buoyancy scores for those that successfully completed the curriculum. It is unclear why the intervention group scores were combined in the reporting of the results as it does not give any insight into whether the face-to-face coaching element of the curriculum had any effect. Nevertheless, an increase in mean scores for those that received the intervention, in comparison to those who continued to receive the normal school wellbeing support, may suggest that buoyancy could be improved in students.

There is further evidence to indicate that based on the five-week Be PART intervention (Putwain et al., 2019) increases in students' levels of academic buoyancy might be short lasting and achieving higher levels of academic buoyancy may depend on the time of the academic year that the intervention is implemented. The findings of Putwain et al.'s (2019) study suggests that there may be some periods within the academic year that lend themselves to successfully teaching students the skills to be academically buoyant more than others. For example, the early intervention group received the intervention during the autumn term, six weeks after they had started college. The late intervention group received the intervention during the spring term. Whilst it was not stated by the authors, this may have been closer to periods of national examinations in English schools which are usually scheduled during the summer term. The early intervention group continued to show higher

mean academic buoyancy scores during the follow up intervention when compared to the late intervention group, which showed a gradual decline in mean levels of buoyancy over the three time points. This might suggest that students have higher levels of academic buoyancy at the beginning of the academic year, which might be a good time to teach students the skills of how to cope with challenges and setbacks that they may encounter during the school year.

Refresher courses during periods that are associated with challenges and setbacks, such as examination periods, may be required to remind students of the skills they had learned earlier in the academic year. This might lead to higher sustained levels of academic buoyancy throughout the year if the intervention is successful and academic buoyancy can be changed in students. Based on Putwain et al.'s (2019) Be PART intervention and their findings from the early intervention group, proactively teaching students how to be academically buoyant earlier in the academic year could potentially be a useful skill for students.

Nevertheless, as these two studies are rated as 1★ for their trustworthiness, the results of these studies should be treated with caution. To report with a higher level of confidence that academic buoyancy is a malleable construct, academic buoyancy interventions would require further attention, investigation and rigorous testing. RCTs and longitudinal studies with opportunities for follow-up measurements should be an ongoing design feature of future interventions to ascertain whether there could be potential long-term impacts of increasing academic buoyancy in students.

6.6: What is the evidence from existing RCTs of a promising intervention for improving academic buoyancy?

Until recently, there have been limited attempts to use robust experimental methods to understand whether it is possible to improve academic buoyancy in students. To date there have been two attempts to implement an RCT to increase levels of academic buoyancy in students (Puolakanaho et al., 2019; Putwain et al., 2019). Martin et al. (2008a) speculate that factors such as psychological, school and engagement, and family and peer factors, which are closest to the student, may be easier to manipulate and possibly may be more responsive to interventions. In a longitudinal modelling study of academic buoyancy and motivation, Martin et al. (2010) “tentatively” identify five motivational predictors of academic buoyancy, which they call the “5Cs” (p.476). Predictors include confidence (self-belief), coordination (planning), commitment (persistence), control and composure (low anxiety). To hypothesise that motivation was predictive of academic buoyancy, Martin et al. (2006, 2010) reflected on existing research literature which focuses on motivation theory, such as Pintrich (2003). They further hypothesised that components which are central to various motivation theories may also predict further components of academic buoyancy. From a motivation theory stance, this included expectancy components, value components and affective components.

Expectancy components describe a student's belief in their capacity to do what they set out to do and encompass constructs such as self-efficacy, control and self-regulatory behaviours such as planning. Value components of motivation encompass an individual's value of a task and persistence. Affective components of motivation often explore constructs such as anxiety and address how individuals feel before and during a task. Based on this hypothesised comparison between motivation theory and academic buoyancy theory, Martin et al. (2010) forecast that components of self-efficacy, control, planning, persistence and anxiety may also be predictors of academic buoyancy. To create a memorable title, they find synonyms beginning with the letter "c" to capture each component and combine them to create the 5C's model: confidence, control, coordination, commitment and composure. Nevertheless, it is regularly highlighted within this study that the 5Cs of academic buoyancy is a tentative model.

In an earlier study Martin et al. (2006) outline several factors that were identified as predicting academic resilience. Martin et al. (2008a) later re-conceptualise academic resilience as presented in this 2006 paper as academic buoyancy. Through a cluster analysis and path modelling the 5C's are highlighted as predictors of academic buoyancy, with anxiety as the strongest predictor, or composure as it is labelled within the 5C's model. This suggests that the lower the level of anxiety, the higher the level of academic buoyancy. This initial finding (Martin et al., 2006) was further supported in their extended longitudinal modelling study (Martin et al., 2010) which highlighted anxiety as the strongest predictor of buoyancy, followed by uncertain control, self-efficacy, persistence and planning. They comment on the salience of anxiety as a "striking feature" of the model as it "explains by far the bulk of the variance" (Martin et al., 2010, p. 488). They predict that an intervention which aims to improve academic buoyancy would be best designed around the multi-dimensional elements that predict it, such as the 5C's.

The strong relationship which is reported to exist between anxiety and academic buoyancy (Martin et al., 2006; 2010) helps to understand Puolakanaho et al. (2019) and Putwain et al.'s (2019) rationale for focusing on ACT and CBT interventions for improving academic buoyancy. CBT is recognised as a common treatment of anxiety and there is growing support for ACT in the treatment of anxiety too (Swain, Hancock, Hainsworth, Bowman, 2013). The aims of the Youth COMPASS (Puolakanaho et al., 2019) intervention were to find direction for life though recognising activities that provide energy, wellbeing and joy, promote awareness of self and acceptance and cognitive diffusion skills, be in the present and practice acceptance (mindfulness), recognise the self and provide self-compassion, and promote good social relationships and be compassionate towards others. ACT interventions combine elements of mindfulness and acceptance with behavioural principles and an understanding of personal values. Puolakanaho et al. (2019) proposed that their ACT intervention could potentially work as preventative and proactive tools for easing psychological symptoms such as anxiety and promoting

wellbeing. In turn, with anxiety as a strong predictor of academic buoyancy, it may also increase levels of academic buoyancy.

In comparison, BePART's (Putwain et al., 2019) multi-component wellbeing intervention combines elements of CBT, mindfulness, positive psychology and goal-setting theory. The aims of the sessions were to recognise negative thoughts and prompt positive ways of thinking, recognise triggers and signs of stress to enhance positive emotions, understand the impact of diet and exercise on psychological and physical health, learn a mindfulness-based technique to improve sleep, and set goals to maintain and improve future wellbeing. The authors comment that mindfulness and CBT were included within the programme to focus on improving students' composure and control, the two strongest predictors of academic buoyancy from the 5C's model to manage academic setbacks and academic pressures (Martin et al., 2010). The lesson which focuses on goal setting activities would also incorporate a third predictor of academic buoyancy from the 5C's model under planning, self-regulation or co-ordination. Mindfulness was also incorporated to help students understand how to down-regulate negative emotions.

Nevertheless, there are fundamental flaws in how the Youth COMPASS and BePART RCTs are reported with regards to their designs and implementation. Whilst there may be some theoretical reasoning for the programmes trialled within these RCTs, both studies received a rating of 1★ using Gorard's (2014) sieve for judging the trustworthiness of the research. These studies demonstrated limited control over their designs and methods, sample sizes, level of attrition, quality of data and outcomes, implementation fidelity and validity. As a result, the trustworthiness of these studies is lower and the ability to make confident conclusions based on the findings from these studies is limited. Increased rigour in the design and implementation of these RCTs may have had the potential to generate a larger effect than was seen in these studies.

Furthermore, both RCTs test mindfulness as one element of a multi-component programme but this construct is not measured across either study. Puolakanaho et al. (2019) measure academic skills, overall stress, school stress and academic buoyancy but they do not measure mindfulness. Likewise, Putwain et al. (2019) measure school-related wellbeing, academic buoyancy and adaptability but again, mindfulness is not measured. This may provide a rationale for measuring the impact that mindfulness could potentially have as an independent factor for lowering student's levels of anxiety and improving students' academic buoyancy. As discussed earlier in chapter three, systematic reviews and meta-analyses have shown some early evidence to suggest that mindfulness-based interventions (MBIs) may influence socio-emotional and psychological outcomes in young people such as resilience, anxiety, stress, and emotion regulation (Zenner et al., 2014; Maynard et al., 2017; Dunning et al., 2019; McKeering et al., 2019; Segal et al., 2021). Nevertheless, the low quality of

evidence relating to MBIs in schools with young people limits their ability to say with confidence whether these interventions could improve socio-emotional and psychological outcomes in young people. Limitations include persistent design and methodological limitations and a lack of attention to detail in how studies are reported. Nevertheless, MBIs continue to be a commonly used intervention in the treatment of stress and anxiety, with courses such as Mindfulness-Based Stress Reduction designed for adults and adapted for young people.

A meta-analysis of MBSR on anxiety symptoms in young people, although not primarily undertaken in school settings, highlighted that MBSR reduced anxiety symptoms when compared to control conditions at post-treatment (Zhou et al., 2020). From the analyses performed in the Youth COMPASS and BePART intervention studies it is not explored if mindfulness was a leading component across both curriculums that was responsible for improving levels of academic buoyancy, or whether it had any impact at all. This provides a rationale for testing whether there is a direct relationship between mindfulness and academic buoyancy further. By isolating mindfulness as the focus of an intervention, it may be possible to understand whether training of this kind holds potential for improving levels of academic buoyancy in students through focusing on three of the 5C predictors of academic buoyancy: composure, control and co-ordination.

Implementation of an MBI in an educational setting should draw upon existing literature to ensure that future research improves on existing limitations in this field of research. To ensure a trustworthy RCT the study should ensure that all elements of its design and methodology are equal aside from the cause, it should aim for a large-scale study with a large number of cases per comparison group, there should be minimal bias introduced through attrition, there should be strong outcomes and quality of data collected with a standardised pre-specified independent outcome, transparent reporting of the study's implementation fidelity which describes the intervention clearly and takes a uniform approach to the delivery, and it should aim to achieve high validity with no evidence of diffusion or other threats (Gorard, 2014). As part of a robust RCT design, a process evaluation should also be embedded into the research design to consider issues of implementation fidelity which have previously been ignored in the two existing RCT studies (Puolakanaho et al., 2019 & Putwain et al., 2019). This is a method to reveal broader knowledge and contextual understanding about the magnitude of an observed effect (Siddiqui, Gorard & See, 2018). Whilst robust randomised trials and impact evaluations can help to ascertain whether the intervention has had an effect, a process evaluation may also help to ascertain how or why the intervention did or did not work. This is an important feature of future intervention work to contribute to the contextual understanding around academic buoyancy trials.

6.7: Limitations of the systematic review

A systematic review with narrative synthesis was considered appropriate for analysing and synthesising the data extracted from the studies in this review. A systematic and transparent approach to conducting and reporting the synthesis process is documented throughout to minimise bias and encourage future replicability. All studies included in this analysis were published or unpublished in the English language and two studies were excluded as they were published in Arabic and a translation could not be found. This raises questions about whether literature published in languages other than English could bring another cultural perspective to the discussion about how to define and measure academic buoyancy. For example, the definition of academic buoyancy and language revealed in translation may detect culturally specific interpretations of the construct, which may not be reflected in the original definition as published by Martin et al. (2008a) and his subsequent works. Whilst a body of work has started to make cross-cultural comparisons and research academic buoyancy across different samples and contexts, this remains as an area for further development (Collie, Ginns, Martin & Papworth, 2017; Datu & Yang, 2019; Martin, Yu, Ginns & Papworth, 2017; Yun et al., 2018; Khalaf et al., 2021). Tudor et al. (2018) recommend that further clarity around the conceptualisation and operationalisation of academic buoyancy is also crucial before further intervention work can meaningfully take place. This is to ensure that future interventions are targeting and measuring the academic buoyancy construct accurately.

The ABS is the most used measure of academic buoyancy across all studies included within this review. Yet there are few existing studies which have tested the psychometric quality of the ABS. Whilst there is some early indication that researchers may be turning their attention to this issue (see Datu et al., 2018a; Khalaf et al., 2021; Martin et al., 2008a,b; Putwain et al., 2012), there is little convincing research to suggest that the ABS is a consistently reliable and valid measure of academic buoyancy for all genders and across all cultural contexts. The ABS raises issues of reliability, validity, reporting biases and the ability of young people to assess themselves with accuracy. This scale measures a student's own perception of their academic buoyancy, it does not provide an objective measure. Further work should also be carried out to develop objective measures of academic buoyancy, which take into consideration the perceptions of parents and teachers. This could ascertain the extent to which the findings from students' subjective self-reported measures on the ABS correlate to objective measurements of the same construct. Work on issues surrounding the ABS are areas for further research to be confident that the scale is reliable and valid. Whilst research currently reports that the ABS has shown good reliability and construct validity across several studies, targeted research would be beneficial to put these claims to the test (Martin, 2013a; Martin, et al., 2010).

Another limitation of this systematic review is the small number of RCTs eligible to be included in phase two. Two RCTs (Puolakanaho et al., 2019; Putwain et al., 2019), were judged in this review to have a 1★ rating of trustworthiness. This indicates that the findings from these studies are not trustworthy enough to make confident recommendations that the Youth COMPASS or BePART interventions can change or improve students' academic buoyancy. As such, these studies provide limited evidence to make further research and policy recommendations.

6.8: Implications of the systematic review

6.8.1: For policymakers

Durlak, Weissberg, Dymnicki, Taylor & Schellinger (2011) propose that a “broad agreement” exists between policymakers, educational practitioners and the wider public which holds the education system responsible for the cognitive and social emotional development of students (p.406). There is increasing speculation around the role that certain character traits and attributes might play in helping students to be well-rounded young people. Policymakers suggest that enhancing students' character may enable young people “to achieve positive health, education, employment and other outcomes” (DfE, 2017a, p.3; DfE, 2019b). Over recent years, policymakers in England have also supported the idea that character education and skills such as resilience can be taught (DfE, 2019b). As such, policy documents refer to a multitude of non-cognitive skills and character traits that schools across all age phases should aim to incorporate into their curriculums. Terms used to describe these non-cognitive skills are often used interchangeably with little clarification about their conceptual or operational definitions. For example, skills such as resilience, coping, tenacity and persistence are used within policy documents, but it may be unclear to the intended audiences of these documents that they each describe different constructs, have different definitions and measurements, and require different interventions to assist in the development of these skills (DfE, 2019b).

It might be important for policymakers to recognise that not all students encounter major adversity in order to identify effective interventions to implement with the wider student population. Rutter (1999) suggests that it is not possible to explore resilience and resistance to major stress and adversity in children who have not experienced circumstances which carry an increased risk of psychopathology. By way of definition resilience and its appropriate interventions may not be suitable to implement across the wider student population. Brown and Shay (2021) report that the narrative around resilience has grown in policy discourse but practitioners and the public are “misguidedly” led to assume that it will assure wellbeing in children (p.8). One purpose of this review is to highlight that when addressing the wider student population terms such as resilience and its associated interventions may not be fit for purpose. It might be important for policymakers and policy documents to make clearer distinctions between different non-cognitive skills to ensure that educational practitioners are suitably equipped with evidence-based information. This review may

also place academic buoyancy on the map which, if a beneficial non-cognitive skill, may be more fit for purpose when referring to a type of resilience that could embody the wider student population who experience instances of minor adversity in their daily school lives. Nevertheless, further work is required to enhance the conceptual and operational definitions of academic buoyancy, alongside robust evaluations of trials before this can become a recommendation for policy makers.

6.8.2: For educational practitioners and practice

Interest in character education may also be growing amongst educational practitioners due to its reported benefits for improving students' educational outcomes. The DfE (2017a) surveyed 880 schools about the provision of character education within their schools. Institution types included primary, secondary, independent, and special schools, alternative provision and pupil referral units. Staff members in these participating schools reported that competing time pressures and a lack of capacity were two barriers that were preventing them from delivering character education to their students. Further barriers such as performance-related pay and inspection requirements encourage schools to dedicate their time to delivering academic subjects and focus on student results (DfE, 2017a). Given these time constraints and competing demands educational practitioners may need support in finding and implementing evidence-based approaches that have the potential to produce a multitude of benefits for students (Durlak et al., 2011).

A study conducted by Brown et al. (2021) suggested that resilience regularly featured in daily school discourse and was a widely used term by students. Examples of how schools used the term resilience included teacher discourse, school mottos, or highlighting resilience as a key schooling principle. When questioned students' definitions of resilience included to "better yourself", "try harder" and "don't give up" (p.19). Brown et al. (2021) also identified that some schools failed to signpost where students could find resources and mechanisms to achieve these outcomes. This might suggest that non-cognitive skills are becoming common features of school discourse, but practitioners and students may be unclear about how to improve them. Providing educational practitioners with up-to-date evidence-based summaries, tools and techniques, such as the EEF Teaching and Learning Toolkit, might be useful for practitioners when they are looking to identify interventions which may have the potential to improve their students' non-cognitive skills (EEF, 2021).

6.8.3: For academic researchers

Despite a growing interest amongst educational researchers in character education and non-cognitive skills, causal relationships between constructs and their possible benefits to educational outcomes remain under-researched and are not well-established (EEF, 2013). Taking academic buoyancy as an example, this is demonstrated by a lack of robust evidence. Reflecting on lessons learned from classic resilience literature, it is important for academic researchers to continue questioning the psychometric

rigour of the ABS and ensure that this is a reliable and valid measure of academic buoyancy. There are concerns in the literature about the creation of the ABS, as it was developed from the ARS with very little documentation about the rationale and process involved in designing the scale items (Tudor et al., 2018). Researchers have continually relied on using the ABS to measure buoyancy and it is often justified by reporting statistics related to the scale's internal consistency. This provides a very narrow perspective to consider the ABS's trustworthiness. Research which focuses on the psychometric properties of the ABS to establish if this is a reliable and valid measure, which will undergo rigorous testing and evaluation, is also highlighted as an area for further research.

Meanwhile it may be important for researchers to continue making distinctions between academic buoyancy and its cognate constructs. Over time, definitions of academic buoyancy have continued to be influenced by the same early studies (Martin et al., 2008a, 2009b, 2010). Greater understanding of the academic buoyancy construct and its relationships with other constructs may influence how it is defined and challenge how closely the current definition of academic buoyancy maps onto the construct of interest. A critical review of the definition and the language used over time is encouraged. In future years, a follow-up systematic review is also encouraged to re-assess the direction of academic buoyancy research in relation to the same research questions underpinning this review. This is encouraged to assess changes and improvements in this growing field of research.

Based on the results of the first two RCTs (Puolakanaho et al., 2019; Putwain et al., 2019), it is uncertain if academic buoyancy is a meaningful construct for describing how students deal with the challenges and setbacks that are typically experienced as part of daily school life. The two RCTs which have explored whether academic buoyancy is malleable to intervention are untrustworthy and limited in their ability to make confident conclusions about whether this construct can be improved in students. The direct and indirect costs of implementing interventions in schools should be carefully considered to ensure that they are cost-effective and are adequately examined. Based on current research, there is limited support to back an academic buoyancy intervention further than a feasibility trial at this time. Future feasibility studies should take care to ensure that their designs and methods are implemented rigorously to report with a higher degree of confidence about the potential effects of an academic buoyancy intervention.

6.9: Conclusion

This results chapter presents a systematic account of available research evidence to provide answers to the four research questions underpinning this review. Academic buoyancy has continued to attract interest from researchers for over a decade and research is underway to understand the nature of the construct and the factors that predict it. The results of the systematic review highlight that academic buoyancy research first appeared in 2008. Most studies have based their conceptual and operational

definitions of academic buoyancy around the earliest works on this construct. Many studies on academic buoyancy have also been written by a recurring group of the same authors (Martin et al., 2008a, 2009b; Martin et al., 2010; Martin, 2013a). Whilst these authors, namely Andrew Martin and members of this research group, have continued to research academic buoyancy this construct has also caught the attention of other educational researchers in recent years, producing an increased number of publications from 2018 onwards.

Two intervention studies published in 2019 (Puolakanaho et al., 2019; Putwain et al., 2019) are the first examples of empirical effectiveness research where academic buoyancy was measured as an outcome. These RCTs explore interventions which combine mindfulness alongside other factors, to consider if multi-component interventions have an impact on students' levels of buoyancy. There is tentative evidence to suggest that academic buoyancy could be malleable, but this requires further investigation. Future effectiveness research should take place alongside theoretical work which continues to refine conceptual and operational definitions of academic buoyancy. There is still further work to be done to investigate the reciprocal relationships between academic buoyancy and its cognate constructs, such as academic adversity, academic competency and other predictors (Martin et al., 2008a, 2020). There is also a requirement for future research to evaluate whether academic buoyancy leads to any other outcomes such as improved educational participation or attainment. As composure (anxiety), control and co-ordination (self-regulation) are identified as three of the main predictors of academic buoyancy this could provide a rationale for exploring the impact that mindfulness could have on student's levels of academic buoyancy. The MiSP .b curriculum has been re-imagined as a child-friendly version of the adult MBSR training course for delivery in a school setting. MBSR is identified as an intervention for reducing symptoms of anxiety and this may have an impact on student's levels of academic buoyancy. Elements of the .b mindfulness curriculum also focus on increasing control and self-regulation, including goal setting. It would also be beneficial to take research on academic buoyancy a step further and test the impact that improving academic buoyancy could have on behavioural outcomes such as school attendance. Initially, feasibility studies are required to test new ideas and there must be evidence of promise before rigorous testing can be undertaken on a wider scale (Gorard, 2013).

CHAPTER SEVEN: RESULTS AND DISCUSSION OF THE SECONDARY DATA ANALYSIS OF SCHOOL ABSENCE DATA FROM THE NATIONAL PUPIL DATABASE

7.1: Introduction

This chapter presents the results from a secondary data analysis of school absence data from the National Pupil Database (NPD). It explores longitudinal data for one cohort of 536,530 pupils across their academic career. To summarise, the research questions that are answered in this chapter include:

1. To what extent is data on students' characteristics missing from the NPD?
2. What patterns of absence and exclusions exist in the selected cohort according to students' background characteristics?
3. Who would benefit from an attendance intervention according to students' school-level background characteristics?
4. To what extent do pupil characteristics, school characteristics and students' prior attainment predict unauthorised absence and persistent absence from school at Key Stage 3 (KS3)?

This chapter comprises five sections. The first section is a descriptive analysis of missing data across a range of key variables. Key variables include school absence (authorised, unauthorised, overall and persistent absence, and fixed term and permanent exclusion), pupils' background characteristics (gender, ethnicity, first language, FSM, SEN and change of home residence) and school-level variables (geographic region and LA). Reasons for missing data are also explored. The second section describes patterns and reasons for school absence and exclusions across the cohort's lifespan. This section also explores the differences that exist between groups of pupils with regards to different types of school absence in the final year of each curriculum Key Stage. A series of background characteristics (age, gender, ethnicity, first language, FSM and SEN) are included in the analysis. Effect sizes are calculated to demonstrate the size of the difference that background indicators can have on various types of school absence (authorised, unauthorised, overall and fixed term exclusions). The third section explores which students may benefit from a school-based attendance intervention, focusing on National Curriculum year groups, geographic region and LAs. Section four explores the key assumptions of the multiple linear regression model to explore if the model can be utilised to generate meaningful results with the current dataset. Finally, section five presents a series of regression models which predict various types of school absence at KS3, including unauthorised absence and persistent absence.

7.2: To what extent is data on students' characteristics missing from the NPD?

This section presents the findings from a longitudinal descriptive analysis of school absence data, pupil- and school-level background characteristics. The aim of this analysis is to explore how much

data is missing for key variables at the end of each Key Stage. Pupils with missing data are often different from the average student and this is important to consider when interpreting the results in this chapter (Gorard, 2012). Missing cases and values have the potential to bias research findings. For transparent reporting, this section acknowledges and describes what is known about the missing data (Gorard, 2020).

The first section focuses on various types of school absence data (overall, authorised, unauthorised and persistent absence, fixed term and permanent exclusion). The second section explores missing data for six background characteristics variables: gender, ethnicity, first language, FSM, SEN and change of home residence. The third section explores missing data for school-level characteristics including the pupils' geographic region and LA. These variables are considered school-level characteristics as they are linked to individual pupils based on their school's Unique Reference Number (URN), not their home address.

7.2.1: School absence and exclusion

Six types of school absence are included in the missing data analysis. Table 7.1 presents the percentage of missing data for each type of school absence at the end of each Key Stage.

Table 7.1: Number of students and percentage of missing school absence data by end of Key Stage (N=536,530)

	KS1 (Year 2)	KS2 (Year 6)	KS3 (Year 9)	KS4 (Year 11)
Overall absence	43,652 (8.1%)	30,078 (5.6%)	10,708 (2.0%)	4,579 (0.9%)
Authorised absence	43,652 (8.1%)	30,078 (5.6%)	10,708 (2.0%)	4,579 (0.9%)
Unauthorised absence	43,652 (8.1%)	30,078 (5.6%)	10,708 (2.0%)	4,579 (0.9%)
Persistent absence	43,652 (8.1%)	30,078 (5.6%)	10,708 (2.0%)	4,579 (0.9%)
Fixed term exclusion	535,177 (99.7%)	531,991 (99.2%)	510,711 (95.2%)	508,517 (94.7%)
Permanent exclusion	536,488 (99.99%)	536,431 (99.98%)	535,570 (99.82%)	535,881 (99.88%)

Table 7.1 shows that there is a higher percentage of missing data during the primary age phase at KS1 and KS2. As students get older, the percentage of missing data decreases for all types of school absence. A decrease in missing data could signify an increase of students joining maintained schools in England. For example, this could include students who have re-located to England from another country, students who have joined the state-funded schooling system following a period of home education, and students who have left the privately funded education system to join a state-funded school.

As exclusions data only exists for students who have been excluded, the reported percentages of missing data for these variables are high. Fixed term and permanent exclusion data is missing for the majority of students in the cohort as they have not been excluded from school.

7.2.2: Pupil-level background characteristics

Pupil-level background characteristics, including age, gender, ethnicity, first language, FSM and SEN, are collated by the School Census. Table 7.2 highlights that the percentage of missing data for pupil-level characteristics decreases as students get older.

Table 7.2: Number and percentage of missing data for pupil-level background characteristics (N=536,530)

	KS1 (Year 2)	KS2 (Year 6)	KS3 (Year 9)	KS4 (Year 11)
Age in months	43,503 (8.1%)	29,797 (5.6%)	9,527 (1.8%)	0 (0.0%)
Gender	43,503 (8.1%)	29,797 (5.6%)	9,527 (1.8%)	0 (0.0%)
Ethnicity	54,206 (10.1%)	30,843 (5.7%)	9,527 (1.8%)	0 (0.0%)
First Language	45,642 (8.5%)	30,433 (5.7%)	10,671 (2.0%)	762 (0.1%)
FSM	44,397(8.3%)	30,102 (5.6%)	9,663 (1.8%)	0 (0.0%)
SEN	45,929 (8.6%)	30,282 (5.6%)	35,140 (6.5%)	0 (0.0%)

Ethnicity and first language variables have high percentages of missing data. This could be explained by the method utilised for data collection, as schools are not permitted to provide responses to these variables. These missing values could be explained by parental refusal or non-response. For example, students who are missing ethnicity data could belong to a mixed ethnic group where their primary ethnicity is unclear, they could be recent immigrants or refugees without documentation or belong to particular ethnic minority groups such as Gypsy, Roma and Traveller families (Gorard & Siddiqui, 2019). Furthermore, missing language data could be due to parents being unable to complete the necessary school forms due to English not being their first language.

By comparing students who have missing ethnicity data with other key variables, cross tabulations can give some indication of who these students may be. Table 7.3 demonstrates that students who are missing ethnicity data are also likely to be missing gender, first language, FSM and SEN data at the end of each key stage. At KS4 there was no missing ethnicity data for comparison with other pupil-level characteristics.

For students who were missing ethnicity data at KS1, there were a higher percentage of males, English speakers, SEN students, and students that were not known to be entitled to FSM missing ethnicity data. At KS2 there were more girls, students who spoke English as an additional language,

students who did not have SEN and students who were not known to be entitled to FSM. At KS3 all students who were missing ethnicity data were also missing other pupil-level characteristics.

Table 7.3: Characteristics of students who lack ethnicity data by Key Stage

	Categories	National Curriculum Key Stage			
		KS1 (n=54,206)	KS2 (n=30,843)	KS3 (n=9,527)	KS4 (n=0)
Gender	Male	5,371 (9.9%)	476 (1.5%)	0 (0%)	-
	Female	5,332 (9.8%)	570 (1.8%)	0 (0%)	-
	Missing	43,503 (80.3%)	30,843 (96.6%)	9,527 (100%)	-
First Language	English	9683 (17.9%)	383 (1.2%)	0 (0%)	-
	Not English	813 (1.5%)	648 (2.1%)	0 (0%)	-
	Missing	43,710 (80.6%)	29,812 (96.7%)	9,527 (100%)	-
FSM	FSM	2,910 (5.4%)	121 (0.4%)	0 (0%)	-
	Not FSM	7,734 (14.3%)	750 (2.4%)	0 (0%)	-
	Missing	43,562 (80.3%)	29,972 (97.2%)	9,527 (100%)	-
SEN	SEN	2,896 (5.4%)	64 (0.2%)	0 (0%)	-
	Not SEN	7,607 (14.0%)	807 (2.6%)	0 (0%)	-
	Missing	43,703 (80.6%)	29,972 (97.2%)	9,527 (100%)	-

A high percentage of missing SEN data (6.5%) can be explained by a methodology change at KS3. As with any longitudinal data analysis variables can be subject to change, which can be challenging for making like-for-like comparisons over time. SEN reforms which took place during this cohort's academic lifetime are likely to have seen an increase in the percentage of missing SEN values at KS3. Transferring students' statements of SEN to the reformed system identified that a quarter of children identified with SEN, and half of the students who were receiving *School Action* support, did not have SEN and would not be eligible for SEN support under the new system (DfE, 2021f). The high percentage of missing values at KS3 may reflect the uncertainty about whether students who previously qualified for SEN support, were still entitled to support under the reformed Special Educational Needs and Disability criteria.

Table 7.4 presents a cross-tabulation of missing SEN data with other pupil-level characteristics. This shows that students who were missing SEN data at KS1 were more likely to be males, students from ethnic minority groups, students who spoke English as an additional language and students who were not known to be entitled to FSM. At KS2 students from White ethnic groups, students who spoke English as their first language and students who were eligible for FSM were more likely to be missing SEN data. Across KS1 to KS3 males were more likely to be missing SEN data. Government data suggests that males, English speaking students, FSM students and students from White ethnic minority groups such as GRT are prevalent characteristics for pupils who are entitled to SEN support in schools (GOV.UK, 2022c). Government data also highlights that SEN is most prevalent at age 10, which may explain a high percentage of missing data at KS2. It is possible that students who were

missing data with these characteristics could have been waiting for a referral or a diagnosis to receive additional SEN support.

Table 7.4: Characteristics of students who lack SEN data by Key Stage

	Categories	National Curriculum Key Stage			
		KS1 (n=45,929)	KS2 (n=30,282)	KS3 (n=35,140)	KS4 (n=0)
Gender	Male	1,264 (2.8%)	265 (0.9%)	16,109 (45.8%)	-
	Female	1,162 (2.5%)	220 (0.7%)	9,504 (27.1%)	-
	Missing	43,503 (94.7%)	29,797 (98.4%)	9,527 (27.1%)	-
Ethnicity	White	711 (1.5%)	193 (0.6%)	20,598 (58.6%)	-
	Not White	1,515 (3.3%)	117 (0.4%)	5,015 (14.3%)	-
	Missing	43,703 (95.2%)	29,972 (99.0%)	9,527 (27.1%)	-
First Language	English	525 (1.1%)	269 (0.9%)	22,489 (64.0%)	-
	Not English	855 (1.9%)	210 (0.7%)	3,058 (8.7%)	-
	Missing	44,549 (97.0%)	29,803 (98.4%)	9,593 (27.3%)	-
FSM	FSM	208 (0.5%)	118 (0.4%)	6,855 (19.5%)	-
	Not FSM	1,324 (2.9%)	62 (0.2%)	18,637 (53.0%)	-
	Missing	44,397 (96.7%)	30,102 (99.4%)	9,648 (27.5%)	-

Eligibility to claim FSM is not a stable pupil-level characteristic, when compared to fixed variables like age (Gorard et al., 2019). FSM eligibility is linked to family circumstances which could mean that in some academic years students meet the threshold to claim for FSM and in others they do not qualify. To claim FSM, households that claim qualifying benefits are required to register through their child’s school or their school’s LA. With the responsibility placed on parents to complete forms and provide the required evidence, this is one possibility that could explain missing data for this characteristic. For example, refugee students without the necessary documentation to claim FSM, could be temporarily missing data for this variable. Evidence suggests that students from state-schools who are missing FSM data from the NPD may be a category of low-achieving students, who are mobile between schools and have little information known about them. They may have the appearance of a “super-deprived and very low-achieving group” (Gorard & See, 2013, p.16).

Table 7.5 shows that students who were missing FSM data were more likely to be males and students from ethnic minority groups from KS1 to KS3. At KS3, students who were also missing FSM data were also more likely to have SEN.

Table 7.5: Characteristics of students who lack FSM data by Key Stage

	Categories	National Curriculum Key Stage			
		KS1 (n=44,397)	KS2 (n=30,102)	KS3 (n=9,663)	KS4 (n=0)
Gender	Male	472 (1.1%)	172 (0.6%)	74 (0.8%)	-
	Female	422 (1.0%)	133 (0.4%)	62 (0.6%)	-
	Missing	43,503 (97.9%)	29,797 (99.0%)	9,527 (98.6%)	-
Ethnicity	White	0 (0%)	77 (0.3%)	63 (0.7%)	-
	Not White	835 (1.9%)	53 (0.2%)	73 (0.8%)	-
	Missing	43,562 (98.1%)	29,972 (99.5%)	9,527 (98.5%)	-
First Language	English	0 (0%)	142 (0.5%)	84 (0.9%)	-
	Not English	0 (0%)	159 (0.5%)	51 (0.5%)	-
	Missing	44,397 (100%)	29,801 (99.0%)	9,528 (98.6%)	-
SEN	SEN	0 (0%)	0 (0%)	12 (0.1%)	-
	Not SEN	0 (0%)	0 (0%)	X (0%)	-
	Missing	44,397 (100%)	30,102 (100%)	9,651 (99.9%)	-

For students who were missing data about their age and gender, particularly in KS1 and KS2, this could have been an issue of school mobility. Examples of school mobile pupils could include children whose parents are in the armed forces and students arriving from other home countries or from outside of the United Kingdom who do not have data for their primary school years. Likewise, pupils who have joined the state-school system from being home educated or educated in the independent sector may be missing data in the early years. In line with other pupil-level characteristics, Table 7.6 shows that missing mobility data decreases as students get older. This mobility variable measures whether students changed their home postcode between School Censuses each year.

Table 7.6: Number of students and percentage of missing data for residential mobility data by end of Key Stage (N=536,530)

	KS1 (Year 2)	KS2 (Year 6)	KS3 (Year 9)	KS4 (Year 11)
Residential mobility	55,792 (10.4%)	39,177 (7.3%)	20,812 (3.9%)	6,296 (1.2%)

Table 7.7 demonstrates that at KS1, KS2 and KS4 students who are missing mobility data were also more likely to be from White ethnic groups. GRT students are categorised as a White ethnicity sub-group and cannot be distinguished as an independent group within the analysis. Mobile pupils who have changed their home address between censuses could also include service children who move home for their parents to work or students moving to the UK from other countries. Furthermore, the percentage of students that are entitled to FSM and are missing mobility data double in percentage at the end of each Key Stage between KS2 and KS4. Children from low-income families are believed to be more at risk of residential mobility due to housing instability (Crowley, 2003).

Table 7.7: Characteristics of students who lack residential mobility data by Key Stage

	Categories	National Curriculum Key Stage			
		KS1 (n=55,792)	KS2 (n=39,177)	KS3 (n=20,812)	KS4 (n=6,296)
Gender	Male	6,325 (11.3%)	4,959 (12.7%)	6,005 (28.9%)	3,362 (53.4%)
	Female	5,964 (10.7%)	4,421 (11.3%)	5,280 (25.4%)	2,934 (46.6%)
	Missing	43,503 (78.0%)	29,797 (76.0%)	9,527 (45.7%)	-
Ethnicity	White	6,636 (11.9%)	4,889 (12.5%)	5,363 (25.8%)	3,467 (55.1%)
	Not White	5,169 (9.3%)	3,445 (8.8%)	5,922 (28.5%)	2,829 (44.9%)
	Missing	43,987 (78.8%)	30,843 (78.7%)	9,527 (45.8%)	-
First Language	English	5,555 (10.0%)	4,691 (12.0%)	5,600 (26.9%)	2,997 (47.6%)
	Not English	5,640 (10.1%)	4,613 (11.8%)	5,588 (26.8%)	3,230 (51.3%)
	Missing	44,597 (79.9%)	29,873 (76.2%)	9,624 (46.2%)	69 (1.1%)
FSM	FSM	1,819 (3.3%)	1,609 (4.1%)	1,736 (8.3%)	1,010 (16.0%)
	Not FSM	9,576 (17.2%)	7,466 (19.1%)	9,413 (45.2%)	5,286 (84.0%)
	Missing	44,397 (79.6%)	30,102 (76.8%)	9,663 (46.4%)	-
SEN	SEN	1,952 (3.5%)	1,412 (3.6%)	842 (4.0%)	1,143 (18.2%)
	Not SEN	7,911 (14.2%)	7,659 (19.5%)	9,874 (47.4%)	5,153 (81.8%)
	Missing	45,929 (82.3%)	30,106 (76.9%)	10,096 (48.5%)	-

There are many explanations for why pupil-level characteristics data could be missing from the NPD. Including missing data as an extra category for each variable included within the regression models in section 7.6 will consider the impact that it can have on the ability to predict which students are absent from school at KS3.

7.2.3: School-level background characteristics

School-level background characteristics included within the regression models include geographic regions and LA areas. This information indicates where the student goes to school, but does not give information about their home postcode.

Table 7.8: Percentage of missing data for school-level characteristics by end of Key Stage (N=536,530)

	KS1 (Year 2)	KS2 (Year 6)	KS3 (Year 9)	KS4 (Year 11)
Geographic region	43,503 (8.1%)	29,797 (5.6%)	9,527 (1.8%)	0 (0%)
Local Authority	43,503 (8.1%)	29,797 (5.6%)	9,527 (1.8%)	0 (0%)

As with the personal-level variables, Table 7.8 highlights that the amount of missing data reduces as the students get older. These geographic variables were assigned to individual students from the ‘Get Information About Schools’ database, which was linked to the NPD. This explains why the same percentage of data is missing for both variables. Many of the arguments presented above about reasons for missing residential mobility data are also applicable to students missing data about their school’s geographic region and LA. Furthermore, students could be missing information about their school if they are dual registered, for example, students who are on a managed move at an alternative

school for behavioural reasons, attending a pupil referral unit, or a special school on a temporary basis.

7.2.4: Summary

The NPD, like many social science datasets, has missing data (Gorard, 2020). To ensure the handling and reporting of missing data is transparent, this descriptive analysis provides an indication of the quantities of missing data across key variables and utilises cross tabulations to explore what *is known* about students who are missing data. The majority of cases that have missing data for one key variable, may also be missing data for other key variables. This is a limitation of the NPD dataset. Nevertheless, for those who do have some available data, the profiles of students who are missing data for key variables changes across key stages. To summarise, this analysis shows that this missing data is not random. It is often an indication of the most deprived students who are entitled to FSM, belong to ethnic minority groups, are entitled to SEN support and are mobile between residences. For those with missing data across many variables for a number of years, it may be possible to speculate that some of these students belong to a super deprived group who find themselves missing from the system completely. This missing data analysis should be considered in the interpretation of the models in section 7.6, as missing data has the potential to introduce bias into the results. Nevertheless, consideration has been given to how missing data is handled within the analysis to ensure the challenges presented by missing data are minimised.

7.3: What patterns of absence and exclusions exist in the selected cohort according to students' background characteristics?

This section presents the results of a descriptive analysis of school absence and exclusions data. It explores patterns of absence for the selected cohort using pupils' background characteristics including gender, ethnicity, first language, FSM and SEN to provide an estimate about which groups of students are more likely to be absent from school. All maintained schools in England are required to keep daily attendance registers which record reasons for absence. Reasons for exclusions are also reported by schools to the School Census. This section will explore the reasons provided to offer some context about why students are absent and excluded from school. Finally, effect sizes are calculated to understand the size of the effect that certain pupil-level characteristics can have on various types of school absence and fixed term exclusion. Whilst section 7.2 has provided a detailed overview of missing data, it is important to recognise that missing data could influence the calculated effect sizes and they are provided as estimations.

7.3.1: School absence and exclusion

Table 7.9 outlines the number and percentage of pupils at the end of each curriculum Key Stage with at least one session of absence or exclusion of various types. In line with existing literature, this table supports the idea that absence from school is considered a “normal” behaviour with up to 92% of students having at least one session of absence during Year 9 (Evans, 2000, p.183). The group of students who were not recorded as absent from school was smaller, with 9.6% of students having no recorded absences in the final year of primary school and 8.3% at the end of secondary school. When compared to the end of KS1 and KS3, the higher percentages of pupils without absences in KS2 and KS4 could be explained by students taking national examinations in English schools during these academic years.

Table 7.9: Number and percentage of students with at least one session of absence and exclusion types by Key Stage (*N*=536,530)

	KS1 (Year 2) <i>N</i> =536,530	KS2 (Year 6) <i>N</i> =536,530	KS3 (Year 9) <i>N</i> =536,530	KS4 (Year 11) <i>N</i> =536,530
No absence	27,634 (5.2%)	51,453 (9.6%)	32,137 (6.0%)	44,626 (8.3%)
At least one session of absence	465,244 (86.7%)	454,999 (84.8%)	493,685 (92.0%)	487,325 (90.8%)
At least one session of authorised absence	462,432 (86.0%)	446,263 (83.2%)	483,976 (90.2%)	473,748 (88.3%)
At least one session of unauthorised absence	103,032 (19.2%)	119,271 (22.2%)	203,308 (37.9%)	217,825 (40.6%)
Persistent absentee	7,683 (1.4%)	13,122 (2.4%)	70,415 (13.1%)	75,899 (14.1%)
At least one session of fixed term exclusion	1,353 (0.3%)	4,539 (0.8%)	25,819 (4.8%)	28,013 (5.3%)
Permanently excluded	42 (0.01%)	99 (0.02%)	960 (0.18%)	649 (0.12%)

Overall, students who were absent from school for authorised reasons were more common than unauthorised reasons, but there was a gradual increase in unauthorised absences as students got older. As students get older and become more responsible for getting themselves to school, it is possible that an increase in unauthorised absences could indicate less parental engagement in getting their child to school. If parents do not volunteer a reason for their child’s absence, schools are required to obtain this information. If schools are unable to obtain this information it will be categorised as unauthorised. Furthermore, unauthorised absences are also inclusive of lateness and absent without an approved reason. From KS2 to KS3 there was a 10.7% increase in students being reported as persistently absent. Some of this sizeable increase could be explained by a national change in the persistent absence threshold from 15% of sessions absent to 10%.

Sessions of authorised absence were high at KS3, suggesting that the number of illness, medical and dental appointments were common reasons for absence during this academic year. Without students having to provide proof of illness in some cases, there could be speculation about whether genuine

illnesses were the true cause of absence. The percentage of unauthorised absence sessions doubled over the course of the cohort's academic career, from 19.2% in KS1 to 40.6% in KS4.

All types of absence, including overall, authorised and unauthorised absence, were high at the end of KS3. Only 6% of students did not have any sessions of absence. Absences at KS3 are a multi-faceted problem with many possible explanations. Students transitioning into adolescence and the biological changes that their bodies undertake during this period may be one explanation for high authorised absences (90.2%) which are largely explained by illness and medical appointments.

With regards to exclusion, the data shows that behavioural issues become more prevalent during the secondary age phase. For example, the percentage of students who received at least one session of fixed term exclusion increased by six times between KS2 (0.8%) and KS3 (4.8%). The percentage of fixed term exclusions continued to increase at KS4. During KS3, the percentage of students who were permanently excluded from school was higher than any other Key Stage.

Overall, there was change in students' attendance behaviour in the transition between KS2 and KS3, with increases in all types of absences at the end of KS3. For some problematic types of absence such as unauthorised absence, persistent absence and fixed term exclusions, where explanations for absence may be deemed unsatisfactory or unknown, the percentage of students who belonged to these groups continued to increase throughout the secondary age phase.

7.3.2: Reasons for school absence

Table 7.10 outlines reasons for absence as they are reported by schools to the School Census. Shape symbols (Δ and \square) are included to categorise authorised and unauthorised reasons.

For this cohort, authorised absences explain a large proportion of all school absences. For example, illness explains over half (between 64.2% and 50.5%) of all school absences throughout the primary phase until Year 8. Medical and dental appointments also explain between 6.4% to 14.6% of school absences across all year groups. In years 9 and 10 other authorised circumstances were also increased. Whilst these categories go some way to explain reasons for absence, further categorisation of illness symptoms and other authorised circumstances may be insightful to increase our understanding of why students are absent from school. The DfE may wish to review current attendance codes and consult with schools to explore whether they are fit for purpose.

Table 7.10: Reasons for school absence by National Curriculum year group

Reason for School Absence	National Curriculum Year Group										
	1	2	3	4	5	6	7	8	9	10	11
Sessions of absence (<i>n</i>)	a	b	c	d	e	f	g	h	i	j	k
Other authorised circumstances % Δ	5.6	7.3	10.5	11.4	9.5	8.5	10.8	11.4	14.9	16.9	9.2
Excluded with no other alternative provision % Δ	0.1	0.2	0.2	0.4	0.6	1.0	1.8	2.4	2.9	2.9	2.2
Agreed extended family holiday % Δ	0.7	0.7	0.3	1.1	0.6	0.5	0.2	0.0	N/A	N/A	N/A
Family holiday or extra days not agreed by the school % □	1.3	1.0	0.4	0.5	0.7	0.8	1.0	1.6	1.2	1.2	1.9
Agreed family holiday % Δ	14.1	8.7	7.7	7.6	7.9	7.6	5.3	3.8	2.4	2.0	0.3
Illness (not medical or dental) % Δ	64.2	60.9	59.8	58.4	58.0	58.3	55.9	50.5	46.1	39.5	44.3
Authorised medical or dental appointment % Δ	6.4	14.1	13.1	13.4	13.5	14.6	12.8	13.4	11.4	10.4	6.4
Unauthorised but reason not yet provided % □	1.6	0.8	0.9	1.1	0.9	0.6	0.9	1.0	0.8	0.8	1.9
Unauthorised reason not covered by other reasons listed % □	4.6	4.2	4.2	4.5	5.8	6.6	9.6	14.1	18.9	24.5	25.5
Authorised religious observance % Δ	0.1	1.1	1.8	1.0	1.6	0.3	0.4	0.7	0.1	0.5	0.7
Study leave % Δ	0.1	0.0	0.0	0.0	0.0	0.3	0.4	0.0	0.0	0.0	5.9
Traveller absence % Δ	0.1	0.3	0.3	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.1
Late arrival after registers closed % □	1.1	0.6	0.6	0.6	0.6	0.7	0.7	0.8	1.1	1.3	1.8
TOTAL %	100	100	100	100	100	100	100	100	100	100	100

Key: Δ authorised absence, □ unauthorised absence; N/A = code does not exist; *n*=total number of absent sessions reported in each academic year; a=8,163,834; b=73,340; c=87,011; d=93,761; e=102,968; f=113,979; g=168,785; h=184,439; i=239,887; j=300,635; k=10,439,331

If further categorisation would not be a feasible solution for schools, it may be possible to link the NPD data to student's health records for further insight. This type of data linkage has recently been achieved with education and mental health records, but the quality of combined data could potentially lead to underestimates for the most disadvantaged groups (Libuy et al., 2021; Mansfield, Gallacher, Mourby & Fazel, 2020). This is an interesting area for further research. With further knowledge about students' illnesses, front line educational practitioners may be able to be more pro-active and recognise attendance patterns early before they become problematic for some students.

Unauthorised absences which were not covered by "other" codes increased as students got older, from 4.6% in Year 1 to 25.5% in Year 11. By the end of KS4, this unauthorised category explained a quarter of all absences. Like authorised illness, this vague categorisation provides little information about the true reasons for student absences. As it is explaining a large proportion of all absences, especially at KS4, this overriding category would also benefit from further sub-grouping. This would suggest that there are currently too few codes used by schools to explain reasons for unauthorised absence. Arriving late to school also increased as students got older, and it was most prevalent in Years 9 to 11. Some studies have suggested that there may be a link between adolescents and a natural shift in their sleep cycles, which promotes later sleep and waking times (Kelley, Lockley, Kelley & Evans, 2017). This could explain increased lateness from ages 13 to 16.

Reforms to national attendance policies may have impacted the percentage of agreed family holidays which decreased from 14.1% in Year 1 to 0.3% in Year 11. Codes such as agreed extended family holidays were phased out towards the end of this cohort's school career. As the percentage of agreed family holidays decreased, the number of unagreed family holidays increased during the secondary school years. There was a high percentage of unauthorised holidays taking place during Year 8 (1.6%) and Year 11 (1.9%). A change to family holidays during term time rules is closely linked to the pattern identified in Year 8.

Recorded traveller absences decreased with age and were highest during the primary age phase. It may be possible that traveller absences are higher during primary school years as there are more students enrolled in state-funded education. As students get older and start secondary school they may leave the education system entirely to work, take on family responsibilities or because they believe the education system does not meet their needs. In a recent parliamentary committee inquiry, reasons for GRT children leaving the education system included bullying, schools not taking their needs into account, not seeing the relevance of education and schools educating their children in a way that was deemed culturally unacceptable (House of Commons, 2019).

Exclusions without alternative provisions increased as students got older and remained constantly high during Year 9 and Year 10 (2.9%). The next section (section 7.3.3) provides further insight into reasons for school exclusions.

7.3.3: Reasons for school exclusion

Table 7.11 outlines reasons for school exclusions. This table only includes information about students who have been excluded. Percentages are calculated as the number of sessions excluded for a given reason by the total number of excluded sessions.

Persistent disruptive behaviour is highlighted as the most prevalent reason for exclusion. It explained one quarter of absences in Year 11 (25.4%). Physical assault against another pupil explains approximately one quarter of exclusions, which decreased with age. A similar pattern was also seen for physical assaults against adults but there was a significant decrease in cases during the secondary age phase. Reductions in physical violence may suggest an increase in emotional maturity and students remaining in control of their emotions as they get older.

Bullying, racial abuse and verbal conflict were most prevalent during the transition from KS2 to KS3. Exclusions of these kinds may relate to a change in school environment during a challenging period of social interactions. In primary schools in England students are clustered in National Curriculum classes, which nationally consist of approximately 27 students on average (GOV.UK, 2022b). When students start secondary school each year group is usually made up of multiple classes of students. Integrating more students together with varying demographic backgrounds may lead to new social and cultural experiences. The challenges associated with this type of social integration could lead to instances of bullying, racial abuse and verbal conflict as students learn to navigate new social and cultural experiences.

Exclusions for sexual misconduct were also highest in Years 7 and 8. An Ofsted report (2021) highlighted that sexual harassment and online sexual abuse cases had become normalised for children. For example, being sent unsolicited explicit sexual material and being pressured to send pictures were described as “normal” and “prevalent” behaviours online. A reduction in cases as children got older may reflect students’ worries about “reputational damage” which may prevent them from reporting incidents of sexual misconduct.

As students got older exclusions for damage became more common, accounting for 3% of exclusions in Year 11. This may demonstrate an anti-establishment and anti-social mindset which developed with age. Drugs and alcohol-related exclusions were also highest in Years 10 and 11. “Other” reasons for exclusion also increased with age. The Timpson Review (2019) questions whether this exclusion category is fit for purpose as it does not provide adequate information to explain why students were excluded from school.

Table 7.11: Reasons for school exclusion by National Curriculum year group

Reasons for Exclusion	National Curriculum Year Group										
	1	2	3	4	5	6	7	8	9	10	11
Sessions of exclusion (<i>n</i>)	2,131	2,907	4,022	5,006	6,988	8,035	20,972	34,952	53,484	68,407	51,581
Bullying %	X	0.5	0.7	1.2	1.1	1.9	2.3	1.8	1.4	1.1	1.0
Damage %	1.5	1.3	1.9	1.8	2.2	2.2	2.0	2.2	2.4	2.5	3.0
Drug and alcohol related %	X	X	X	X	X	0.1	0.7	1.8	3.2	4.7	5.4
Other %	4.9	4.5	5.0	6.5	6.9	8.3	16.1	16.8	20.0	21.6	23.1
Persistent disruptive behaviour %	27.0	26.7	29.0	28.2	28.7	25.5	20.2	24.3	26.3	26.6	25.4
Physical assault against a pupil %	23.9	22.7	24.5	26.1	26.1	28.2	28.2	22.2	17.1	14.8	13.3
Physical assault against an adult %	33.2	31.3	22.9	17.9	12.2	8.9	4.7	3.9	3.1	2.5	2.3
Racial abuse %	X	X	0.8	1.2	1.5	1.6	2.6	2.1	1.5	1.1	0.9
Sexual misconduct %	0.5	X	0.9	0.5	0.8	0.7	1.1	1.1	1.0	0.6	0.6
Theft %	X	0.4	0.7	0.5	1.0	1.1	2.8	1.9	1.3	1.1	1.1
Verbal abuse/threatening behaviour against pupils %	2.4	3.9	4.1	5.0	6.5	7.0	5.6	4.5	4.1	4.0	3.8
Verbal abuse/threatening behaviour against adults %	5.8	8.0	9.5	11.1	13.0	14.5	13.7	17.4	18.6	19.4	20.1
TOTAL (%)	100	100	100	100	100	100	100	100	100	100	100

Key: X = cells with low cell counts where $n < 10$; n =total number of sessions excluded in each academic year

7.3.5: Gender

The results from Table 7.12 suggest that males may have been more absent from school than females.

A within-group analysis of figures suggests that females may have had more authorised absences from school at KS3 and KS4 compared to boys. With regards to fixed term exclusions, there were double the number of male absences for exclusions at KS3 and KS4 than females.

Table 7.12: Percentage of absences and fixed term exclusion by gender ($N=536,530$)

	KS1 (Year 2) ($N=536,530$)		KS2 (Year 6) ($N=536,530$)		KS3 (Year 9) ($N=536,530$)		KS4 (Year 11) ($N=536,530$)	
	M ($n=251,636$)	F ($n=241,391$)	M ($n=258,472$)	F ($n=248,261$)	M ($n=268,978$)	F ($n=258,025$)	M ($n=274,046$)	F ($n=262,484$)
N	14,384 (2.7%)	13,250 (2.5%)	25,577 (4.8%)	25,876 (4.8%)	16,870 (3.1%)	15,267 (2.8%)	25,128 (4.7%)	19,498 (3.6%)
O	237,159 (44.2%)	228,085 (42.5%)	232,691 (43.4%)	222,308 (41.4%)	251,317 (46.8%)	242,368 (45.2%)	246,338 (45.9%)	240,987 (44.9%)
A	235,179 (43.8%)	226,253 (42.2%)	228,259 (42.5%)	218,004 (40.6%)	246,107 (45.9%)	237,869 (44.3%)	238,720 (44.5%)	235,028 (43.8%)
U	52,566 (9.8%)	50,466 (9.4%)	62,166 (11.6%)	57,105 (10.6%)	103,336 (19.3%)	99,972 (18.6%)	110,701 (20.6%)	107,124 (20.0%)
E	1,221 (0.23%)	131 (0.02%)	4,069 (0.76%)	470 (0.09%)	17,242 (3.21%)	8,574 (1.60%)	19,418 (3.62%)	8,595 (1.60%)

Key: N = no sessions of absence; O = at least one session of overall absence; A = at least one session of authorised absence; U = at least one session of unauthorised absence; E = at least one session of fixed term exclusion

The results in Table 7.13 suggest that gender is unlikely to be a strong predictor of absence and exclusions due to the very small effect sizes found between groups.

Table 7.13: A comparison of mean sessions absent for males and females in terms of school absences (authorised, unauthorised and overall) and fixed term exclusion by Key Stages ($N=536,530$)

		Authorised Absence Session			Unauthorised Absence Sessions			Overall Absence Sessions			Fixed Term Exclusion Sessions		
		Mean	SD	Effect size	Mean	SD	Effect size	Mean	SD	Effect size	Mean	SD	Effect size
KS1	Female	14.31	13.35	0.01	1.62	6.28	0.00	15.93	15.46	0.01	7.91	0.26	0.00
	Male	14.14	13.43		1.61	6.20		15.75	15.53		7.91	0.73	
	Total	14.23	12.84		1.61	5.98		15.84	14.85		7.91	0.53	
KS2	Female	10.54	11.43	-0.04	1.64	5.60	-0.02	12.18	13.21	-0.04	6.60	0.32	0.00
	Male	10.94	11.95		1.76	6.06		12.70	13.99		6.60	1.09	
	Total	10.74	11.37		1.70	5.67		12.45	13.24		6.60	0.79	
KS3	Female	15.31	17.37	0.01	4.64	14.60	0.01	19.95	24.30	0.01	9.03	1.96	0.00
	Male	15.07	17.17		4.56	15.17		19.64	24.67		9.03	2.68	
	Total	15.19	17.11		4.60	14.76		19.79	24.27		9.03	2.34	
KS4	Female	14.16	19.72	0.06	5.89	19.81	-0.02	20.06	30.00	0.02	7.66	1.37	-0.02
	Male	13.04	19.37		6.33	22.05		19.37	31.87		7.70	2.30	
	Total	13.59	19.55		6.12	20.98		19.71	30.97		7.68	1.90	

These results suggest that girls were more likely to be absent from school for authorised reasons particularly at KS4 (0.06). Whilst boys were more likely to be absent from school for unauthorised reasons at KS2 and KS4 (0.02), girls were more likely to be unauthorised absentees at KS3 (0.01). For all types of authorised and unauthorised absences, boys were more likely to be absent at KS2 and girls were more likely to be absent at KS1 and KS3.

Only a small number of students were eligible to be included within the fixed term exclusion effect size calculations, as data does not exist for students who have not been excluded. The results in Table 7.13 suggest that there is a difference between boys and girls at KS4, with more boys being fixed term excluded. The effect sizes presented in this descriptive analysis are small and may not be considered to be meaningful, but they could be helpful for considering issues which underpin different types of school absence across Key Stages in state-funded schools.

Whilst some gender-related patterns were found within the data for the current cohort, caution should be taken not to misinterpret these small effect sizes.

7.3.6: Ethnicity

Prior to discussing the differences between ethnic groups, it is key to highlight that there is a larger percentage of students belonging to the White ethnic group which creates an initial imbalance. Table 7.14 suggests that there was an increase in the percentage of unauthorised absences for ethnic minority groups during the secondary phase. High unauthorised absence from some minority groups is recognised in existing research literature (DfE, 2020e; Strand, 2007). Likewise, the percentage of students from ethnic minority groups who were fixed term excluded during the secondary age phase is also supported by literature (Demie et al., 2017; Demie, 2021).

Table 7.14: Percentage of absences and fixed term exclusion by ethnicity (N=536,530)

	KS1 (Year 2) (N=536,530)		KS2 (Year 6) (N=536,530)		KS3 (Year 9) (N=536,530)		KS4 (Year 11) (N=536,530)	
	White (n=392,122)	Not White (n=144,408)	White (n=398,529)	Not White (n=138,001)	White (n=392,122)	Not White (n=144,408)	White (n=398,529)	Not White (n=138,001)
N	22,719 (4.2%)	4,915 (0.9%)	37,897 (7.1%)	13,556 (2.5%)	22,719 (4.2%)	4,915 (0.9%)	37,897 (7.1%)	13,556 (2.5%)
O	369,323 (68.8%)	95,921 (17.9%)	360,418 (67.2%)	94,581 (17.6%)	369,323 (68.8%)	95,921 (17.9%)	360,418 (67.2%)	94,581 (17.6%)
A	366,842 (68.4%)	94,590 (17.6%)	355,198 (66.2%)	91,065 (17.0%)	366,842 (68.4%)	94,590 (17.6%)	355,198 (66.2%)	91,065 (17.0%)
U	70,270 (13.1%)	32,762 (6.1%)	85,313 (15.9%)	33,958 (6.3%)	70,270 (13.1%)	32,762 (6.1%)	85,313 (15.9%)	33,958 (6.3%)
E	1,040 (0.19%)	313 (0.06%)	3,553 (0.66%)	986 (0.18%)	1,040 (0.19%)	313 (0.06%)	3,553 (0.66%)	986 (0.18%)

Key: N = no sessions of absence; O = at least one session of overall absence; A = at least one session of authorised absence; U = at least one session of unauthorised absence; E = at least one session of fixed term exclusion

The effect sizes presented in Table 7.15 suggest that ethnicity could be a predictor of school absences and fixed-term exclusion. In this analysis, major ethnicity groups have been collapsed into two main categories, White and not known to be White. Ethnic minority groups were more likely to be unauthorised absentees at KS1 (0.15) and KS2 (0.09). Students from White ethnic groups had more authorised absences at KS2 (0.14), KS3 (0.17) and KS4 (0.15). It is important to highlight that GRT students were contained within the White ethnic group. Approved traveller absence is an authorised reason for absence and may have impacted on the findings. At KS4, belonging to an ethnic minority group could mean more fixed term exclusions.

These results indicate that ethnicity might be a meaningful indicator for understanding patterns of absence and exclusions. Further exploration of White minority ethnic groups and the impact that their absence patterns could have on effect size calculations could be an interesting area for further exploration.

Table 7.15: A comparison of mean sessions absent for White and not White students in terms of school absences (authorised, unauthorised and overall) and fixed term exclusion by Key Stages (N=536,530)

		Authorised Absence Session			Unauthorised Absence Sessions			Overall Absence Sessions			Fixed Term Exclusion Sessions		
		Mean	SD	Effect size	Mean	SD	Effect size	Mean	SD	Effect size	Mean	SD	Effect size
KS1	White	13.87	13.08	-0.10	1.37	5.82	-0.15	15.24	15.02	-0.15	7.91	0.56	0.00
	Not White	15.20	12.10		2.27	6.35		17.47	14.27		7.91	0.44	
	Total	14.23	12.84		1.61	5.98		15.84	14.85		7.91	0.53	
KS2	White	11.12	11.68	0.14	1.57	5.70	-0.09	12.73	13.75	0.08	6.60	0.83	0.01
	Not White	9.54	10.22		2.09	5.57		11.62	11.57		6.59	0.65	
	Total	10.74	11.37		1.70	5.67		12.45	13.24		6.60	0.79	
KS3	White	15.89	17.85	0.17	4.66	15.57	0.02	20.55	25.45	0.13	9.04	2.43	0.02
	Not White	12.96	14.28		4.42	11.85		17.38	19.84		9.00	2.02	
	Total	15.19	17.11		4.60	14.76		19.79	24.27		9.03	2.34	
KS4	White	14.28	20.51	0.15	6.32	21.83	0.04	20.60	32.39	0.13	7.68	1.90	-0.01
	Not White	11.26	15.68		5.44	17.33		16.70	25.36		7.69	1.90	
	Total	13.59	19.55		6.12	20.89		19.71	30.97		7.68	1.90	

7.3.7: First language

Table 7.16 demonstrates that overall absences increased for non-English speakers from KS2 to KS4.

The percentages of non-English speaking students who were recorded to have no absences at KS3 decreased to 1%, and it appears that percentages of unauthorised absences increased in the same year. For non-English speakers there was an increase of 2.2% in unauthorised absences between Key Stages 2 and 3.

Table 7.16: Percentage of absences and fixed term exclusion by first language ($N=536,530$)

	KS1 (Year 2) ($N=536,530$)		KS2 (Year 6) ($N=536,530$)		KS3 (Year 9) ($N=536,530$)		KS4 (Year 11) ($N=536,530$)	
	English ($n=418,501$)	Not English ($n=118,029$)	English ($n=423,938$)	Not English ($n=112,592$)	English ($n=446,086$)	Not English ($n=90,444$)	English ($n=450,900$)	Not English ($n=85,630$)
N	24,626 (4.6%)	3,008 (0.6%)	41,778 (7.8%)	9,675 (1.8%)	26,936 (5.0%)	5,201 (1.0%)	37,348 (7.0%)	7,278 (1.4%)
O	393,786 (73.4%)	71,458 (13.3%)	381,927 (71.2%)	73,072 (13.6%)	418,131 (77.9%)	75,554 (14.1%)	410,800 (76.6%)	76,525 (14.3%)
A	390,915 (72.9%)	70,517 (13.1%)	376,102 (70.1%)	70,161 (13.1%)	411,353 (76.7%)	72,623 (13.5%)	400,779 (74.7%)	72,969 (13.6%)
U	77,252 (14.4%)	25,780 (4.8%)	91,606 (17.1%)	27,665 (5.2%)	163,392 (30.5%)	39,916 (7.4%)	176,881 (33.0%)	40,944 (7.6%)
E	1,239 (0.23%)	114 (0.02%)	4,032 (0.75%)	507 (0.09%)	22,397 (4.17%)	3,422 (0.64%)	24,337 (4.54%)	3,676 (0.69%)

Key: N = no sessions of absence; O = at least one session of overall absence; A = at least one session of authorised absence; U = at least one session of unauthorised absence; E = at least one session of fixed term exclusion

Table 7.17 shows that there are differences between English speaking students and those that speak English as an additional language. There are some meaningful differences between groups with regards to authorised absences, particularly at KS3 (0.18) and KS4 (0.20). Whilst the effects were smaller for unauthorised absences, there is some indication that non-native English speakers were more likely to be absent from school for unauthorised reasons at KS1 (0.15), KS2 (0.11) and KS3 (0.02). The strength of the effect between groups decreased over time.

Table 7.17: A comparison of mean sessions absent for English speaking and not native English-speaking students in terms of school absences (authorised, unauthorised and overall) and fixed term exclusion by Key Stages ($N=536,530$)

		Authorised Absence Session			Unauthorised Absence Sessions			Overall Absence Sessions			Fixed Term Exclusion Sessions		
		Mean	SD	Effect size	Mean	SD	Effect size	Mean	SD	Effect size	Mean	SD	Effect size
KS1	English	13.80	13.06	-0.15	1.42	5.98	-0.15	15.22	15.08	-0.19	7.91	0.58	0.00
	Not English	15.72	11.89		2.30	5.94		18.02	13.79		7.91	0.26	
	Total	14.23	12.84		1.61	5.98		15.84	14.85		7.91	0.53	
KS2	English	11.04	11.88	0.12	1.57	5.69	-0.11	12.61	13.76	0.06	6.60	0.87	0.01
	Not English	9.63	9.09		2.21	5.58		11.85	11.03		6.59	0.38	
	Total	10.74	11.37		1.70	5.67		12.45	13.24		6.60	0.79	
KS3	English	15.71	17.78	0.18	4.56	15.44	-0.02	20.27	25.33	0.12	9.04	2.45	0.03
	Not English	12.64	13.07		4.79	10.85		17.43	17.95		8.98	1.68	
	Total	15.19	17.11		4.60	14.76		19.79	24.27		9.03	2.34	
KS4	English	14.21	20.42	0.20	6.25	21.80	0.04	20.46	32.33	0.15	7.68	1.97	0.01
	Not English	10.31	13.66		5.41	15.24		15.71	22.05		7.67	1.49	
	Total	13.59	19.55		6.12	20.89		19.71	30.97		7.68	1.90	

At KS1 there was a meaningful difference between groups across all types of school absence. Non-English speakers were more likely to be absent for all types of school absence (overall, authorised and unauthorised), which could have been due to underlying difficulties and the challenges associated with learning a new language in school at a young age. Particularly when English may not be spoken at home or in the community.

7.3.8: Free School Meals (FSM)

Table 7.18 outlines that the percentage of FSM students who were registered with no absences at each Key Stage was low. This suggests that students who belonged to the FSM group were more likely to be absent from school than their non-FSM peers. At KS2, 82,011 pupils from the 90,282 FSM students had at least one session of unauthorised absence. This equates to about 91% of students who belonged to the FSM group had at least one unauthorised absence at the end of KS2. In comparison, only 8% of students within the non-FSM group had at least one session of unauthorised absence. This was approximately 60% of students who belonged to the FSM group. In comparison, only 12% of the students who belonged to the non-FSM group had at least one session of unauthorised absence. The percentage of FSM students who had at least one session fixed term exclusion more than doubled between KS3 and KS4.

Table 7.18: Percentage of absences and fixed term exclusion by FSM status ($N=536,530$)

	KS1 (Year 2) ($N=536,530$)		KS2 (Year 6) ($N=536,530$)		KS3 (Year 9) ($N=536,530$)		KS4 (Year 11) ($N=536,530$)	
	FSM ($n=83,954$)	Not FSM ($n=452,576$)	FSM ($n=90,282$)	Not FSM ($n=446,248$)	FSM ($n=81,403$)	Not FSM ($n=455,127$)	FSM ($n=72,548$)	Not FSM ($n=463,982$)
N	2,570 (0.5%)	25,064 (4.7%)	6,367 (1.2%)	45,086 (8.4%)	2,950 (0.5%)	29,187 (5.4%)	3,970 (0.7%)	40,656 (7.6%)
O	81,349 (15.2%)	383,895 (71.6%)	83,822 (15.6%)	371,177 (69.2%)	78,274 (14.6%)	415,411 (77.4%)	67,978 (12.7%)	419,347 (78.2%)
A	80,431 (15.0%)	381,001 (71.0%)	81,515 (15.2%)	364,748 (68.0%)	76,247 (14.2%)	407,729 (76.0%)	65,496 (12.2%)	408,252 (76.1%)
U	33,336 (6.2%)	69,696 (13.0%)	82,011 (15.3%)	37,260 (6.9%)	49,058 (9.1%)	154,250 (28.7%)	44,663 (8.3%)	173,162 (32.3%)
E	565 (0.11%)	788 (0.15%)	2,143 (0.40%)	2,396 (0.45%)	8,868 (1.65%)	16,951 (3.16%)	20,549 (3.83%)	7,464 (1.39%)

Key: N = no sessions of absence; O = at least one session of overall absence; A = at least one session of authorised absence; U = at least one session of unauthorised absence; E = at least one session of fixed term exclusion

The effect sizes demonstrated in Table 7.19 are meaningful for explaining patterns of absence and exclusion. The results suggest that FSM may be a strong indicator of school absence and fixed term exclusions, especially at KS3. Table 7.9 indicates that the most disadvantaged students from low socio-economic backgrounds are more likely to be absent and excluded from school than students who are not known to be entitled to FSM.

Table 7.19: A comparison of mean sessions absent for FSM and not FSM students in terms of school absences (authorised, unauthorised and overall) and fixed term exclusion by Key Stages ($N=536,530$)

		Authorised Absence Session			Unauthorised Absence Sessions			Overall Absence Sessions			Fixed Term Exclusion Sessions		
		Mean	SD	Effect size	Mean	SD	Effect size	Mean	SD	Effect size	Mean	SD	Effect size
KS1	FSM	18.21	15.93	0.37	3.92	10.35	0.46	22.13	19.91	0.50	7.91	.94	0.00
	Not FSM	13.49	12.03		1.18	4.63		14.67	13.39		7.91	.41	
	Total	14.23	12.84		1.61	5.98		15.84	14.85		7.91	.53	
KS2	FSM	13.28	13.91	0.27	3.67	9.22	0.42	16.95	17.43	0.41	6.62	1.48	0.03
	Not FSM	10.23	10.71		1.30	4.53		11.53	12.01		6.60	.55	
	Total	10.74	11.37		1.70	5.67		12.45	13.24		6.60	.79	
KS3	FSM	19.70	21.56	0.31	11.23	25.88	0.53	30.92	35.84	0.54	9.19	3.96	0.08
	Not FSM	14.39	16.06		3.42	11.31		17.80	20.94		9.00	1.90	
	Total	15.19	17.11		4.60	14.76		19.79	24.27		9.03	2.34	
KS4	FSM	18.15	25.89	0.27	15.53	35.49	0.52	33.68	46.83	0.52	7.67	1.73	-0.03
	Not FSM	12.88	18.26		4.64	17.08		17.52	27.04		7.73	2.76	
	Total	13.59	19.55		6.12	20.89		19.71	30.97		7.68	1.90	

The difference that a student's entitlement to FSM explains between pupils at KS3 is large and meaningful, especially for overall absences (0.54). Overall absence encompasses all types of school absence. The biggest differences between groups was seen during KS3, closely followed by KS4. The difference that entitlement to FSM explains between groups of pupils decreases for authorised absence.

These effect sizes are concerning and show that entitlement for FSM was a strong predictor of unauthorised absences. This implies that students' reasons for missing school were deemed unacceptable (not in line with school rules) or remain unknown. Understanding what the facilitators and barriers are for students who are entitled to FSM at KS3 and KS4 is crucial. With regards to fixed term exclusion, entitlement to FSM explains a large amount of the difference between students at KS3 (0.08).

7.3.9: Special Educational Needs (SEN)

A comparison of within-group percentages show that at KS3, 95% of SEN students had at least one session of absence, compared to 92% of non-SEN students. Table 7.20 shows that the percentage of SEN students who had no absences at KS3 (0.6%) and KS4 (1%) are also low. For the SEN group, there appears to be a higher percentage of authorised absence, which may indicate that students were absent from school for reasons including illness, attending medical or dental appointments, agreed family holidays, or other authorised reasons.

Table 7.20: Percentage of absences and fixed term exclusion by SEN status ($N=536,530$)

	KS1 (Year 2) ($N=536,530$)		KS2 (Year 6) ($N=536,530$)		KS3 (Year 9) ($N=536,530$)		KS4 (Year 11) ($N=536,530$)	
	SEN ($n=108,706$)	Not SEN ($n=427,824$)	SEN ($n=122,342$)	Not SEN ($n=414,188$)	SEN ($n=71,107$)	Not SEN ($n=465,423$)	SEN ($n=80,646$)	Not SEN ($n=455,884$)
N	3,777 (0.7%)	23,857 (4.4%)	8,743 (1.6%)	42,710 (8.0%)	3,133 (0.6%)	29,004 (5.4%)	5,115 (1.0%)	39,511 (7.4%)
O	104,861 (19.5%)	360,383 (67.2%)	113,395 (21.1%)	341,604 (63.7%)	67,400 (12.6%)	426,285 (79.5%)	74,104 (13.8%)	413,221 (77.0%)
A	103,995 (19.4%)	357,437 (66.6%)	111,264 (20.7%)	334,999 (62.4%)	66,158 (12.3%)	417,818 (77.9%)	72,116 (13.4%)	401,632 (74.9%)
U	32,539 (6.1%)	70,493 (13.1%)	38,357 (7.1%)	80,914 (15.1%)	33,894 (6.3%)	169,414 (31.6%)	40,876 (7.6%)	176,949 (33.0%)
E	1,110 (0.21%)	243 (0.05%)	3,140 (0.59%)	1,399 (0.26%)	7,504 (1.40%)	18,315 (3.41%)	8,724 (1.63%)	19,289 (3.60%)

Key: N = no sessions of absence; O = at least one session of overall absence; A = at least one session of authorised absence; U = at least one session of unauthorised absence; E = at least one session of fixed term exclusion

Table 7.21 demonstrates that SEN status may also be a strong predictor of all types of absence and fixed term exclusion. At KS4, SEN pupils were more likely to be absent from school overall (0.52), for authorised (0.42), and unauthorised reasons (0.38). SEN was a strong predictor for all Key Stages but particularly at KS4. SEN was a stronger predictor of authorised absence at all Key Stages than unauthorised absences. SEN was also an indicator of fixed term exclusions at all Key Stages and explains a difference of 0.07 at KS3, where the difference between groups was the largest.

Table 7.21: A comparison of mean sessions absent for SEN and not SEN students in terms of school absences (authorised, unauthorised and overall) and fixed term exclusion by Key Stages ($N=536,530$)

		Authorised Absence Session			Unauthorised Absence Sessions			Overall Absence Sessions			Fixed Term Exclusion Sessions		
		Mean	SD	Effect size	Mean	SD	Effect size	Mean	SD	Effect size	Mean	SD	Effect size
KS1	SEN	17.66	16.30	0.34	2.79	8.90	0.25	20.45	19.43	0.39	7.92	1.13	0.02
	Not SEN	13.35	11.64		1.31	4.93		14.67	13.19		7.91	.17	
	Total	14.23	12.84		1.61	5.98		15.84	14.85		7.91	.53	
KS2	SEN	13.90	15.78	0.32	2.64	8.04	0.22	15.82	17.14	0.33	6.62	1.50	0.04
	Not SEN	10.26	10.45		1.42	4.72		11.45	11.65		6.59	.37	
	Total	10.74	11.37		1.70	5.67		12.45	13.24		6.60	.79	
KS3	SEN	19.94	24.46	0.32	7.85	22.56	0.25	27.79	35.74	0.38	9.17	3.94	0.07
	Not SEN	14.47	15.56		4.10	13.10		18.57	21.74		9.01	1.98	
	Total	15.19	17.11		4.60	14.76		19.79	24.27		9.03	2.34	
KS4	SEN	20.56	31.20	0.42	12.91	33.70	0.38	33.47	49.37	0.52	7.76	2.87	0.05
	Not SEN	12.36	16.36		4.91	17.41		17.27	25.66		7.67	1.67	
	Total	13.59	19.55		6.12	20.89		19.71	30.97		7.68	1.90	

The effect sizes outlined in Table 7.21 are meaningful for explaining patterns of absence and exclusion. The results suggest that SEN could be a strong indicator of school absence and fixed term exclusions. SEN as a predictor of absence and exclusions across all age phases of schooling is widely supported by existing research literature (Lawrence et al., 2019; May et al., 2020; Parker et al., 2019).

7.3.10: North divide

Prior to exploring whether attending a school in a northern region in England has a meaningful effect on school absence and exclusion, it is key to highlight that the “north” category in this analysis only represents three regions in England (North West, North East and Yorkshire and the Humber). Table 7.22 highlights that the size of this group increases each year and encompasses less than a third (less than 28.7%) of the cohort. The imbalance between groups is important to consider when interpreting the results in this sub-section.

Table 7.22: Percentage of students by school’s geographic region for each National Curriculum year group ($N=536,530$)

	National Curriculum Year Group										
	1	2	3	4	5	6	7	8	9	10	11
North	26.9%	27.0%	27.2%	27.3%	27.4%	27.5%	27.8%	28.0%	28.2%	28.5%	28.7%
Not North	73.1%	73.0%	72.8%	72.7%	72.6%	72.5%	72.2%	72.0%	71.8%	71.5%	71.3%

As groups were imbalanced a within-group analysis, rather than a between-group analysis, was carried out to explore differences. Percentages from the analysis are presented in Table 7.23. This comparison suggests that students from northern regions (North West, North East, Yorkshire and the Humber) at KS1 (94%), KS2 (89%), and KS3 (93%) were more likely to be absent from schools overall, when compared to students from other regions at KS1 (84%), KS2 (83%) and KS3 (92%).

Table 7.23: Within-group percentages of absences and fixed term exclusion by school’s geographic region ($N=536,530$)

	KS1 (Year 2) ($N=536,530$)		KS2 (Year 6) ($N=536,530$)		KS3 (Year 9) ($N=536,530$)		KS4 (Year 11) ($N=536,530$)	
	North ($n=145,109$)	Not North ($n=391,421$)	North ($n=147,619$)	Not North ($n=388,911$)	North ($n=151,532$)	Not North ($n=384,998$)	North ($n=153,901$)	Not North ($n=382,629$)
N	8,678 (6.0%)	18,956 (4.8%)	16,084 (10.9%)	35,369 (9.1%)	10,111 (6.7%)	22,026 (5.7%)	14,688 (9.5%)	29,938 (7.8%)
O	136,384 (94.0%)	328,860 (84.0%)	131,475 (89.1%)	323,524 (83.2%)	141,212 (93.2%)	352,473 (91.6%)	138,298 (89.9%)	349,027 (91.2%)
A	135,472 (93.4%)	325,960 (83.3%)	129,193 (87.5%)	317,070 (81.5%)	138,226 (91.2%)	345,750 (89.8%)	133,774 (86.9%)	339,974 (88.9%)
U	27,203 (18.7%)	75,829 (19.4%)	32,399 (21.9%)	86,872 (22.3%)	61,619 (40.7%)	141,689 (36.8%)	64,699 (42.0%)	153,126 (40.0%)
E	341 (0.23%)	1,012 (0.26%)	1,223 (0.83%)	3,316 (0.85%)	7,987 (5.27%)	17,832 (4.63%)	8,735 (5.68%)	19,278 (5.04%)

Key: N = no sessions of absence; O = at least one session of overall absence; A = at least one session of authorised absence; U = at least one session of unauthorised absence; E = at least one session of fixed term exclusion

Based on the effect sizes in Table 7.24 there does not appear to be remarkable differences between students who attend schools in a northern region of England and those who do not. Whilst the effect sizes are very small, attending a school in the North of England might explain a very small amount of the differences for unauthorised absences (0.08) and fixed term exclusions (0.03 at KS3) during the secondary age phase. Whilst the differences between groups are minimal and may not be perceived to be as meaningful as other predictors such as FSM and SEN, this analysis could provide some helpful guidance to consider potential issues which could be impacting the attendance of students in the northern regions of England in state-funded schools.

Whilst there may be some indication that students who attend a school in a northern region may be more absent from school for unauthorised reasons at KS3 and KS4, the difference identified between groups is likely to be more of a multifaceted issue than simply being northern or not. Living in the north of England is likely to encompass other factors such as high levels of poverty, which may be more likely to be driving the differences between groups (Francis-Devine, 2022).

Whilst some small patterns were found within the data for the current cohort, extreme caution should be taken not to misinterpret these small effect sizes.

Table 7.24: A comparison of mean sessions absent for Northern and students living in other regions of England in terms of school absences (authorised, unauthorised and overall) and fixed term exclusion by Key Stages ($N=536,530$)

		Authorised Absence Session			Unauthorised Absence Sessions			Overall Absence Sessions			Fixed Term Exclusion Sessions		
		Mean	SD	Effect size	Mean	SD	Effect size	Mean	SD	Effect size	Mean	SD	Effect size
KS1	North	14.42	13.72	0.02	1.54	6.37	-0.02	15.96	15.91	0.01	7.913	0.627	0.01
	Not North	14.15	12.49		1.64	5.83		15.80	14.44		7.909	0.489	
	Total	14.23	12.84		1.61	5.98		15.84	14.85		7.910	0.530	
KS2	North	10.69	11.63	-0.01	1.68	5.96	-0.01	12.37	13.62	-0.01	6.602	0.798	0.00
	Not North	10.77	11.27		1.71	5.56		12.48	13.09		6.599	0.786	
	Total	10.74	11.37		1.70	5.67		12.45	13.24		6.600	0.790	
KS3	North	15.02	17.12	-0.01	5.45	16.34	0.08	20.46	25.47	0.04	9.079	2.857	0.03
	Not North	15.26	17.11		4.27	14.08		19.53	23.78		9.011	2.096	
	Total	15.19	17.11		4.60	14.76		19.79	24.27		9.030	2.336	
KS4	North	12.78	19.27	-0.06	7.28	23.80	0.08	20.05	33.28	0.02	7.696	2.190	0.01
	Not North	13.92	19.65		5.65	19.58		19.57	29.99		7.674	1.771	
	Total	13.59	19.55		6.12	20.89		19.71	30.97		7.680	1.901	

Key: North = North East, North West, Yorkshire and the Humber; Not North = East Midlands, East of England, London, South East, South West, West Midlands, Missing

7.3.11: Summary

The outcomes from the effect size calculations indicate that it might be possible to predict how much difference pupil-level characteristics can have on school absences and fixed term exclusions. At KS1, females, individuals from ethnic minority groups, students who did not speak English as their first language, pupils in receipt of SEN support and those eligible for FSM were more likely to be absent from school.

At KS2, males, students who spoke English as their first language, pupils who received SEN support and those entitled to FSM were more likely to be absent from schools for authorised reasons. Similar patterns were also found for unauthorised absences, but these students were more likely to be male, from non-White ethnic minority groups and non-native English speakers.

At KS3, females, students from White ethnic groups, native English speakers, students with SEN and those entitled to FSM were more likely to be absent from schools. Students who attended state-funded schools in the north of England were more likely to be absent for unauthorised reasons or fixed term excluded.

At KS4, females, students from White ethnic backgrounds, English speakers, students with SEN and pupils entitled to FSM were more likely to be absent for authorised reasons. Males were more likely to be absent for unauthorised reasons and fixed term excluded. Students who had been excluded were also more likely to be from non-White ethnic minority groups, receiving SEN support and those not entitled to FSM. Students who attended schools in the north of England were more likely to be absent for unauthorised reasons.

Overall, FSM and SEN may be strong predictors of all types of absence and exclusions across all Key Stages. Other factors such as gender and students' geographic region were not convincing predictors across all types of absence and calculations showed very small effect sizes between groups. The summary of the results as presented above should be interpreted with caution. The effect size calculations in this section give an estimation of how much difference pupil-level characteristics might have on school absences and fixed term exclusions. Nevertheless, they do not account for the variation caused by other variables. Attention should be paid to the interpretation of these results, particularly due to missing data, but they could give a meaningful baseline and descriptive account of what patterns may be occurring within the data. For a more robust analysis of the association between pupil- and school-level variables and school absence, a series of regression models will be carried out in section 7.6 at the end of this chapter.

7.4: Who would benefit from an attendance intervention according to school-level characteristics?

This section presents a descriptive analysis of school-level characteristics to ascertain which students and schools might benefit from an attendance intervention. Stage three of this PhD project designs an

RCT in English schools which aims to improve school attendance. This analysis was conducted to provide a descriptive account of which National Curriculum year group, geographic region and LA areas in England may benefit from a targeted attendance intervention. The results from this analysis will influence the design of the RCT and sampling strategy in stage three of this thesis.

7.4.1: National Curriculum Year Group

Table 7.25 outlines the average number of sessions that the selected cohort were absent for based on different types of school absences and exclusion in each academic year.

Table 7.25: Average number of sessions absent from school by National Curriculum year group

	National Curriculum Year Group										
	1	2	3	4	5	6	7	8	9	10	11
Overall absence	17.38	15.84	15.03	14.87	14.09	12.45	16.91	17.07	19.79	21.30	19.71
Authorised absence	15.75	14.23	13.29	13.09	12.26	10.74	14.30	13.56	15.19	15.26	13.59
Unauthorised absence	1.62	1.61	1.74	1.78	1.83	1.70	2.61	3.51	4.60	6.03	6.12
Fixed term exclusion	10.02	7.89	7.78	7.44	7.12	6.60	7.93	8.33	9.03	8.84	7.68

For example, in Year 1 the average number of sessions missing for all types of absence across all students was 17.38 sessions. On average, this equates to approximately nine days of school during the academic year.

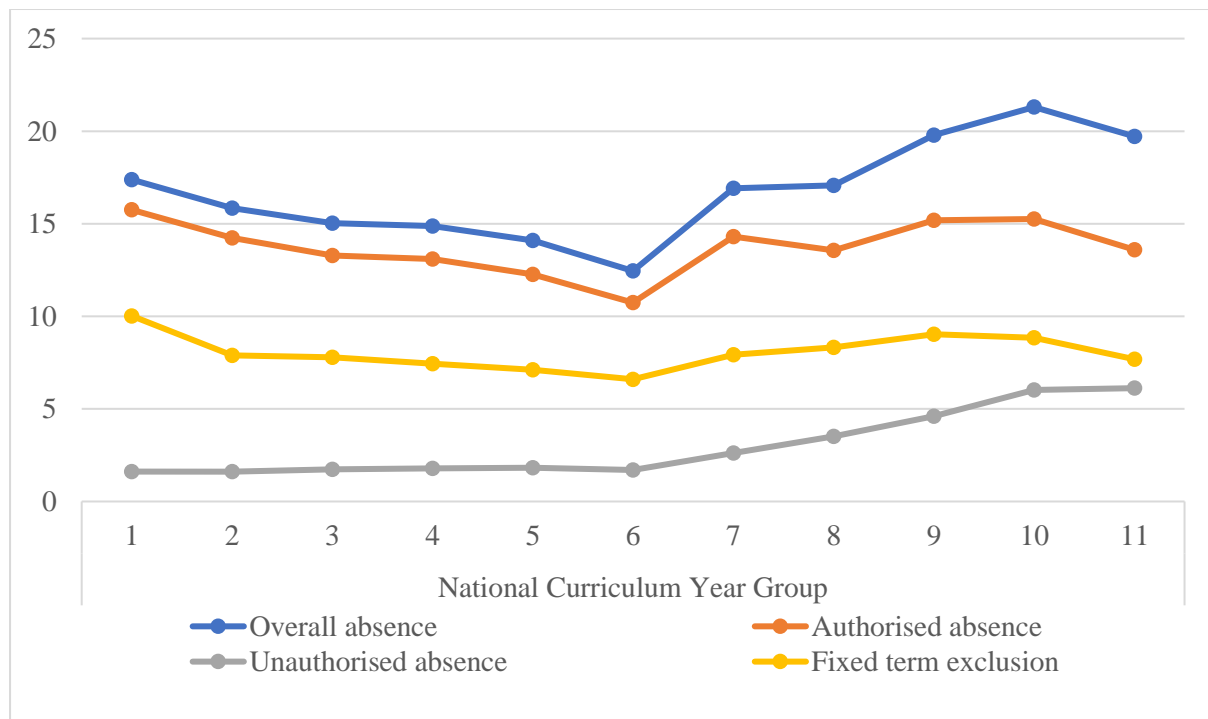


Figure 7.1: Average number of sessions absent from school by National Curriculum year group

Figure 7.1 presents a graph of the figures outlined in Table 7.25. This demonstrates that for all types of school absence there was a reduction in the average number of sessions absent during Year 6 before students transitioned into the secondary age phase. During the final year of primary school Year 6 students sit national SAT examinations in English schools. Lower absence rates during Year 6 may be due to the reported importance of attending school for increasing achievement and attainment outcomes (DfE, 2022). A similar pattern was seen again in Year 11 for overall absence, authorised absence and fixed term exclusions, where the average number of sessions absent was lower during a year of national examinations. This graph supports a rising trend which suggests that as students get older, they are more absent from school.

The average number of sessions absent due to unauthorised absence increased by almost a full session between Year 6 (1.70) and Year 7 (2.61). This increase continued throughout the secondary age phase with the highest average sessions of unauthorised absence identified during KS4. Furthermore, there was an increase in fixed term exclusions during Year 9 (8.33) with persistent disruptive behaviour highlighted as the most common reason for exclusion during this National Curriculum year (see Table 7.11).

For most types of absence, the highest rates of school non-attendance were during Year 9 and Year 10 during the transition period between KS3 and KS4. Based on this cohort's data, this pattern could support an argument to implement an attendance intervention at the end of KS3 to assist students in navigating the transition into their GCSE school years.

7.4.3: Geographic region

Table 7.26 outlines the percentage of students who attended schools across each geographic region for all National Curriculum year groups. Year 11 did not have any missing data.

Table 7.26: Percentage of pupils by school's geographic region (*N*=536,530)

	National Curriculum Year Group											
	R	1	2	3	4	5	6	7	8	9	10	11
East Midlands %	7.6	7.8	7.9	8.0	8.1	8.1	8.2	8.3	8.4	8.5	8.6	8.7
East England %	9.8	10.2	10.3	10.4	10.4	10.6	10.6	11.0	11.1	11.2	11.4	11.4
London %	13.0	13.3	13.4	13.4	13.5	13.6	13.7	13.7	13.9	14.1	14.4	14.5
North East %	4.5	4.6	4.6	4.6	4.6	4.6	4.7	4.7	4.7	4.7	4.8	4.8
North West %	12.7	12.8	12.9	13.0	13.0	13.1	13.1	13.3	13.4	13.6	13.8	13.8
South East %	13.7	14.2	14.3	14.4	14.6	14.7	14.8	15.3	15.4	15.7	15.8	15.9
South West %	8.3	8.5	8.6	8.7	8.8	8.8	8.9	9.2	9.3	9.4	9.5	9.5
West Midlands %	10.2	10.3	10.4	10.4	10.5	10.5	10.7	10.8	10.9	11.1	11.2	11.3
Yorkshire and the Humber %	9.3	9.5	9.5	9.6	9.6	9.7	9.7	9.8	9.9	9.9	10.0	10.1
Missing %	10.9	8.8	8.1	7.5	6.9	6.3	5.6	3.9	3.0	1.8	0.5	0.0

The South East was the largest region in England with 15.9% of students attending a school in this region during their final year of compulsory schooling. This was closely followed by London with

14.5% of students attending a school in this region. On the other hand, the North East had the smallest percentage of students attending a school in this region, with 4.8% in Year 11. This was followed by the East Midlands (8.7%) which had the second smallest percentage of students attending a school in this region. The percentage of students who attended schools in each region is important to consider when making comparisons about the size of the differences between groups.

A simple descriptive analysis based on the average number of absent sessions in each region was carried out for each National Curriculum year group. For each type of absence (overall, authorised unauthorised and fixed term exclusion) the average number of absent sessions were added together and regions were ranked from lowest to highest based on their total absent sessions across the cohort's academic career. The results of this analysis can be found in Table 7.27. Ranking was assigned from first to ninth. First indicated the region with best attendance and the lowest average number of sessions absent from school. Ninth indicated the region with the worst attendance and had the highest average number of sessions absent from school. This analysis was carried out to see which regions, on average, had the best and worst attendance over the cohort's academic career.

Table 7.27: Regions ranked by the average number of sessions absent across all National Curriculum year groups for all absence types

	Overall absence	Authorised absence	Unauthorised absence	Fixed term exclusion
East Midlands	4 th	3 rd	4 th	7 th
East England	1 st	5 th	2 nd	3 rd
London	2 nd	1 st	8 th	6 th
North East	9 th	8 th	7 th	8 th
North West	5 th	4 th	6 th	4 th
South East	3 rd	6 th	3 rd	5 th
South West	6 th	9 th	1 st	1 st
West Midlands	7 th	7 th	5 th	2 nd
Yorkshire and the Humber	8 th	2 nd	9 th	9 th

Table 7.27 highlights that the North East region repeatedly had high average sessions of absence across all National Curriculum years for all types of absences. For overall, authorised, and unauthorised absences this region was ranked 9th, 8th and 7th. This is in contrast to regions like the East of England and South East which had low average sessions of absence when averaged across all National Curriculum years. It is also worth noting that the average attendance rankings of these regions may be correlated to levels of poverty. The North East is reported to have high levels of child poverty and the East of England and South East regions have some of the lowest levels of poverty in England (Francis-Devine, 2022).

The results from this analysis support the idea that an attendance intervention which targets schools in the North East of England may be beneficial to the students who attend the schools in this region.

7.4.4: Local Authorities (LAs)

As the North East was highlighted as a region with high rates of absence, this section will assess which LAs in this region may benefit from an attendance intervention. It is important to highlight that the results in this analysis are relevant to the selected cohort. If this analysis was carried out with a different cohort, the results may be different. Nevertheless, this analysis can provide an estimation of the types of LAs which may benefit from an attendance intervention.

Table 7.28: North East LAs average number of sessions absent by Key Stage for types of absence (overall, authorised and unauthorised) and exclusion

	Overall Absence		Authorised Absence		Unauthorised Absence		Fixed Term Exclusion	
	KS3	KS4	KS3	KS4	KS3	KS4	KS3	KS4
Darlington	24.42	22.16	18.65	13.99	5.77	8.18	9.280	7.666
Durham	21.08	16.73	15.81	11.40	5.28	5.32	9.169	7.721
Gateshead	21.12	21.25	15.72	14.17	5.40	7.08	9.079	7.815
Hartlepool	18.14	20.65	12.86	11.84	5.29	8.81	9.073	8.170
Middlesbrough	28.03	22.76	16.81	11.11	11.22	11.65	9.351	8.183
Newcastle Upon Tyne	22.07	24.46	14.93	12.51	7.14	11.94	9.066	7.728
North Tyneside	20.45	19.10	15.71	13.50	4.75	5.61	8.968	7.624
Northumberland	20.91	19.14	16.93	13.48	3.99	5.65	8.943	7.695
Redcar and Cleveland	22.46	22.38	15.60	12.88	6.86	9.50	9.036	7.823
South Tyneside	22.02	18.80	17.44	14.16	4.58	4.64	9.108	7.757
Stockton On Tees	20.30	21.22	14.16	11.72	6.13	9.51	9.070	7.762
Sunderland	21.73	21.02	15.41	13.79	6.32	7.23	9.072	7.703

As the transition between KS3 and KS4 may be an ideal time for an attendance intervention, the average number of absent sessions for overall, unauthorised, authorised absences and fixed term exclusions are included in Table 7.28. These figures are representative of the average absent sessions at the end of Key Stage 3 (Year 9) and KS4 (Year 11).

With regards to overall absence at KS3, Middlesbrough (28.04) and Darlington (24.42) had the highest average sessions of absence. LAs with the lowest sessions of overall absence included Hartlepool (18.14) and Stockton On Tees (20.30). At KS4, Newcastle Upon Tyne (24.46) and Middlesbrough (22.76) had the highest average sessions of overall absence and Durham (16.73) and South Tyneside (17.44) had the lowest. At KS3 and KS4 Middlesbrough had high average sessions of overall absence.

With regards to authorised absences at KS3, Darlington (18.65) and South Tyneside (17.44) had the highest average sessions of absence. Stockton On Tees (14.16) and Hartlepool (12.86) had the lowest average sessions of absence. At KS4 Gateshead (14.17) and South Tyneside (14.16) had the highest average sessions of authorised absence. Middlesbrough (11.11) and Durham (11.40) had the lowest average sessions of authorised absences. Whilst Middlesbrough had less sessions of authorised absences, at KS4 they had high sessions of overall and unauthorised absence and fixed term exclusions. At both KS3 and KS4 South Tyneside had high average sessions of authorised absences.

This may indicate that health problems were more prevalent amongst students in South Tyneside with absences reported for reasons including illness, and medical and dental appointments.

Middlesbrough (11.22) and Newcastle Upon Tyne (7.14) had the highest average sessions of unauthorised absence at KS3, and Northumberland (3.99) and South Tyneside (4.58) had the lowest. Again, at KS4 Newcastle Upon Tyne (11.94) and Middlesbrough (11.65) had the highest average sessions of unauthorised absence, and South Tyneside (4.64) and Durham (5.32) had the lowest. South Tyneside had low levels of unauthorised absences at both KS3 and KS4, this may be because the reasons provided were more likely to be authorised by schools. At KS4 Durham had low levels of overall, authorised and unauthorised absences. This may be explained by demographic differences. A LA like Durham may be perceived to be more affluent, when compared to LAs like Middlesbrough and Newcastle Upon Tyne.

Middlesbrough (9.351) and Darlington (9.280) reported the highest average sessions of fixed term exclusions at KS3, and Northumberland (8.943) and North Tyneside (8.968) had the lowest. At KS4, Middlesbrough (8.183) and Hartlepool (8.170) had the highest average sessions of fixed term exclusions and North Tyneside (7.624) and Darlington (7.666) had the lowest.

This descriptive analysis suggests that LAs including Middlesbrough, Newcastle Upon Tyne, Darlington, South Tyneside and Gateshead may benefit from an attendance intervention. LAs like Durham and Northumberland appeared to have lower average sessions of absence. Nevertheless, an intervention in these LAs should not be ruled out as the North East as a collective region requires improvement with regards to attendance. LAs like Middlesbrough and Newcastle Upon Tyne have some of the highest child poverty rates in the region and it may be unsurprising to see that school attendance is worse in these areas. On the other hand, LAs like Durham and Northumberland have lower levels of poverty which may give one possible explanation for their lower average sessions of absence (Bradshaw, 2020).

7.4.4: Summary

Based on the selected cohort's absence data, the descriptive analysis in this section estimates that a targeted attendance intervention may be beneficial for students at the end of KS3 (Year 9) before they transition into KS4 (Year 10). Across all types of absence there is an increase in the average number of sessions absent during this period and an attendance intervention which could help them to cope with school life and the transition into their final years of secondary education may be helpful.

The North East region had high average sessions of absence for all types of absence, including fixed term exclusions. For the selected cohort, LAs like Middlesbrough had high average numbers of absent sessions and may also benefit from an attendance intervention. Nevertheless, it is also acknowledged that these findings may only be generalisable to the selected cohort and analysis of a different cohort may have generated different findings. These findings provide an estimation of the

kinds of LAs in the North East region of England which may benefit from a targeted attendance intervention.

Based on the results from this analysis, the RCT designed in phase three of this PhD project will recruit Year 9 students from schools across the North East of England. Where feasible, schools from LAs with high absences will be invited to participate in the intervention.

7.5: Four assumptions underpinning multiple linear regression

Multiple linear regression combines several independent variables within one model to predict or explain the variance in the dependent variable. In the multiple linear regression model in this study, unauthorised absence is the dependent variable. The rationale for utilising multiple linear regression is to explore the extent to which groups of independent variables, such as pupils' characteristics (including age, gender, ethnicity, first language, FSM and SEN), primary school indicators (KS1 attainment and attendance, KS2 attainment and attendance), and secondary school indicators (geographic region and residential mobility) could predict unauthorised absence at Key Stage 3. To utilise multiple linear regression and have confidence in the model's results, there are a series of basic assumptions that should be tested prior to undertaking the analysis. These include checking that a linear relationship exists between the independent and dependent variables, regression residuals (errors) are normally distributed, homoscedasticity and multicollinearity and singularity.

For all tests the dependent variable was unauthorised absences at KS3, and the independent variables were entered into the model in three blocks. The independent variables consisted of pupil-level data, including age, gender, ethnicity, first language, FSM and SEN in the first block. The second block contained primary school indicators including KS1 and KS2 attainment and attendance variables. The third block consisted of secondary school indicators including geographic location and residential mobility. Using SPSS software, testing the assumptions of multiple linear regression are easily achieved by selecting options when designing the model.

This section highlights that the NPD dataset for the chosen cohort meets three of the four assumptions. As the test for homoscedasticity does not meet the assumptions for multiple linear regression, it is important to highlight that the NPD is a rich administrative dataset which is collected at a population scale. With this in mind, the multiple linear regression models presented in this chapter are still meaningful for exploring possible predictors of unauthorised absence at KS3, but causal conclusions will not be made based on the findings from these models.

7.5.1: A linear relationship between the independent and dependent variables

The first assumption of the multiple linear regression model was linearity. This means that the multiple linear regression model can estimate the relationship between the dependent variable (KS3 unauthorised absence) and independent variables if the relationship between them are linear in nature.

If the relationship between the dependent variable and independent variables are not linear, the results of the regression analysis may under- or over-estimate the true relationship (Osborne & Waters, 2002). A P-P plot obtained from the regression model can be utilised to test this assumption (see Figure 7.2). An approximately linear relationship between the dependent variable and the regression co-efficients suggests that this assumption is met.

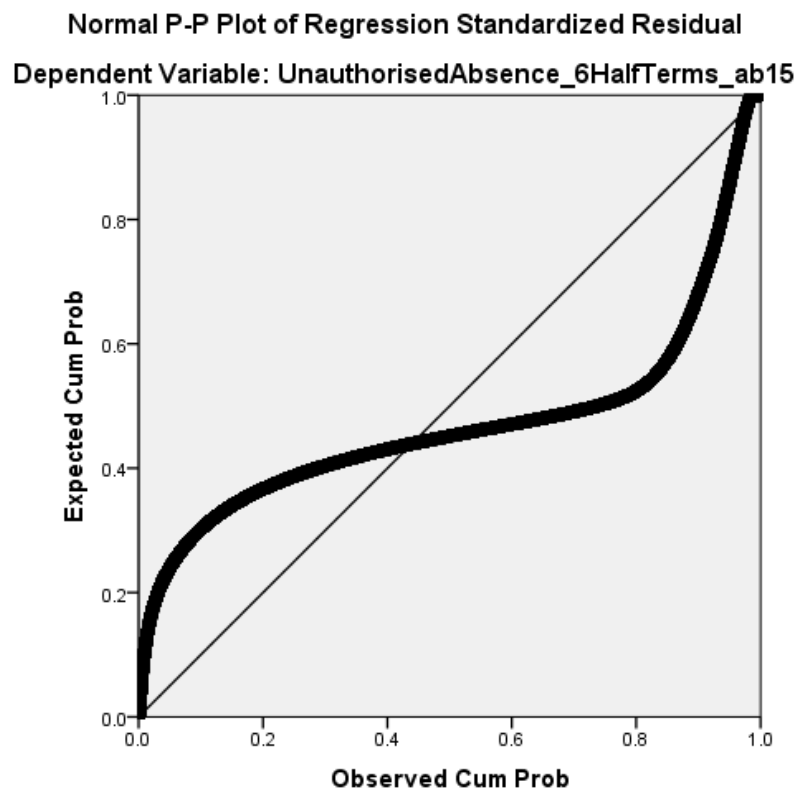


Figure 7.2: P-P plot to predict linearity

7.5.2: Regression residuals (errors) are normally distributed

The second assumption of the multiple linear regression model was the normality of residuals. This test assumes that data (residuals) follow a normal distribution (Abulela & Harwell, 2020). Williams et al. (2013) stipulate that this assumption refers to the normal distribution of errors. Errors are defined as the difference between observed variables on the response variable and the values predicted by the regression model.

Figure 7.3 presents a histogram obtained from the regression model. From the histogram results, it can be assumed that the errors (regression residuals) are approximately normally distributed so this assumption is met. As this test utilises a very large sample ($N=536,530$) Williams et al. (2013) support the notion that inferences about coefficients are likely to be trustworthy when the sample size is large, even if the distribution of errors are not exactly normal.

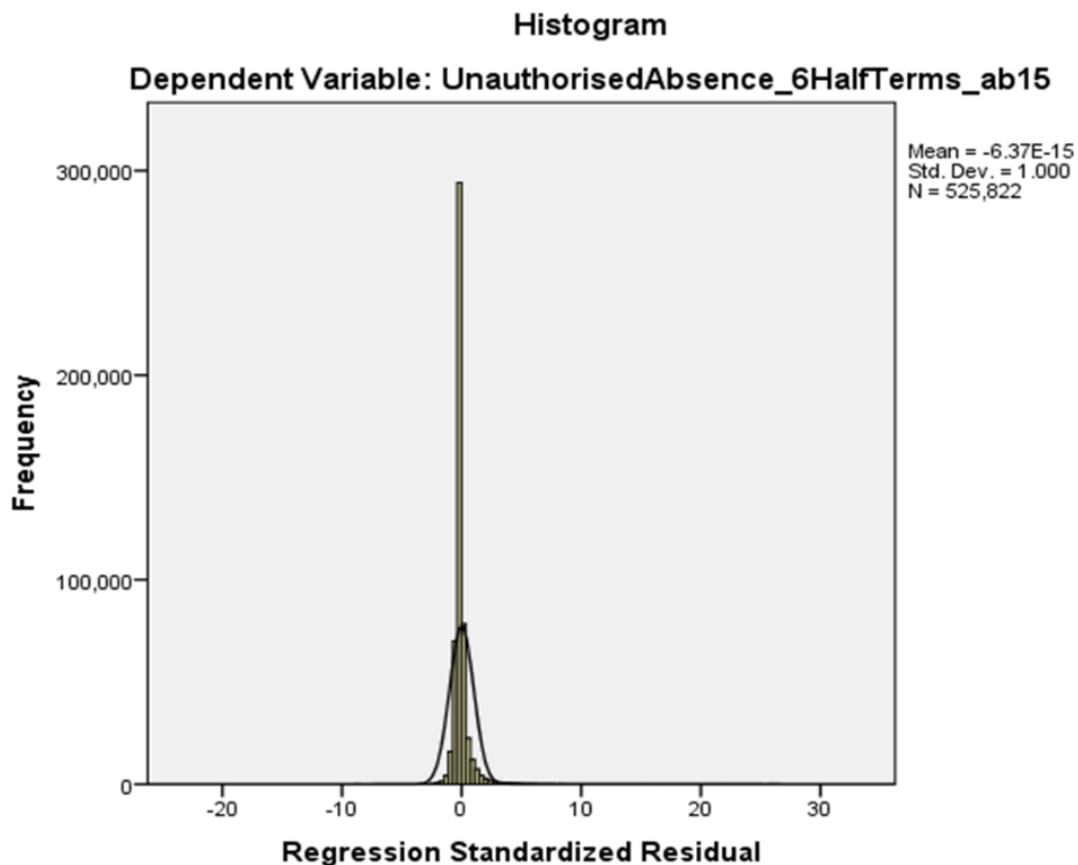


Figure 7.3: Histogram to demonstrate the normality of regression residuals

7.5.3: Homoscedasticity

Homoscedasticity was the third assumption of the multiple linear regression model. This means that the variance of regression standardised residuals (errors) is approximately maintained across all levels of the independent variables (Osborne et al., 2002). If strong heteroscedasticity is found, this could lead to distorted findings and a weak analysis. A scatterplot was created to test this assumption and this is presented in Figure 7.4.

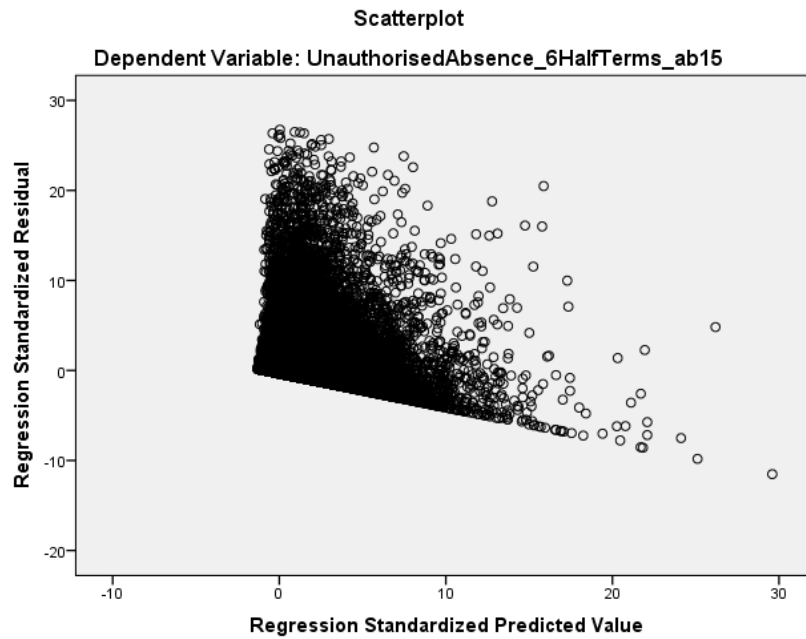


Figure 7.4: Scatterplot to explore the distribution of regression residuals

Osborne et al. (2002) present an example of homoscedasticity for comparison. Ideally residuals should be randomly and evenly scattered around 0, demonstrated by a horizontal line in Figure 7.5.

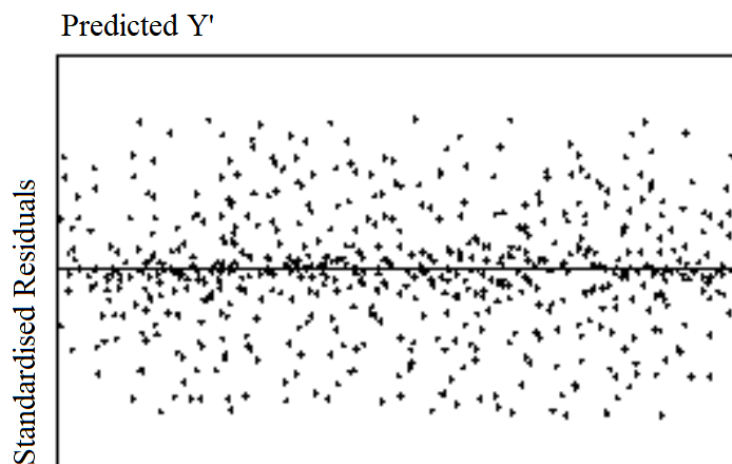


Figure 7.5: Scatterplot to explore homoscedasticity

Figure 7.4 demonstrates that the variance of errors are not evenly scattered around 0. As such, the assumption of homoscedasticity is not met. The multiple linear regression models will provide estimates about potential predictors of unauthorised absence in KS3 students, significance testing will not be performed, and causal conclusions will not be drawn. Standardised coefficients will be interpreted with caution in case of over-inflation.

7.5.4: Multicollinearity and singularity

Multicollinearity and singularity are the fourth assumption of multiple linear regression. Singularity would imply a perfect correlation between independent variables ($r=1$), whereas multi-collinearity would imply that variables are highly correlated. Highly correlated would suggest a measure of closeness to singularity or near-singularity (Yu, Jiang & Land, 2015). For this assumption it was important that the analysis did not show perfect correlations between predictor variables. As this was not the case, the assumptions of multicollinearity and singularity are met.

Table 7.29: Correlations between predictor variables to test the multi-collinearity and singularity assumption

	Age	KS1 Point Score	KS2 Point score	KS1 Authorised absences	KS1 Unauthorised absences	KS2 Authorised absences	KS2 Unauthorised absences
Age	1						
KS1 Point score	.167	1					
KS2 Point score	.083	.698	1				
KS1 Authorised absence	-.013	-.200	-.157	1			
KS1 Unauthorised absence	-.004	-.155	-.108	.130	1		
KS2 Authorised absence	.009	-.135	-.166	.336	.080	1	
KS2 Unauthorised absence	.002	-.128	-.147	.157	.258	.107	1

7.6: To what extent do pupil characteristics, school characteristics and students' prior attainment predict unauthorised absence and persistent absence from school at KS3?

This section will utilise two types of regression models, multiple linear regression and binary logistic regression, to predict unauthorised and persistent absence from school at KS3. These types of regression models have been selected based on the dependent variables. Multiple linear regression is utilised to predict unauthorised absence as a continuous dependent variable. A binary logistic regression model has also been applied to predict unauthorised absences, which has also been coded as a binary variable (1=an unauthorised absentee and 0=not an unauthorised absentee). A binary logistic regression model has also been applied to persistent absence where the dependent variable is a yes/no binary variable (1=a persistent absentee and 0=not a persistent absentee). This section will explore the results of each model to ascertain which pupil-level indicators (age, gender, ethnicity, first language, FSM, SEN), primary school indicators (KS1 and KS2 attainment and attendance) and secondary school indicators (geographic region and residential mobility) predict unauthorised and persistent absence at KS3.

7.6.1: Predicting unauthorised absence at KS3

This section shares the results of two multiple linear regression models that have been created to predict unauthorised absence from school at KS3. Each model uses the same independent variables, but they have been entered into the model using different blocks. For all of the regression models in this chapter, independent variables have been added into the model in blocks in chronological order. These include students' personal characteristics from birth, KS1 attainment and attendance, KS2 attainment and attendance, KS3 indicators. The first model uses three blocks: pupil characteristics, primary school indicators and secondary school indicators. The second model utilises four blocks: pupil characteristics, KS1 attainment and attendance, KS2 attainment and attendance and KS3 indicators. The results of each model will be compared to consider how much variance each block can explain for unauthorised absences at KS3.

7.6.1.1: Multiple linear regression model to predict unauthorised absence from school at KS3

Table 7.30 shows that this multiple linear regression model can explain 13% of variation in unauthorised absences at KS3. As this is not a high percentage, this might imply that other independent variables which were not included in this model may be able to explain more of the variation in unauthorised absences. Nevertheless, the results of this model are still meaningful because they go some way to understand predictors at KS3. From this model primary school level indicators can explain the highest amount of variation (8%). Pupil characteristics can explain 4% of variation and secondary school indicators can explain a further 1%.

Table 7.30: Three block multiple linear regression model to predict unauthorised absence at KS3 (N=536,530)

Dependent variable: Unauthorised absence KS3		
Block	Block Title	Standardised Coefficients Beta
1	Pupil-level data: age, gender, ethnicity, first language, FSM, SEN	0.04
2	Primary school indicators: KS1 and KS2 attainment and attendance	0.12
3	Secondary school indicators: geographic location and residential mobility	0.13

Table 7.31 outlines the regression coefficients which provide some insight into the variables which predict unauthorised absences at the end of KS3. From this table it appears that unauthorised absences at KS2 (0.175) are a strong predictor of unauthorised absence at KS3. This may suggest that a pro-active approach to improving school attendance from a young age might be beneficial. Supporting students with emerging patterns of unauthorised absence from the earliest opportunity may be important for maintaining positive attendance behaviour later in their schooling career.

Table 7.31: Regression coefficients from a multiple linear regression model to predict unauthorised absence at KS3 (N=536,530)

Dependent variable: Unauthorised absence KS3		
Block	Variables	Standardised Coefficients Beta
1	Age in months	0.019
	Male	-0.013
	FSM	0.113
	FSM missing	0.001
	White ethnic group	0.026
	English as first language	0.003
	First language missing	-0.001
	SEN	0.025
	SEN missing	-0.033
2	KS1 attainment	-0.019
	KS1 attainment missing	0.006
	KS1 authorised absence	-0.021
	KS1 unauthorised absence	-0.006
	KS1 persistent absence	0.040
	KS1 persistent absence missing	0.091
	KS2 attainment	-0.001
	KS2 attainment missing	-0.010
	KS2 authorised absence	0.092
	KS2 unauthorised absence	0.175
	KS2 persistent absence	0.033
KS2 persistent absence missing	0.010	
3	North	0.027
	North East	0.005
	Residential mobility	0.039
	Residential mobility missing	-0.018

Based on this model, the second strongest predictor of unauthorised absence is entitlement to FSM (0.113). Socio-economic disadvantage is highlighted as a risk factor of school absence within existing literature (Morrissey et al., 2013). Providing students who are entitled to FSM with attendance support may be valuable for improving unauthorised attendance at KS3. Students from White ethnic backgrounds (0.026) were also associated with unauthorised absence. This may be due to White ethnic minority groups like GRT students being included within this category, who are identified as a group of poor attendees during the secondary school phase (Wilkin et al., 2010). Whilst the regression coefficient was not as strong as FSM, students' entitlement to SEN support (0.025) may also be a predictor of unauthorised absence. Literature suggests that SEN students who do not have their individual needs met may be more likely to become disengaged with school (Vizard, 2009).

Attendance at a school in the North of England (0.027) had a marginally higher regression coefficient than ethnicity and SEN for predicting unauthorised absences. Residential mobility (0.039) may be a better predictor variable within the same block. There is some evidence to suggest that children from low-income families may be more likely to have higher levels of residential mobility (Crowley, 2003; Machin et al., 2006).

For comparison purposes a second multiple linear regression model was created. The same independent variables were included within the model, but the blocks were designed differently. Blocks were still entered into the model in chronological order, but KS1 and KS2 attainment and attendance were divided into two stages. Table 7.32 outlines the standardised coefficients for the second multiple linear regression model.

Table 7.32: Four block multiple linear regression model to predict unauthorised absence at KS3 (N=536,530)

Dependent variable: Unauthorised absence KS3		
Block	Block Title	Standardised Coefficients Beta
1	Pupil-level data: age, gender, ethnicity, first language, FSM, SEN	0.04
2	Primary school indicators: KS1 attainment and attendance	0.08
3	Primary school indicators: KS2 attainment and attendance	0.12
4	Secondary school indicators: geographic location and residential mobility	0.13

This model suggests that the first three blocks, pupil-level data (4%), KS1 attainment and attendance (4%) and KS2 attainment and attendance (4%), explain equal amounts of variance within the model. The fourth block which contains secondary school indicators explains the least (1%). This model supports an earlier argument that good attendance behaviour may be established from a young age. This model suggests that students school attendance behaviour in Year 2, from the ages of 6 and 7 years, could predict their likelihood of unauthorised absences in Year 9, at 13 and 14 years old. At

KS1 (0.091) and KS2 (0.175) unauthorised absence was the best predictor of unauthorised attendance at KS3.

Even though the blocks were entered in a different chronological order, the regression co-efficients remained consistent across both models as highlighted in Table 7.33.

Table 7.33: Regression coefficients from a multiple linear regression model to predict unauthorised absence at KS3 ($N=536,530$)

Dependent variable: Unauthorised absence KS3		
Block	Variables	Standardised Coefficients Beta
1	Age in months	0.019
	Male	-0.013
	FSM	0.113
	FSM missing	0.001
	White ethnic group	0.026
	English as first language	0.003
	First language missing	-0.001
	SEN	0.025
	SEN missing	-0.033
2	KS1 attainment	-0.019
	KS1 attainment missing	0.006
	KS1 authorised absence	0.040
	KS1 unauthorised absence	0.091
	KS1 persistent absence	-0.001
	KS1 persistent absence missing	-0.010
3	KS2 attainment	-0.021
	KS2 attainment missing	-0.006
	KS2 authorised absence	0.092
	KS2 unauthorised absence	0.175
	KS2 persistent absence	0.033
	KS2 persistent absence missing	0.010
4	North	0.027
	North East	0.005
	Residential mobility	0.039
	Residential mobility missing	-0.018

7.6.1.2: Binary logistic regression model to predict unauthorised absence from school at KS3

The binary logistic regression model outlined in Table 7.34 is an average model that was calculated from 12 individual models. To create 12 binary logistic regression models the same 203,308 students who had at least one session of unauthorised absence during Year 9 were included each time. From the remaining 333,222 students who were not known to have any sessions of unauthorised absence in Year 9, 12 individual random samples of 203,308 students were generated. From all binary logistic regression models (see Appendix G) an average model was calculated and is presented in this chapter. A rationale for the methodology utilised in this section is outlined in chapter five.

Binary logistic regression estimates the probability of an event occurring, which in this instance it is the probability that a student will be an unauthorised absentee. Table 7.34 shows that this regression model correctly classifies 64.8% of students as being unauthorised absentees, when all 3 blocks of independent variables are entered into the model. As each block was entered into the model, its ability to correctly classify students as unauthorised absentees was increased.

The final column in Table 7.34 shows the amount of unexplained variance that can be explained by each block. Individual pupil characteristics including age, gender, ethnicity, first language, FSM and SEN explained 21% of the unexplained variation in the model. A further 8% was explained by primary school factors including KS1 attainment and attendance, and KS2 attainment and attendance. A final 1% of the unexplained variation in the model was explained by secondary school factors including geographic region and residential mobility. These results suggest that this model may not be sufficient enough to explain all of the variation in unauthorised absences at KS3 and there may be other independent variables that could explain more.

Table 7.34: Average binary logistic regression model summarised from 12 binary logistic regression models to predict unauthorised absence at KS3 ($n=406,616$)

Dependent variable: Unauthorised absence KS3 (binary yes/no) $n=406,616$				
	Not unauthorised absentee (% correct)	Unauthorised absentee (% correct)	Total (% correct)	Variation explained by blocks
Base	0.0	100.0	50.0	
Block 1 Pupil characteristics	70.2	50.4	60.3	(10.3/50) 21%
Block 2 Primary indicators	71.1	58.2	64.7	(14.7/50) 29%
Block 3 Secondary indicators	71.1	58.6	64.8	(14.8/50) 30%

From the results displayed in Table 7.34 it appears that pupils' background characteristics are associated with unauthorised absences at KS3. This can be further explored in Table 7.35. The odds ratio shows that missing FSM data was the strongest predictor of unauthorised absence (odds ratio=190.02) from all of the independent variables included within the model. Literature has shown that students with missing data often belong to the most deprived groups (Gorard, 2020). Eligibility for FSM (odds ratio=1.908) and missing language data (odds ratio=1.341) were also strong predictors of unauthorised absence. Students who were missing data about their first language may be more likely to speak English as an additional language, for example, students who have moved from other countries and refugees where their first language has not been reported.

Table 7.35: Average regression coefficients from 12 binary logistic regression models to predict unauthorised absence at KS3 ($n=406,616$)

Dependent variable: Unauthorised absence KS3 (binary yes/no) $n=406,616$		
Block	Variables	Exp. (B)
1	Age in months	1.014
	Female (vs. male)	0.940
	FSM (vs. not FSM)	1.908
	FSM missing (vs. FSM not missing)	190.020
	White ethnic group (vs. not White)	0.889
	English as first language (vs. not English)	0.729
	First language missing (vs. language not missing)	1.341
	SEN (vs. not SEN)	0.968
	SEN missing (vs. SEN not missing)	0.845
2	KS1 attainment	0.965
	KS1 attainment missing (vs. attainment not missing)	0.986
	KS1 authorised absence	1.012
	KS1 authorised absence missing (vs. authorised not missing)	0.911
	KS1 unauthorised absence	1.040
	KS1 persistent absence	0.457
	KS2 attainment	0.990
	KS2 attainment missing (vs. attainment not missing)	0.854
	KS2 authorised absence	1.024
	KS2 authorised absence missing (vs. authorised not missing)	1.322
	KS2 unauthorised absence	1.069
	KS2 persistent absence	0.504
3	Attending a school in the North of England (vs. not North)	1.161
	Attending a school in the North East of England (vs. not North East)	0.956
	Residential mobility (vs. not residentially mobile)	1.374
	Residential mobility missing (vs. residential mobility not missing)	0.835

The second block of independent variables highlight KS1 and KS2 attendance as predictors of unauthorised absence at KS3. Instilling positive attendance behaviour at KS2, particularly with regards to authorised (odds ratio=1.024) and unauthorised (odds ratio=1.069) absences, may be prerequisites for improving unauthorised absences in KS3. Being proactive in encouraging positive attendance behaviour from the beginning of students' school careers may be an important influencing factor. Persistent absence at KS1 and KS2 does not appear to be a strong predictor of unauthorised absence at KS3. This may suggest that persistent absence is not a static attendance behaviour, in that students may be persistent absentees some years and not in others.

In the final block of independent variables entered into the model, residential mobility appears to be a predictor of unauthorised absence at KS3 (odds ratio=1.374). This means that students who have moved home in the past year may be more likely to be unauthorised absentees. Likewise, students attending a school in the North of England (odds ratio=1.161) may be more likely to be unauthorised absentees. As previously mentioned, these variables may have links to high levels of child poverty. For all of the pupil-level characteristics (missing FSM data, missing first language data and FSM eligibility) and secondary school geographical indicators (attending a school in the North of England

and residential mobility) that are strong predictors of unauthorised absence at KS3, there appears to be an undertone of disadvantage.

7.6.2: Predicting persistent absence at KS3

7.6.2.1: Binary logistic regression model to predict persistent absence from school at KS3

Again, this binary logistic regression model is an average model calculated from 12 individual models. The model includes 70,415 persistently absent Year 9 students. From the remaining 466,115 students who were not known to be persistent absentees, 12 individual random samples of 70,415 students were generated. The random samples of students not known to be persistent absentees were merged with the 70,415 persistent absentees and regression models were created (see Appendix H).

This binary logistic regression model estimates the probability that a student will be a persistent absentee at KS3. Table 7.36 shows that this regression model correctly classifies 71.9% of students as being unauthorised absentees, when all 3 blocks of independent variables are entered into the model. After each block was entered, the model's ability to correctly classify students as unauthorised absentees was increased.

Table 7.36: Average binary logistic regression model summarised from 12 binary logistic regression models to predict persistent absence at KS3 ($n=140,830$)

Dependent variable: Unauthorised absence KS3 (binary yes/no) $n=406,616$				
	Not unauthorised absentee (% correct)	Unauthorised absentee (% correct)	Total (% correct)	Variation explained by blocks (% explained)
Base	0.0	100.0	50.0	
Block 1 Pupil characteristics	76.5	48.9	62.7	(12.7/50) 25%
Block 2 Primary indicators	76.6	66.9	71.1	(21.1/50) 42%
Block 3 Secondary indicators	76.5	67.3	71.9	(21.9/50) 44%

The final column in Table 7.36 provides an indication of the amount of variance that can be explained by each block entered into the model. Individual pupil characteristics including age, gender, ethnicity, first language, FSM and SEN explained 25% of the unexplained variation in the model. A further 17% is explained by primary school factors and a final 2% of the unexplained variation in the model was explained by secondary school factors. When compared to the unauthorised absence binary logistic regression model, the same independent variables explained more variance in the persistent absentee model. Nevertheless, this model is not sufficient enough to explain all of the variation. There may be other independent variables which are not included in this model that could explain more of the variation in persistent absences at KS3.

The odds ratios as outlined in Table 7.37 highlight that missing FSM data was a strong predictor of persistent absence (odds ratio=20.193). As with unauthorised absence, missing language data (odds ratio=1.323) was also a notable indicator. FSM (odds ratio=2.095) was a stronger predictor of persistent absence than unauthorised absence at KS3. Other notable pupil-level predictors include White ethnic groups (odds ratio=1.357), SEN status (odds ratio=1.323) and English as a first language (odds ratio=1.316). SEN status is a stronger predictor of persistent absence than unauthorised absence. Within existing literature students who are identified as school phobic may be experiencing anxiety-based behaviours, which may be associated with certain types of SEN including social, emotional and mental health difficulties (Kearney et al., 2004, 2018; Kearney et al., 1990).

Table 7.37: Average regression coefficients from 12 binary logistic regression models to predict persistent absence at KS3 ($n=140,830$)

Dependent variable: Persistent absence KS3 (binary yes/no) N=140,830		
Block	Variables	Exp. (B)
1	Age in months	1.028
	Female (vs. male)	0.846
	FSM (vs. not FSM)	2.095
	FSM missing (vs. FSM not missing)	20.193
	White ethnic group (vs. not White)	1.357
	English as first language (vs. not English)	1.316
	First language missing (vs. language not missing)	1.943
	SEN (vs. not SEN)	1.323
	SEN missing (vs. SEN not missing)	0.641
2	KS1 attainment	0.975
	KS1 attainment missing (vs. attainment not missing)	0.970
	KS1 authorised absence	1.022
	KS1 authorised absence missing (vs. authorised not missing)	0.945
	KS1 unauthorised absence	1.027
	KS1 persistent absence	0.499
	KS2 attainment	0.988
	KS2 attainment missing (vs. attainment not missing)	0.740
	KS2 authorised absence	1.066
	KS2 authorised absence missing (vs. authorised not missing)	1.320
	KS2 unauthorised absence	1.064
KS2 persistent absence	0.380	
3	Attending a school in the North of England (vs. not North)	1.081
	Attending a school in the North East of England (vs. not North East)	1.041
	Residential mobility (vs. not residentially mobile)	1.543
	Residential mobility missing (vs. residential mobility not missing)	0.527

In block two, prior authorised and unauthorised absences at KS2 were stronger predictors of persistent absence at KS3 than absences at KS1. Missing authorised absence data at KS2 was the strongest predictor in this block of variables. In block 3 there were three potentially notable independent variables, residential mobility (odds ratio=1.543), attending a school in the North of England (odds ratio=1.081), and attending a school in the North East of England (odds ratio=1.041). For residentially mobile children who have changed their home postcode within the past year, these

students could be service children, children arriving to the UK from abroad, immigrants, GRT families, or from low-income backgrounds. These groups have all been associated with mobility and may explain this variable as a predictor of persistent absence. Attending a school in the North East of England is a stronger predictor of persistent absence than unauthorised absence at KS3, which again could be explained by high levels of child poverty in certain local authorities.

7.6.4: Summary

This section explored two types of regression models to predict two types of school absence, unauthorised absence and persistent absence at KS3. Predictors which explained unauthorised absences at KS3 included prior attendance at KS2, missing data for indicators of disadvantage (FSM) and entitlement to FSM. Other predictors to note included residential mobility, White ethnic groups, SEN and attendance at a school in the North of England.

Predictors of persistent absence at KS3 highlighted missing FSM and language data, prior attendance at KS2, and FSM as notable variables. White ethnicity, SEN, English as a first language, residential mobility and attending a school in the North East of England were also notable predictors within the model. Overall, a re-occurring theme of disadvantage has been highlighted as a predictor of absence at KS3. Further consideration about the role of prior absences in predicting unauthorised and persistent absence at KS3 may be important considerations for future intervention work.

CHAPTER EIGHT: PROTOCOL FOR A CLUSTER RANDOMISED CONTROLLED TRIAL

8.1: Study rationale and background

The systematic review in chapter six outlined that a mindfulness-based intervention might provide one promising approach for increasing academic buoyancy in students. The secondary data analysis of the NPD in chapter seven indicated poor attendance during the transition between KS3 and KS4, and high levels of absences in the North East region of England. The findings from phases one and two of this thesis offer a rationale for conducting a cluster RCT to test the effectiveness of a mindfulness-based intervention (MBI) on KS3 students' levels of academic buoyancy and school attendance. This cluster RCT offers a robust research design to evaluate whether the Mindfulness in Schools Project's .b curriculum *does* or *does not* impact student levels of academic buoyancy and school attendance (Connolly, Keenan & Urbanska, 2017). Through random allocation of cases to treatment and control groups selection bias is minimised, and the differences observed between groups can be attributed to the effects of the intervention as opposed to selection characteristics that are unobserved (Torgerson & Torgerson, 2008). This study is designed as a pilot trial as it evaluates "an incompletely developed intervention" (Lancaster, Dodd & Williamson, 2004; Torgerson et al., 2008, p.119). If the impact and process evaluations indicate promise, a scaled-up version of this pilot trial may be plausible.

8.1.1 Mindfulness in Schools Project (MiSP) intervention

The Mindfulness in Schools Project (MiSP) .b curriculum is a 10-lesson mindfulness intervention purposely designed to be delivered to a secondary age phase audience of 11 to 18 years (<https://mindfulnessinschools.org/teach-dot-b/>). The curriculum is delivered over lesson periods of between 40 minutes and 1 hour and the timings of activities can be adjusted to meet school timetabling needs. Prior to teaching the curriculum, prospective .b teachers must attend an 8-week Mindfulness Based Stress Reduction course or equivalent, successfully complete a 4-day intensive .b teacher training course and sustain their own mindfulness with regular formal daily practice. Teachers should also be fully qualified classroom practitioners, or individuals who can work closely with a trained teacher who can assist with classroom management. The course creators specify these pre-requisites with the rationale that teaching mindfulness should be grounded in internal knowledge and personalised experiences of mindfulness practice.

As a classroom introduction to mindfulness, .b aims to raise awareness and give students a taste of mindfulness to increase awareness, revisit in future situations where it may be beneficial, demonstrate the relevance of mindfulness and learn more about when it can be useful. Unlike adult mindfulness courses .b is intended to be shorter, with brief practices and has less time for enquiry as this is not intended as therapy and is not designed to address mental health problems. Described as practices and not meditations, there are no religious connotations implied within the .b curriculum.

8.2: Intervention

8.2.1: RCT research question

To ascertain if improving academic buoyancy in secondary school students can improve their school attendance, the underlying research question is:

1. Can a 10-week mindfulness-based intervention improve academic buoyancy and school attendance in Year 9 students?

8.2.2: Cluster RCT design

As an alternative to the simple RCT, this study is designed as a cluster RCT and focuses on classes as the unit of randomisation. In discussion with senior leaders at eligible schools it is apparent that randomising individual pupils is unlikely to be practical or feasible due to the lack of resources available in schools, such as teacher assistance, size of teaching environments, access to technology and potential disruption to teaching and learning. With this in mind, full classes will be assigned at random to either receive the treatment or continue with their normal curriculum.

This research design can be illustrated using design notation (Gorard, 2013). As time moves from left to right 'R' indicates random allocation of classes to groups, 'O' illustrates an episode of measurement and data collection from the same classes, and 'X' signifies the point at which the intervention is delivered and received by the treatment group.

(Time →)

R	O ₁	X	O ₂	(Treatment Group)
R	O ₁		O ₂	(Control Group)

8.2.3: Participant selection and recruitment

Secondary state-funded schools across the North East region of England are the primary focus of this trial. The population of interest in this study is Year 9 adolescents, aged 13 to 14 years, across all LA areas in the North East of England. A wide range of schools will be recruited to ensure that they differ in terms of the number of students on roll, school type, aggregate public examination results, and the demographics of students are mixed. The aim of the recruitment is to ensure that the schools taking part in the trial are statistically representative of the larger student population in the geographical region of interest.

Year 9 students were chosen as the target NC year group based on the outcomes of the secondary data analysis in stage two of the PhD research, which identified KS4 as a crucial time for school attendance figures falling (see chapter seven). Implementing the intervention in Year 9, before they transition to KS4, may provide students with practical tools and techniques to be proactive, rather than reactive when faced with setbacks and challenges at school. A pre-requisite for schools to participate

is to volunteer at least two classes to be eligible for recruitment. This will allow at least one class to receive the treatment and the other to act as the control group in each school. Some may volunteer the whole year group and others may be able to volunteer two classes in total. The aim is to recruit the highest number of classes as is feasible, as classes are the unit of randomisation. Most importantly it should not be specified which classes should receive the intervention as this should be determined at random.

At schools where classes are mixed ability, all remaining classes that are not randomly selected to receive the intervention will be included as control groups. This is done to increase the degrees of freedom (*df*) in the analysis, which is described as the number of observations that have the freedom to vary when estimating the statistical distribution. By including all possible mixed ability classes in the control group, the size of the study is increased in “power” and the extra classes provide a more robust counterfactual (Gorard, 2013, p.136).

With intervention and control groups at each school, a particular concern with cluster randomisation is the possibility of a contamination effect (Torgerson et al., 2008). This is not considered to be a strong possibility given the style of curriculum delivery and clustering in classes. Resources should not be shared with the school, and students will not be given resources to take home. Whilst previous evaluations have highlighted that increased exposure to the .b curriculum may have positive effects on outcomes in those students who participate with home practice, this extra responsibility for students and parents has impacted the acceptability of the intervention (Johnson et al., 2017b). Given the lack of experimental control over this aspect of the curriculum for little benefit, an evidence informed decision has been made to keep all teaching and learning confined within the classroom and to disregard the voluntary element of home practice as a feature of this study.

8.3: Outcome measures

Academic Buoyancy is measured using the four-item Academic Buoyancy Scale (ABS) developed by Martin et al. (2008a). Participants respond to items on a seven-point Likert scale (7=strongly agree, 4=neither agree or disagree, 1=strongly disagree). Items include, “I’m good at dealing with setbacks (e.g. bad mark, negative feedback on my work)”, “I don’t let study stress get on top of me”, “I think I’m good at dealing with schoolwork pressures”, “I don’t let a bad mark affect my confidence”. A high score is representative of a higher level of academic buoyancy. Internal reliability of the ABS will be measured to calculate Cronbach’s alpha.

Mindfulness is measured using the Child and Adolescent Mindfulness Measure (CAMM), developed by Greco et al. (2011). This measure of adolescent mindfulness is selected as it aligns with the intended outcomes of the 10-week Mindfulness in Schools Project .b curriculum. The CAMM scale

assesses how children and adolescents think, feel and what they do in response to 10 items. Students respond to items “I get upset with myself for having feelings that don’t make sense”, “at school, I walk from class to class without noticing what I’m doing”, “I keep myself busy so I don’t notice my thoughts or feelings”, “I tell myself that I shouldn’t feel the way I’m feeling”, “I push away thoughts that I don’t like”, “It’s hard for me to pay attention to only one thing at a time”, “I get upset with myself for having certain thoughts”, “I think about things that have happened in the past instead of thinking about things that are happening right now”, “I think that some of my feelings are bad and that I shouldn’t have them”, “I stop myself from having feelings I don’t like”. These items are measured on a five-point scale (4=always true; 2=sometimes true; 0=never true). On completion of the scale, the assessor reverses all scores by changing 0 to 4, 1 to 3, 3 to 1, and 4 to 0. A score of 2 remains unchanged. Scores for all items are totalled for each individual pupil and a higher score corresponds to a higher level of mindfulness. Internal reliability of the CAMM scale will be measured to calculate Cronbach’s alpha. Based on the findings of existing research literature, a further question will be asked to ascertain the frequency of prior experience students have had with mindfulness and meditative practices such as yoga. This will be measured on a 5-point Likert scale (4=always to 0=never).

School Attendance is measured as a statutory requirement twice during the school day for each student on the school’s roll. Reasons for attendance and absence are coded for the school’s internal registers to provide contextual information relevant for the annual school census. If the child is marked as present or absent during the two sessions in each school day, this equates to an overall percentage of the total number of sessions attended. For example, an ordinary school week equates to 5 days or 10 sessions. Therefore, a student who has attended 10 sessions will have an average attendance of 100%. A student who has attended 5 out of 10 sessions over the 5 days will have an average attendance of 50%. As such, a student with 100% attendance will have been present during every registered session on every possible day of the school year, up to the date at which attendance was measured. Likewise, a student with 50% attendance will have attended half of the possible sessions on the date that attendance was measured. This data is calculated and recorded by each school for their termly submission to the School Census. In this trial, a measurement for each eligible pupil will be taken on the same date for all schools at pre- and post-test intervals.

Demographic information is collated from schools as it would appear on the Annual School Census. All schools will agree to provide anonymised pupil-level data relating to gender, ethnic group, first language, Free School Meals eligibility (FSM) and Special Educational Needs (SEN) for all pupils involved in the trial. This data is already collected by schools and reported to the DfE three times per year.

8.4: Sample Size

The population of interest for this trial includes all Year 9 classes attending state-funded schools in the North East of England. To ensure the results of this trial are convincing, the aim is to recruit as many schools and classes within the North East region of England as possible. It is well documented within existing literature that the concept of statistical ‘significance’ power analysis represents several problems (Gorard, 2013). Sample size calculations include estimates and arbitrary thresholds as it is not possible to know the precise effect size without having already carried out the research. Slight revisions of the estimates required to calculate sample sizes can have large impacts on the size of the effect found. With this in mind, an exact sample size calculation is not provided as calculations of statistical significance will not be reported in this trial. As classes will be the unit of randomisation, the sample size for this trial will be as large as is feasible which recruits as many Year 9 classes at as many state-funded schools as possible. Effect sizes reported in this trial will be interpreted with caution and causal conclusions will not be drawn from the results.

8.5: Procedure

To teach the Mindfulness in Schools Project .b curriculum all course facilitators must undergo an eight-week MBSR certified course and successfully complete a four-day intensive .b teacher training course. The analysis of the NPD in chapter seven identified the North East of England as a geographical region in need of attendance intervention. The recruitment process will target all state-funded schools in the North East of England. Once recruited, schools will be able to accommodate the intervention during a timetabling slot which remains in keeping with their current routines and practices. This could range from Personal Social Health Education (PSHE) lessons, to tutor and registration slots, or Physical Education (PE) and Wellbeing lessons. It will be at the school’s discretion to indicate where they want to incorporate this intervention into their timetable. Meetings will be held with senior leaders and designated attendance leads to introduce the .b curriculum learning aims, share examples of lesson plans, identify and recruit classes that are eligible to participate and provide an opportunity for their questions to be answered.

To participate in the trial each school will provide a minimum of two classes who are eligible to participate. Schools will consent to random assignment of classes to the intervention and treatment groups. To ensure individual student data remains anonymous and confidential, a designated individual at each school will provide all eligible students with an anonymous ID code. This code will be stored by the school and teachers will inform students of their individual number when necessary to link their pre- and post-test data to their ID code. Classes will also be assigned an anonymous code (A, B, C, etc.) for the researcher to perform the random allocation of classes to groups. To minimise bias, the researcher will independently allocate classes to groups as they have

no prior knowledge of the students in each group or the characteristics of the class, so the randomisation process will not be undermined.

At the pre-test stage all students will have their demographic characteristics and levels of academic buoyancy, mindfulness and school attendance percentage measured. Each of these figures will be linked to individuals using their anonymous ID codes. Students will be notified that they have the right to withdraw from the intervention group at any time if they do not want take part, but they will still be required to participate in the lessons at the discretion of their teacher. This enables students to have the rights to withdraw but also manage the whereabouts of students in classes for safeguarding reasons.

The 10-lesson .b curriculum will be delivered to classes in the treatment group. These lessons are fully scripted and resourced and will be taught by the same trained teacher to minimise implementation bias. The control groups will follow a business-as-usual approach following their timetabled lessons as they would normally. During the intervention period, the teacher will keep a detailed diary of field notes to document the process throughout. This is for the purposes of a process evaluation at the end of the trial (see section 8.7). Following the intervention period, students in both the treatment and control groups will have their levels of academic buoyancy, mindfulness and school attendance percentage measured again in the post-test measurement window. Teachers will also be invited to provide comments about the process and the effects they may have noticed throughout the intervention period in an online survey. Any attrition during the trial will be clearly logged, recorded and reported for transparency.

8.6: Data Analysis

Firstly, an intention-to-treat (ITT) analysis will be conducted to analyse participants in the group that they were originally randomly assigned to, whether they completed the intervention in their originally assigned group or not. ITT analysis is done to minimise any unforeseen issues associated with non-random attrition. This is an analysis strategy to prevent bias and oversee that any reported effects are not misleading. The CONSORT statement for improving the quality of reports suggests several participants in each group should be analysed using an ITT analysis principle.

The main analysis will evaluate the effectiveness of the treatment group on each of the dependent outcome measures CAMM, ABS, and attendance percentage. The pre- and post-test mindfulness scores, academic buoyancy scores and average attendance percentage will be analysed for each class. When combined, this will generate gain scores, means and standard deviation scores for the treatment and control groups. The standardised effect size will be calculated as the difference between gain scores from the treatment and control groups, divided by a combined average post-test standard

deviation of both groups. This requires the researcher to take into consideration the lower standard deviation as randomisation was conducted at class level. The purpose of this analysis is to identify if any major differences between groups can be attributed to the intervention. Causal conclusions will not be drawn from this analysis.

Using pupil characteristics, a sub-group analysis will also be carried out to identify “what works for whom”, but caution will be paid in the interpretation of the results not to over claim about any indication of effect (Connolly et al., 2017b; Styles & Torgerson, 2018). Finally, for robust results and reporting of the trial, this will follow the CONSORT Criteria.

8.7: Process evaluation

Conducting trials in educational settings can be complex and outcomes could be due to factors that are not the focus of the impact evaluation (Siddiqui, Gorard & See, 2018). A pragmatic solution is required to better understand the context in which these results are achieved and help with the interpretation of results before assessing and agreeing to further implementation. Siddiqui et al. (2018) outline that a process evaluation could include information on implementation of the intervention, dosage offered and received by the participant, fidelity to the protocol and research process, limits to the implementation, assessment of the Hawthorn or John Henry’s effect, perceived impact and evidence of contamination of the treatment to the control group. Research questions to be answered in the process evaluation for this trial may include:

1. Was the intervention implemented successfully in the treatment group?
2. How practical, engaging and age appropriate is the “.b” curriculum for Year 9 students?
3. Were there barriers to overcome during the implementation of the intervention?
4. Was the implementation of the intervention undermined, challenged or disrupted?
5. Were there any unintended consequences?
6. What happened to the control group during the period of intervention?
7. Was there any evidence of contamination between groups?

The teacher will be required to keep a detailed diary of field notes describing experiences after each lesson taught during the intervention phase. School leads, facilitating with behavioural support during the delivery of the intervention, will also be asked to complete an evaluation survey at the end of the trial based on students’ experiences, general feedback and the perceived effects of the intervention on their students. A thematic analysis of responses to understand recurring themes will be performed and results will be used to provide explanations for any evaluated or perceived impact (Braun & Clarke, 2006).

8.8: Ethics

This study is a pilot trial and exploratory study as the .b curriculum has previously demonstrated limited potential for improving mindfulness in students. The design for this study has drawn on the limitations of previous .b evaluation studies to develop previous designs and methods utilised. A pilot trial is most appropriate under these circumstances as the intervention shows some promise and the effects are not certain (Gorard, 2013). In these circumstances it would not be considered unethical to withhold the treatment from the control group as the effects of the intervention are unknown. All schools will be provided with at least one treatment group and, as such, all schools can participate and offer this intervention to their students. Furthermore, if the intervention appears to be causing harm to the treatment group, particularly with mindfulness and wellbeing as the focus of the intervention, the experiment will immediately stop as not to bring further harm to participants. Appropriate safeguarding procedures in line with the schools' policies will be followed.

Ethical approval for this RCT protocol was received from Durham University's School of Education Ethics Committee on 29th November 2019 (Appendix C). This trial protocol is registered with the OSF (<https://osf.io/v3swf>).

CHAPTER NINE: CONCLUSIONS AND IMPLICATIONS

9.1: Introduction

This chapter will provide a summary of the key findings which answer this ambitious project's underpinning research questions (Anderson, 2022b). The first section will outline the findings from an original systematic review as summarised in (Anderson, 2022a). This is followed by a summary of the key findings from an original secondary data analysis of school absence data from the NPD. In the second section limitations of the project will be discussed. Section three will consider suggestions for further research and discuss the practical implications for educational policymakers and practitioners which have arisen from this project. The chapter ends with a concluding statement.

9.2: Summary of findings

This section will take each of the research questions from the systematic review and secondary data analysis to summarise the key findings.

9.2.1: Stage one: Summary of systematic review findings

9.2.1.1: *What is academic buoyancy?*

The purpose of this research question was to explore how the academic buoyancy construct was conceptually defined within existing literature. Since the construct was created in 2008, many of the published academic buoyancy papers have been conducted by Andrew Martin and his colleagues. Martin et al. (2008a) define academic buoyancy as, “students' ability to successfully deal with academic setbacks and challenges that are typical of the ordinary course of school life (e.g., poor grades, competing deadlines, exam pressure, difficult schoolwork)” (p.54). This definition has influenced other researchers' conceptualisation of the construct, with three quarters of definitions included within this review paraphrasing the original definition as provided by Martin et al. (2008a). As more researchers publish on the topic of academic buoyancy this initial conceptualisation of the construct is still being utilised by researchers.

9.2.1.2: *How is academic buoyancy measured?*

This question was asked to ascertain how academic buoyancy was measured in existing research and to identify an academic buoyancy scale to utilise within the RCT in stage three of this PhD project. Two thirds of the studies which were included within this review utilised the ABS, a four-item self-report measure created by Andrew Martin and his colleagues. This measure was adapted from the ARS, which appears in Martin's earlier work on academic resilience, but there is little explanation about how the items for the ABS were selected. The four-items on the ABS include:

- “I'm good at dealing with setbacks at school (e.g., negative feedback on my work, poor results).”
- “I don't let study stress get on top of me.”

- “I think I’m good at dealing with schoolwork pressures.”
- “I don’t let a bad mark affect my confidence.”

Studies commonly report Cronbach’s alpha statistics, but caution should be given to this as the only indicator of the scale’s reliability. Whilst there are some emerging studies in this area, there is a lack of research which has examined the psychometric properties of the ABS in detail. Whilst this is the most commonly used scale for measuring academic buoyancy, further research which assesses the trustworthiness of the ABS is required.

A quarter of papers in the review utilised an adapted form of the ABS, whether it was translated into a language other than English, adapted to be subject or age-phase specific, or had removed or added items to the ABS to meet the needs of their study. Studies where adapted forms of the ABS are utilised should be treated with caution as further work is required to examine if these scales are valid and can be used reliably in these forms. The small number of studies that did not use the ABS or an adapted version ranged from creating new measurement instruments to merging sub-scales together which measured correlated constructs. These measurements and the results of these studies should be treated with extreme caution as the validation of these scales would require significant further research.

9.2.1.3: Is academic buoyancy malleable to intervention?

This question was posed to ascertain whether there is existing evidence to show that academic buoyancy is malleable to intervention. This question was asked with stage three of the PhD project in mind, to ascertain whether levels of academic buoyancy could be changed in students through implementing an intervention. Only RCT design studies were eligible to answer this research question as the use of random allocation to assign participants to groups increases confidence that any changes identified were less likely to be attributable to natural changes or other factors.

Two RCTs (Puolakanaho et al., 2019; Putwain et al., 2019) included within the review delivered interventions which showed some tentative evidence to suggest that academic buoyancy might be malleable to intervention. Nevertheless, both studies highlighted some design and methodology concerns which may impact the trustworthiness of their research. For example, the data analysis presented in Puolakanaho et al.’s (2019) study reported combined results from two separate intervention groups. From this analysis it is unclear whether both or just one of the active treatment groups demonstrated changes in students’ levels of academic buoyancy. By combining the findings across two different intervention groups, it is not clear whether the additional face-to-face element of the ACT curriculum had any effect. Nevertheless, a change in academic buoyancy scores was reported for the combined treatment groups. Furthermore, there was evidence to suggest that Putwain

et al.'s (2019) study changed levels of academic buoyancy in the early intervention group, but this change was not seen in the late intervention group.

As buoyancy levels did change, there is early evidence to believe that this construct could be malleable to intervention. To be confident about any effects identified, it is important that future RCTs are robustly designed and delivered.

9.2.1.4: What is the evidence from existing RCTs of a promising intervention for improving academic buoyancy?

This question was asked to ascertain a promising intervention to test in stage three of this PhD project. Until recently there have been limited attempts to use robust experimental methods to understand whether academic buoyancy could be changed in students. The two RCTs as mentioned in the previous section were also the focus of the analysis in this question. Puolakanaho et al. (2019) tested an ACT intervention which combines elements of mindfulness, acceptance and personal values. The authors proposed that their ACT intervention could potentially work as a preventative and proactive tool for easing psychological symptoms such as anxiety and promoting wellbeing. Research has highlighted that anxiety may be a strong predictor of academic buoyancy.

Putwain et al. (2019) implemented a multi-component wellbeing intervention combining elements of CBT, mindfulness, positive psychology and goal-setting theory. The authors report that mindfulness and CBT were included to focus on improving students' composure and control to manage academic setbacks and pressures. Mindfulness was also incorporated to help students to down-regulate negative emotions. Goal setting activities were incorporated for planning, self-regulation and co-ordination.

Both RCT studies test mindfulness as one element of a multi-component curriculum but it is not directly measured in either study. There is a rationale for measuring the impact that mindfulness could have as an independent factor for improving students' academic buoyancy. Whilst Puolakanaho et al. (2019) and Putwain et al. (2019) should be commended for implementing RCT studies aimed at improving levels of academic buoyancy, the quality of these studies limit the trustworthiness of their findings. Increasing control over their levels of attrition, quality of data and outcomes, implementation fidelity and validity should be the focus of a trustworthy mindfulness intervention.

9.2.2: Stage two: Summary of secondary data analysis of absence data from the NPD findings

9.2.2.1: To what extent is data on students' characteristics missing from the NPD?

This research question was asked to ascertain the quality of the data for the selected cohort prior to undertaking further analysis. In the selected cohort missing data was assessed at the end of each Key Stage. At KS1 8.1% of students had missing attendance data, which decreased to 0.9% of students at

the end of KS4. This quantity of missing data is acknowledged as a limitation of the dataset, but all missing data was reported with transparency and treated carefully to minimise the possibility of introducing bias into the results. All pupil-level variables had missing data from KS1 to KS3 which decreased with age. KS4 had no pupil characteristics data missing, with the exception of 0.1% of students who had data about their first language missing. Ethnicity and first language had the highest percentages of missing data, followed by characteristics like FSM and SEN. This study showed that missing data was often an indication of the most disadvantaged pupils who were entitled to FSM, SEN support and from ethnic minority groups. School-level variables also had missing data in KS1 to KS3, but this could also have been a result of linking two administrative datasets together. Missing data variables were included within the regression models to ascertain the extent to which it could predict unauthorised and persistent absences at KS3.

9.2.2.2: What patterns of absence and exclusions exist in the selected cohort according to students' background characteristics?

This research question was asked to identify existing patterns of absence and exclusions in the selected cohort. This descriptive analysis identified that illness was the most common reason for authorised absence. Unauthorised absence was most often explained by “other” reasons which were not captured by the national attendance codes. Persistent disruptive behaviour was the most common reason provided for excluding pupils.

Effect size calculations were utilised to estimate how much difference background characteristics could have on different types of attendance at the end of each Key Stage. For the selected cohort, this descriptive analysis suggested that females were more absent than males during the secondary age phase. Period poverty could be one gender-specific explanation for this difference seen between males and females in secondary schools. During the secondary age phase, absence amongst White ethnic groups was prevalent but the specific impact that White minority groups like GRT students had on this finding cannot be distinguished. Absences in students who were eligible for FSM and SEN support were also prevalent across all Key Stages. Exclusions at KS4 were most prevalent amongst disadvantaged groups of students, including males, students from ethnic minority backgrounds, pupils entitled to FSM and students receiving SEN support. The results of this analysis suggest that attendance support should be targeted at the most disadvantaged students, particularly those entitled to FSM and SEN support.

9.2.2.3: Who would benefit from an attendance intervention according to students' school-level background characteristics?

This question was asked to ascertain which National Curriculum Key Stage, geographic region and LAs may benefit from receiving an attendance intervention in stage three of this project. Based on the selected cohort, this descriptive analysis identified Years 9 and 10 as the year groups with the highest

absences. For many students in England Year 10 marks the start of their formal GCSE education, which may introduce new academic challenges that students are required to navigate. Implementing an attendance intervention in Year 9 may help students with this transition phase. The North East was highlighted as a region which may benefit from an attendance intervention as they reported high average numbers of sessions absent across all types of absence and exclusions. LAs like Middlesbrough and Newcastle Upon Tyne may benefit from an attendance intervention and are identified as areas with high levels of child poverty. LAs which may benefit from an attendance intervention may change annually but regions with high levels of child poverty should be identified as priority areas to receive additional support. To summarise these findings, an intervention may be best targeted at Year 9 pupils in schools located in areas which experience high levels of child poverty and disadvantage.

9.2.2.4: To what extent do pupil characteristics, school characteristics and students' prior attainment predict unauthorised absence and persistent absence from school at KS3?

This research question was asked to ascertain which variables could predict unauthorised and persistent absence from school at KS3. The multiple linear regression model was created to explain unauthorised absences at KS3. This model highlighted strong predictors including unauthorised absence at KS2 and entitlement to FSM. Other predictors to note included residential mobility, White ethnic groups, SEN and attendance at a school in the North of England. It is important to highlight that this model only explained 13% of the variance in unauthorised absences at KS3, so there may be alternative and better predictors to explain this type of absence than the variables included within this model. Nevertheless, the model is meaningful as it goes some way to explain which variables could predict unauthorised absences at KS3.

A binary logistic regression model was also utilised to predict unauthorised absence and was carried out as a comparison to the multiple linear regression model. This model highlighted some of the same predictors of unauthorised absence including missing FSM data, FSM, attendance at KS1 and KS2, and residential mobility. This model also identified missing language data as a possible indicator.

The binary logistic regression model utilised to predict persistent absence at KS3 highlighted that missing FSM data, missing language data and FSM eligibility were strong indicators of persistent absence. Other pupil-level predictors included White ethnic groups, SEN status and English as a first language. Missing authorised absence data at KS2 was a strong predictor of persistent absence at KS3. Residential mobility and attending a school in the North East of England may also be predictors of persistent absence at KS3.

These three regression models did not sufficiently explain all of the unexplained variance in unauthorised and persistent absence at KS3. This suggests that there may be other variables which could explain the variance more than those that were included in the models. A common underlying

theme across many of the notable predictors is disadvantage. For example, students who are missing FSM and first language data may be more likely to be from disadvantaged groups. Likewise, FSM, SEN, residential mobility and attending a school in the North of England are also factors associated with higher levels of disadvantage.

The role of prior absences in explaining future absence is an interesting finding for further consideration as this may imply that establishing good attendance behaviours during the primary age phase may be important for maintaining good attendance during the secondary phase.

9.3: Limitations of the study

This section presents limitations of the study and focuses on the systematic review and secondary data analysis separately.

9.3.1: Stage one: Limitations of the systematic review

All studies included in the systematic review were published or unpublished in the English language.

Two studies were excluded during the screening process as they were published in Arabic and translations could not be found. There appears to be an increasing number of studies being published in countries where English may not be the primary language. This raises a question about whether non-Western cultures would conceptualise and operationalise academic buoyancy in the same way. Some studies have attempted to make cross-cultural comparisons to research how academic buoyancy impacts different samples across different cultures and contexts.

Further clarity about the conceptualisation and operationalisation of academic buoyancy is required before further intervention work can meaningfully take place. This is to ensure that future interventions are targeting and measuring the academic buoyancy construct accurately. The ABS is the most commonly used measure of academic buoyancy but there is very little research carried out to assess the psychometric quality, reliability and validity of the four item self-response scale. There is some emerging research which turns its attention to this issue (see Martin et al., 2008a; Datu & Yang, 2019; Khalaf et al., 2021), but there is little convincing research to suggest that the ABS is a good measure of academic buoyancy for all genders and across all cultural contexts. The ABS raises issues of reporting biases and the ability of young people to assess themselves with accuracy. This scale measures a student's own perception of their academic buoyancy, it does not provide an objective measure. Teachers or parents may be ideally placed to also comment on students' academic buoyancy to triangulate the findings.

Another limitation of this systematic review is the small number of RCTs. The two RCTs that were included in the analysis had low ratings of trustworthiness. This suggests that the findings from these studies may not be trustworthy enough to make confident recommendations about whether the tested

interventions could change or improve students' academic buoyancy. As such, these studies provide limited evidence to make further research and policy recommendations.

9.3.2: Stage two: Limitations of the secondary data analysis

Missing data is a key limitation of the NPD, nevertheless, precautions were taken to ensure that bias was minimised. It is important to remember that in many cases students are not missing data at random, and the cross-tabulations highlighted that these students were often from the most disadvantaged backgrounds. It is possible that the most difficult to reach populations and those with missing data are the types of students who would benefit most from additional support to help them with their school attendance. Missing data may have contributed to over or under-estimations of the effects that certain pupil- and school-level characteristics can have on students' school attendance.

A further limitation of attendance data from the NPD is that the national codes utilised by schools for registering attendance and exclusions do not accurately capture reasons for school absence. Codes including illness and "other" reasons for authorised absence, unauthorised absence and exclusions are too vague and do not provide enough information to understand students' true reasons for absence. A large proportion of absences remain unexplained as the coding system used by schools in England for recording school absences is currently inadequate.

9.4: Implications for further research

With an increase in academic buoyancy research in recent years, an update of the current systematic review in future years may be beneficial. An updated review could explore whether the conceptualisation and operationalisation of the construct have evolved and matured. For example, a key recommendation for further research concerns the ABS and the current lack of psychometric testing. To ensure that academic buoyancy studies are reporting unbiased and trustworthy findings, it is crucial that the ABS measures the construct that it is intended to capture. After this gap in the research has been addressed potentially meaningful intervention work could take place. Evidence-based intervention work is also required to develop the construct further.

With regards to the NPD attendance codes collated by the School Census, over half of absences were classified as 'illness' but this tell us relatively little about the true reasons for absence. Further indication of the types of illness and symptoms that students experience may provide further insight into why students are absent from school. For example, some students may regularly report somatic symptoms such as headaches, stomach aches and dizziness, which could be common side effects of poor mental wellbeing. Monitoring these types of patterns and trends in students' daily school attendance may enable schools to be proactive in identifying issues before poor attendance becomes a habit. If this type of attendance monitoring is not feasible or it is not deemed reasonable for schools

to request this level of sensitive data, linking education with health records may provide an interesting insight for researchers to further understand reasons for authorised absences. Likewise, a similar issue exists for unauthorised absences where “other” reasons which are not captured by existing attendance codes explains a sizeable proportion of students’ absence. A review of attendance codes is required to ensure that all data collected by the national School Census is fit for purpose. If these codes do not highlight where improvement is required the daily administrative task of recording absences could be potentially meaningless and a waste of time for educational practitioners. Ensuring that attendance codes appropriately capture reasons for absences has also been highlighted by the Timpson Review of Exclusions (2019).

A longitudinal analysis of the NPD has been undertaken with one selected cohort’s attendance data. To explore the extent to which the results from this cohort can be applied to other cohorts in state-funded English schools it would be important to repeat this analysis with other cohorts’ data. Furthermore, linking the NPD with other datasets like the Longitudinal Study of Young People in England (LSYPE) could provide further insight into reasons for absence, particularly unauthorised absence, during the transition from Year 9 to Year 10 where absence is at its highest. There are topics covered by the LSYPE which are not included in the NPD consisting of school-related attitudes, experiences and behaviours. Further research in this area may enhance our understanding of reasons for student absence.

Finally, the RCT in stage three of this PhD project is included as a protocol within this thesis. This was due to extenuating circumstances created by the COVID-19 pandemic which made the delivery of the intervention unfeasible. Contingency plans were made, and schools were offered a shortened version of the RCT through online methods. However, intermittent and extended periods of school closures, social distancing policies and general uncertainty during a time of national crisis highlighted the challenges and difficulties that schools were managing on a daily basis. This protocol has been created with the intention of running the RCT in the future as originally planned. Findings from stage one and stage two of this thesis have informed the design of this RCT based on data and existing evidence. This RCT will provide some indication of the relationships that may or may not exist between academic buoyancy, school attendance and mindfulness. This recommendation comes at a potentially relevant time where changes in the education system, due to the COVID-19 pandemic, may still be creating challenges and difficulties for some students. School attendance has also been highlighted as a key government priority due to the increasing number of persistent absentees in recent years.

9.5: Implications for policymakers

It may be important for policymakers to recognise that not all students encounter major adverse situations throughout their time in compulsory schooling. For this reason, government recommendations for educational practitioners to instil resilience in students across the wider population may not be appropriate. Without the increased risk of developing psychopathology or long-term developmental problems at school, measurements of resilience and interventions which increase resilience and resistance to major stress and adversity may not be relevant to all children. There are currently a number of constructs included within policy documents which are utilised without clarification of their conceptual or operational definitions, for example, grit, resilience, coping, tenacity and persistence. Attention is required when discussing psychological constructs within policy documents to ensure that their recommendations capture the intended concept and audience. Transparent reporting of conceptual and operational definitions may also be required to ensure that evidence-based interventions are implemented and are fit for purpose.

As previously mentioned in the implications for further research section, this study showed that national attendance codes may not be adequately capturing reasons for student absences. To obtain better understanding of the reasons why students are not attending school, it may be important for categories such as illness and “other” absences to be categorised further. A review of current attendance codes is recommended.

The North East of England was highlighted as an area which may benefit from an attendance intervention. Within the North East, particular LAs also stood out with high average sessions of absence. Poor attendance within this region should be highlighted. With high rates of child poverty in the North East of England and LAs like Middleborough, these areas may require additional government support. School absence is a multi-faceted and complex problem, and the regression models highlighted FSM as a predictor of school absence. By providing additional funding to schools in areas of high poverty across England, they may be able to access additional support and implement interventions which best suit the needs of their pupils.

9.6: Implications for educational practitioners

Interest in character education and practical ways to improve students’ socio-emotional skills have increased in recent years due to the reported benefits for improving a range of students’ educational outcomes. Teachers have reported competing time pressures and a lack of capacity as reasons for not delivering character education to their students. Educational practitioners should be supported in locating evidence-based interventions and given guidance on how to deliver these types of lessons. Senior leaders and teachers may have incorporated non-cognitive skills into their use of language within the classroom but explaining how to build these skills is less convincing. Providing

educational practitioners with up-to-date evidence-based summaries, tools and techniques, such as the EEF Teaching and Learning Toolkit, might be useful for practitioners when they are looking to identify interventions which may have the potential to improve their students' non-cognitive skills.

Government guidance (DfE, 2022) indicates that effective whole school strategies for improving attendance require commitment from every member of the school community. Educational practitioners are expected to reinforce the importance of attendance to their students, motivate students to attend school and be punctual, identify barriers and reasons for absence, contact parents to follow up on missed days and lateness, and consider the needs of individual and vulnerable pupils. This responsibility for improving whole-school attendance is usually in addition to their daily teaching duties. The regression models showed that strong predictors of unauthorised and persistent absence at KS3 were historical absences at KS2. A proactive approach for improving school attendance could start from the earliest opportunity during the primary age phase, in order to embed positive attendance behaviours from an early age.

To date the .b curriculum has limited evidence to suggest that it could be a cost-effective and time worthy intervention. This means that the costs incurred for training teachers, delivering the intervention and taking time out of the curriculum are offset by limited evidence about positive desirable outcomes. Nevertheless, the quality of the studies that have evaluated the .b curriculum have also been limited in their trustworthiness. Challenges encountered in existing literature have included a lack of adherence to the curriculum and utilising measurements that were not validated for use with children. Schools should be critical about commercialised curriculums like .b and ensure that there is robust evidence to support their outcomes. Spending large amounts of public funding on delivering curriculums which may not work are not cost-effective.

9.7: Concluding statement

The rationale for undertaking this study was based on observations and genuine interest from a front-line educational practitioner responsible for improving students' school attendance. Since embarking on this PhD project, the underlying topics of school attendance and students' health and wellbeing have become increasingly relevant in light of the COVID-19 pandemic and in line with current government priorities. This research aimed to ascertain whether improving academic buoyancy in students, an everyday type of resilience, could improve their school attendance.

This study suggests that academic buoyancy could be malleable to intervention and based on a systematic review of existing evidence, a 10-week mindfulness curriculum might provide a promising approach to do this. Literature supports that mindfulness interventions have caught the attention of educational practitioners in recent years due to their perceived benefit on wellbeing, yet the

foundation for these beliefs are often based on research with adults in clinical settings. At present, schools should be cautious about investing public spending on MBIs with limited empirical evidence to support their effectiveness.

Pupil's prior attendance at KS2 and background characteristics such as FSM and SEN are predictors of unauthorised and persistent absence at KS3. Intervention work which aims to increase school attendance should be delivered with the needs of disadvantaged groups in mind, to ensure that public spending is targeted at those who need the most help. Geographic regions and LAs where there are high levels of child poverty, including the North East and areas like Middlesborough should be prioritised. As prior attendance is also a strong predictor of absence at KS3, it may be important for attendance interventions to be applied from an early age during the primary school phase as proactive rather than reactive measures.

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APPENDICES

Appendix A: Systematic review protocol

A systematic review of studies exploring the educational construct ‘academic buoyancy’: Protocol

Background

The traditional resilience concept explored in an academic setting provides insight into those who are most vulnerable to high-level academic risk. By way of definition academic resilience does not encompass the everyday, low-level challenges and setbacks that naturally occur as part of school life. Considering this, educational psychologists have made a distinction between academic resilience, relevant to a minority of the student population who experience major or acute adversity, and academic buoyancy, which is applicable to the “many and the healthy” who experience minor challenges, stresses and setbacks that are deemed ordinary or typical of academic life (Martin & Marsh, 2008, p.55). A rapid scoping review has demonstrated that much has been done to understand the nature of the construct and the factors that predict it. It appears to be emerging in an early stage of development.

Currently, policy makers (Department for Education, 2019) are encouraging educational practitioners to build “resilience” in pupils across the student population. Thereby implying that most of the student population are vulnerable to high academic risk. By recognising that resilience and buoyancy represent two distinct dimensions, established by differences in degree and kind, they are best placed at either end of a continuum. Research has also alluded to something of a hierarchy between the two constructs, implying that buoyancy is a necessary but not sufficient condition for academic resilience (Martin et al., 2008). It is possible that developing buoyancy in students would enable them to be proactive in developing the necessary skills to cope with the challenges they encounter during their academic lives, preventing their level of risk from escalating and, for most students, potentially evading experiences of major or chronic adversity. For policy makers, it is important to recognise that not all students encounter extreme academic adversity and recommendations for building resilience-based interventions into the curriculum to support the wider student population may not be value for money or fit for purpose. It is important to keep the distinctions between type and kind which demarcate resilience and buoyancy in mind if interventions are to be successful in making a change.

For researchers and educational practitioners, this systematic review will also summarise and synthesise the findings of existing research literature to establish whether the academic buoyancy

construct is malleable to intervention, and if so, what the most promising intervention would be. This would give some indication about what intervention could be carried out in an academic setting to improve students' levels of academic buoyancy.

Aim of Review

The overarching aim of this systematic review is to identify and synthesise all existing research on academic buoyancy, in line with pre-defined inclusion and exclusion criteria, to provide clarity about how it is defined and measured and share the most promising insights for intervention. To the best of the authors' knowledge, it is the first review of its kind.

Review Questions

This systematic review aims to answer four research questions:

1. How is academic buoyancy defined?
2. How is academic buoyancy measured?
3. Is academic buoyancy malleable?
4. What is the evidence from existing RCTs of a promising intervention for improving academic buoyancy?

Search Strategy

Study Identification

An electronic search with defined terms will be used to search for papers published in the English Language between 1998 to present. Three databases will be searched: EBSCOHost (British Education Index, Educational Resource Information Centre, Education Abstracts, Educational Administration Abstracts, PsychINFO and PsychARTICLES), Web of Science and Scopus to return searches from across the education, psychology and social science disciplines. The search strategy is built around two groups of key words: the construct (“academic* buoyan*” OR “educat* buoyan*” OR “daily resilien*” OR “everyday resilien*”) AND setting (academic* OR school* OR college OR universit* OR educat* OR schola* OR pedagog* OR pupil OR student OR learn*). Given limits to the skills of the research team, studies will be included if they are published in the English Language. An initial scoping search suggested that 2008 was the earliest appearance of “academic buoyancy” in the literature, therefore, the time period will be inclusive of 10 years prior to ensure the search is inclusive.

Study Selection

Search results will be downloaded into EPPI Reviewer Software. Following the removal of duplications, results will be screened by an independent reviewer on their titles and abstracts. This

will then be quality assured by a second independent reviewer. Those that do not meet the inclusion criteria will be excluded and eligible full text papers will be reviewed. Again, full texts will be reviewed by two independent reviewers and any disagreements will be resolved through discussion or inclusion of a third reviewer to mediate. The third stage will involve data extraction, carried out by the first independent reviewer and quality assured by the second reviewer. Results of each stage of the study selection process and outcomes will be documented and presented as a flow chart in the final report.

Selection Criteria

Inclusion Criteria

Studies will be included if academic buoyancy is defined as an everyday or daily type of resilience. All study designs, age phases and academic settings will be included. Published or unpublished texts in the public domain will be included if they have been written in the English language between 1998 and 2019.

Exclusion Criteria

Studies will be excluded if they do not focus specifically on the learner. Papers that focus on other individuals in the academic setting, such as teachers or parents, will be discarded. Studies that are not focused on an academic setting, such as youth centres, will also be excluded along with those that do not define buoyancy as an *everyday* construct. Papers that discuss resilience in relation to major adversity will not be included. Finally, if the paper is not published in the English language or is dated pre-1998 it will be excluded.

Quality Assurance

To ensure bias is minimised screening of titles and abstract and full texts will be carried out by two independent reviewers. Any discrepancies will be discussed before finding a resolution. A third independent reviewer will also be on hand to mediate if required. Data extraction will be carried out by the first independent reviewer and a sample of (20%) will be double screened by the second reviewer.

Data Extraction

Two online data extraction forms will be created, tested and refined before any data from the included texts is extracted. The first data extraction template will be used to answer research questions one and two. This data extraction template will require bibliographic information, a definition and measurement scale to be identified. In data extracting papers eligible for inclusion to answer the first two research questions, any papers relevant to questions three and four will be identified. The second data extraction template will be a more detailed extraction of the RCT design and will extract

information such as bibliographic details, research questions, study characteristics (e.g., country and year), methodological characteristics (e.g., design, attrition, etc.), participant characteristics (e.g., sample size and type of participants), intervention characteristics, outcome measures, results and conclusions.

Using the two forms, data will be extracted independently by the first two reviewers. Any discrepancies will be discussed before finding a solution. In instances where a solution cannot be found, a third reviewer will be on hand to mediate the discussions.

Data Analysis and Synthesis

This review will carry out a narrative synthesis of evidence for review questions one and two. With regards to defining academic buoyancy, a range of definitions will be presented in a list based on subgroups. Definitions will be categorised and clustered into groups to synthesise the results. This will identify types of definition and determine whether language used to define academic buoyancy has drastically evolved or remained static over the previous decade. A thematic analysis will also be carried out to code and group synonymous words and phrases presented in the definitions to review the most frequently used terminology to describe academic buoyancy.

Review question two will extract relevant information about how academic buoyancy is measured and there will be a descriptive synthesis of the findings. Measurement scales will be grouped into categories based on the title of the scale and descriptive comments will be made about the level of measurement (for example, number of scale items) and reliability of the scale items by reporting Cronbach's Alpha statistic, where included in the original study.

From RCTs eligible to answer review questions three and four details of bibliographic details, research questions, study characteristics (e.g., country and year), methodological characteristics (e.g., design, attrition, etc.), participant characteristics (e.g., sample size and type of participants), intervention characteristics, outcome measures, results, and conclusions will be extracted and compiled in table format. Tabulation will be assembled, and effect sizes will be reported as documented in the study. These RCTs will be judged on their quality across three domains: relevance to the research question, internal validity and external validity. An overall judgement of quality will be made based on an average rating over three domains.

The final report will be prepared following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines.

Discussion

Although existing research has explored variables relating to academic buoyancy and the relationships between them, the construct remains early in its development. The results of this systematic review

can help to clarify the meaning of academic buoyancy and how it is measured, ascertain whether it is malleable to intervention and if so, the most promising way forward for designing an intervention to improve academic buoyancy. The results are believed to benefit researchers who wish to design and test a promising academic buoyancy intervention. Furthermore, it should bring a more appropriate conceptualisation of everyday resilience to the forefront of discussions for policy makers and educational practitioners. To the best of the authors' knowledge, this is the first review of its kind.

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doi:[10.1016/j.jsp.2007.01.002](https://doi.org/10.1016/j.jsp.2007.01.002)

Footnotes

Competing interests: Non declared

Appendix B: Ethical approval for secondary data analysis of the NPD



Shaped by the past, creating the future

1 December 2017

Sophie Anderson
Sophie.c.anderson@durham.ac.uk

Dear Sophie

TITLE Can improving the academic 'buoyancy' of secondary school students lead to improved school attendance?

Reference : 2871

I am pleased to inform you that your ethics application for the above research project has been approved by the School of Education Ethics Committee.

May we take this opportunity to wish you good luck with your research.

Yours sincerely,

A handwritten signature in black ink that reads "Nadin Beckmann". The signature is written in a cursive style.

Dr Nadin Beckmann
School of Education Ethics Committee Chair

Leazes Road
Durham, DH1 1TA
Telephone +44 (0)191 334 2000 Fax +44 (0)191 334 8311
www.durham.ac.uk/education

Appendix C: Ethical approval for mindfulness-based intervention RCT

From: Ethics
Sent: 29 November 2019 11:25
To: ANDERSON, SOPHIE C.
Cc: ED-ETHICS E.D.; GORARD, STEPHEN A.C.
Subject: Ethical Approval: EDU-2019-10-31T14:45:52-htvl67

Please do not reply to this email.

Dear Sophie,

The following project has received ethical approval:

Project Title: *Can improving the academic buoyancy of secondary school students lead to better school attendance?*;
Start Date: 01 November 2019;
End Date: 01 August 2021;
Reference: EDU-2019-10-31T14:45:52-htvl67
Date of ethical approval: 29 November 2019.

Please be aware that if you make any significant changes to the design, duration or delivery of your project, you should contact your department ethics representative for advice, as further consideration and approval may then be required.

If you have any queries regarding this approval or need anything further, please contact ed.ethics@durham.ac.uk

If you have any queries relating to the ethical review process, please contact your supervisor (where applicable) or departmental ethics representative in the first instance. If you have any queries relating to the online system, please contact research.policy@durham.ac.uk.

Appendix D: Category of definition by first author and year

Category	First Author	Date	Definition
Directly quotes Martin et al. (2008)	Martin	2008	“We define academic buoyancy as students' ability to successfully deal with academic setbacks and challenges that are typical of the ordinary course of school life (e.g., poor grades, competing deadlines, exam pressure, difficult schoolwork).” (p.54)
	Skinner	2012	“Academic buoyancy refers to “students’ ability to successfully deal with academic setbacks and challenges that are typical of the ordinary course of school life (e.g., poor grades, competing deadlines, exam pressure, difficult schoolwork)” (Martin & Marsh, 2008a, p. 72).” (p.31)
	Miller	2013	“Martin and Marsh define academic buoyancy as: ‘students’ ability to successfully deal with academic setbacks and challenges that are typical of the ordinary course of school life (e.g. poor grades, competing deadlines, exam pressure, difficult schoolwork)’ (Martin & Marsh, 2008, p54).” (p.246)
	Smith	2015	“Academic buoyancy is the ability of students to successfully deal with academic setbacks and challenges that are ‘typical of the ordinary course of school life (e.g. poor grades, competing deadlines, exam pressure, difficult schoolwork)’ (Martin & Marsh, 2008, p.54).” (p.719)
	Calhoun	2019	“Martin and Marsh (2008) [...] “students’ ability to successfully deal with academic setbacks and challenges that are typical of the ordinary course of school life” (p. 53).” (p.322)
	Simonton	2020	“Martin and Marsh (2008) define academic buoyancy as “students' ability to successfully deal with academic setbacks and challenges that are typical of ordinary school life” (p. 54).” (p.3)
Paraphrases or strong resemblance to Martin et al. (2008)	Martin	2010	“[...] academic buoyancy has been differentiated from academic resilience and defined as students’ capacity to successfully overcome setbacks and challenges that are typical of the ordinary course of everyday academic life (e.g., poor performance, competing deadlines, performance pressure, difficult tasks; Martin & Marsh, 2009).” (p.5)
	Barnett	2012	“Martin and Marsh (2009) define <i>academic buoyancy</i> as —students’ capacity to successfully overcome setbacks and challenges that are typical of the ordinary course of everyday academic life (e.g. poor performance, competing deadlines, performance pressure, difficult tasks)” (p. 54).” (p.13)
	Liem	2012	“[...] it is students’ academic buoyancy or the capacity to deal with stresses typical of everyday academic life that determines the extent to which they can successfully overcome these academic challenges (Martin & Marsh, 2009) [...]” (p.224)

	Martin	2012	“Martin and Marsh (2008a, 2008b, 2009) have defined buoyancy as individuals’ capacity to deal with adversities and difficulties that are typical of everyday school life (e.g., poor grades, competing deadlines, exam pressure, and difficult schoolwork).” (p.9)
	Carrington	2013	“Academic buoyancy refers to the successful responses and adaptations to academic setbacks and challenges that are typical of the ordinary course of school life (e.g., poor grades, competing deadlines, exam pressure) (Martin & Marsh, 2008).” (p.7)
	Martin	2013a	“Academic buoyancy has been defined as a capacity to overcome setbacks, challenges, and difficulties that are part of everyday academic life.” (p.488)
	Martin	2013b	“Academic buoyancy is defined as students' capacity to successfully overcome setbacks and challenges that are typical of the ordinary course of everyday academic life (e.g., poor performance, competing deadlines, performance pressure, difficult tasks; Martin & Marsh, 2009; Putwain, Connors, Symes, & Douglas-Osborn, 2012)” (p.129)
	Martin	2013c	“Academic buoyancy is defined as students’ ability to deal effectively with academic setbacks, school-related stress, and school-related pressure in the course of everyday school life (Martin & Marsh, 2006, 2008, 2009).” (p.7)
	Martin	2013d	“Academic buoyancy refers to students’ capacity to effectively deal with everyday academic adversity and challenge (e.g., difficult schoolwork, negative feedback, study pressure) (Martin & Marsh, 2008, 2009).” (p.3)
	Putwain	2013	“Academic buoyancy refers to a student's capacity to withstand the pressures and respond adaptively to the setbacks that are experienced during the routine course of schooling, college and university education (Martin & Marsh, 2009).” (p.158)
	Martin	2014a	“Academic buoyancy is defined as students’ capacity to successfully overcome setbacks and challenges that are typical of the ordinary course of everyday academic life (e.g., poor performance, competing deadlines, performance pressure, difficult tasks; Martin & Marsh, 2009; Putwain, Connors, Symes, & Douglas-Osborn, 2012).” (p.3)
	Martin	2014b	“Academic buoyancy is a factor relevant to students’ capacity to deal with academic setback and is related to a variety of achievement motivation factors (Martin & Marsh, 2009).” (p.423)
	Putwain	2014	“Academic buoyancy refers to a student’s capacity to overcome the types of setbacks, challenges and pressures that are routinely experienced during academic study and schooling, such as managing work for competing deadlines, receiving a poor grade, or failing a test (Martin & Marsh, 2006, 2008, 2009).” (pp.422–423)

	Yu	2014	“Academic buoyancy is defined as students’ capacity to successfully overcome setbacks and challenges that are typical of the ordinary course of everyday academic life (e.g., poor performance, competing deadlines, performance pressure, difficult tasks; Martin & Marsh, 2009; Putwain, Connors, Symes, & Douglas-Osborn, 2012).” (p.11)
	Putwain	2015	“Academic buoyancy is defined as the capacity to withstand the routine types of setbacks, challenges and pressures experienced by the majority of students during their education (Martin & Marsh, 2009).” (p.3)
	Comerford	2015	“Academic Buoyancy has been described as a students’ ability to successfully navigate the everyday challenges that are typical of school life.” (p.98)
	Strickland	2015	“Buoyancy is generally defined as an individual’s ability to successfully overcome the setbacks and challenges that are typical of everyday life (Martin & Marsh, 2008a; 2008b).” (p.1)
	Symes	2015	“Academic buoyancy is the ability to withstand and respond successfully to the types of challenges and setbacks associated with routine school life, such as competing deadlines, examination pressure, and poor grades (Martin & Marsh, 2008a).” (p.607)
	Martin	2016	“Buoyancy refers to an ability to effectively deal with ‘everyday’ setback, challenge, adversity, and pressure in one’s life (Martin & Marsh, 2008a, 2008b, 2009).” (p.12)
	Putwain	2016a	“Academic buoyancy refers to the ability to withstand and respond successfully to the types of challenges and setbacks associated with routine school life, such as competing deadlines, examination pressure and poor grades (Martin & Marsh, 2008a, 2009).” (p.1808)
	Putwain	2016b	“Academic buoyancy is the perceived capacity of a student to withstand the pressures and challenges that are typical for school (e.g., competing deadlines, examination pressure, and poor grades) and respond positively to experiences of failure (Martin & Marsh, 2008).” (p.3)
	Bakhshae	2017	“Martin and Marsh (2008) defined academic buoyancy as students’ ability to successfully overcome academic setbacks and challenges that are typical in their academic path, such as poor grades, anxiety, and challenging assignments.” (p.340)
	Collie	2017	“Academic buoyancy refers to ‘everyday academic resilience’, or a student’s capacity to positively cope with academic setbacks and challenges (e.g. an unexpectedly poor grade, difficult schoolwork, assessment pressures) that typically occur during school life (Martin & Marsh, 2006, 2008, 2009).” (p.947)
	Martin	2017	“Academic buoyancy is defined as an ability to successfully deal with everyday academic adversity (i.e. minor adversity; Martin & Marsh, 2009; Malmberg, Hall, & Martin, 2013; Putwain, Connors, Symes, & Douglas-Osborn, 2012; Putwain & Daly, 2013;

		Putwain, Chamberlain, Daly, & Sadreddini, 2014).” (p.933)
Ramasubramanian	2017	“Academic buoyancy is defined as students’ ability to cope with academic setbacks and challenges typically associated with ordinary life as a student such as test anxiety, management of competing priorities and academic performance (Martin, 2013; Martin & Marsh, 2008).” (p.310)
Tarbetsky	2017	“[...] academic buoyancy is defined as students’ capacity to successfully overcome setback, challenge, and adversity that are typical of the ordinary course of academic life (Martin & Marsh, 2006, 2008a, 2008b, 2009). In that sense, it is also sometimes referred to as “everyday resilience” (Parker & Martin, 2009).” (p.10)
Chong	2018	“[...] (Martin & Marsh, 2008) [...] students’ ability to effectively deal with setback, challenge, adversity and pressure typically faced in the ordinary course of everyday school life (e.g., “I am good at dealing with setbacks.”)” (p.6)
Dahal	2018	“Martin et al. ((2008) p.1) [...] “setbacks, challenges, and pressures that are part of the ordinary course of life.” (p.1467)
Datu	2018a	“(Martin & Marsh, 2008a) [...] students’ capacity to deal with day-to-day academic challenges.” (p.278)
Datu	2018b	“Martin and Marsh (2008a) have conceptualized academic buoyancy as the students’ capability to effectively cope with day-to-day school-related challenges.” (p.208)
Holliman	2018	“Academic buoyancy refers to students’ ability to successfully navigate ‘everyday’ or low-level academic setbacks, challenges, adversities, and pressures (Martin and Marsh 2008).” (p.2)
Mammarella	2018	“[...] the ability to face and deal successfully with academic difficulties and challenges typical of ordinary school life (e.g., poor grades, competing deadlines, exam pressure, difficult schoolwork).” (p.203)
Shafi	2018	“Academic buoyancy is defined by Martin and Marsh (2008) as a student’s ability to deal with academic challenges such as poor grades, meeting deadlines or coping with examination pressure and, in addition, coping with the negative emotions associated with some of these challenges (Bouteyre, Maurel, and Bernaud 2007).” (p.416)
Yun	2018	“The capacity of students to navigate challenges that are typical of the ordinary course of school life and to successfully deal with academic setbacks (Martin and Marsh, 2008)” (p.806)
Aydin	2019	“Academic buoyancy has been proposed by Martin and Marsh (2006, 2008, 2009) to describe students’ competence to respond effectively to daily setbacks such as poor grades in examinations or pressuring deadlines.” (p.2)

	Breslin	2019	"[...] buoyancy relates to a student's capacity to withstand setbacks, challenges, and pressures experienced during their education (Martin and Marsh 2009), such as, receiving negative feedback or dealing with academic pressures." (p.10)
	Colmar	2019	"Academic buoyancy refers to 'students' capability to effectively deal with challenge, adversity, and setback in the school setting' (Martin & Marsh, 2006, p. 268)." (p.1)
	Datu	2019	"Academic buoyancy refers to students' capability of dealing with day-to-day obstacles in the school contexts" (p.1)
	Fong	2019	"Academic buoyancy [...] is defined as a students' ability to succeed when managing academic difficulties and setbacks in everyday school settings (e.g. poor academic grade, meeting deadlines, test stress, difficult school tasks; Martin et al. 2013; Martin and Marsh, 2008a,b, 2009; Putwain et al. 2012; Yu and Martin, 2014)." (p.3)
	Gilfillan	2019	"Academic buoyancy – the ability to overcome everyday academic challenges (e.g., receiving a low score on an exam; Martin & Marsh, 2008)." (p.13).
	Hirvonen	2019	"[...] students' beliefs that they can respond adaptively to the everyday pressure, challenges and setbacks they face in school, such as poor grades, occasional fluctuation in motivation, negative feedback from teachers or difficult schoolwork (Martin and Marsh, 2008a, 2009)." (p.101)
	Jahedizadeh	2019	"[...] Academic buoyancy is the ability of learners to survive the everyday challenges and stressful situations of school life (Martin and Marsh, 2006, 2008a, b, 2009; Martin et al., 2010; Martin, 2014)." (p.163)
	Mawarni	2019	"Academic buoyancy is an individual's ability to be able to deal with the typical academic downturn and daily academic challenges in school life." (p.1)
	Martin	2019	"Academic buoyancy refers to students' capacity to successfully overcome academic setbacks, difficulty and adversity (Martin & Marsh, 2009)." (p.302)
	Puolakanaho	2019	"[...] academic buoyancy, which refers to a student's capacity to overcome everyday academic life setbacks and challenges successfully (Martin and Marsh, 2009)" (p.287)
	Rohinsa	2019	"Academic buoyancy is defined by Martin and Marsh (2008) as the ability of students to overcome academic setbacks or challenges that are commonly faced in schools." (p.202).
	Vinter	2019a	"Academic buoyancy refers to students' ability to successfully cope with academic difficulties occurring in everyday school-life, such as poor grades (Martin, 2013; Martin & Marsh, 2008)." (p.58)
	Vinter	2019b	"Academic buoyancy refers to students' abilities to successfully deal with academic setbacks occurring in everyday school-life, such as deadlines, difficult

			schoolwork and poor grades (Martin and Marsh 2008).” (p.3)
	Azadianbojnordi	2020	“Academic buoyancy refers to students’ capability to effectively deal with challenges, adversity and setbacks in the school setting (Martin & Marsh, 2006).” (p.2)
	Gohorbani	2020	“Academic buoyancy refers to the student’s ability to overcome the problems, setbacks and challenges that commonly occur in the routine academic life of the most of the students, including poor grades, exam pressure, difficult schoolwork, negative feedbacks from teachers, competition, and loss of motivation (Martin & Marsh, 2015).” (p.96)
	Hirvonen	2020	“Academic buoyancy refers to students’ ability to successfully respond to everyday academic setbacks and challenges, such as poor grades or negative feedback (Martin et al., 2010; Martin & Marsh, 2008; see also Datu & Yuen, 2018).” (p.949)
	Middleton	2020	“[Academic buoyancy] refers to how learners respond to everyday (low-level) setbacks and challenges within the academic environment, such as anxiety during assessments or disappointments in a grade (Martin and Marsh 2009; Martin 2013).” (p.4).
	Putwain	2020a	“Academic buoyancy is defined as the perceived capacity to respond adaptively to the types of minor adversities that are typically experienced during the course of one's education and schooling (Martin and Marsh, 2008).” (p.1)
	Putwain	2020b	“Academic buoyancy is the ability to respond adaptively to the everyday challenges, setbacks, and pressures experienced by students during their studies (Martin & Marsh, 2009).” (p.1)
	Rohinsa	2020	“[...] students need the ability or capacity in themselves to be able to overcome the problems, setbacks, and daily academic challenges or called academic buoyancy (Martin & Marsh: 2008, pp. 53-83).” (p.145)
	Saalh	2020	“Martin, Colmar, Davey, & Marsh (2010) define the academic buoyancy as "students' ability to successfully deal with setbacks and challenges that are typical of academic life."” (p.230)
	Salmela-Aro	2020	“Academic buoyancy, defined as student’s ability to successfully deal with academic setbacks and challenges can buffer these negative effects during schooldays (A. J. Martin & Marsh, 2008; A. Martin & Marsh, 2009).” (p.948).
	Ursin	2020	“Academic buoyancy, referring to a student’s personal capacity to positively cope with academic challenges and setbacks typical for everyday school life, [...] (Martin & Marsh, 2006, 2008a, 2009).” (p.1)
	Khalaf	2021	“Academic buoyancy can be defined as students’ ability to overcome challenges that negatively impact their educational progress (Martin & Marsh, 2006).” (p.2122)
	Lei	2021	“Academic buoyancy refers to the ability of students to successfully cope with common academic setbacks and

			challenges faced in daily school life, including poor test scores, pressure from frequent examinations, and difficult homework (Martin & Marsh, 2008).” (p.620)
	Sudina	2021	“[...] “an individual’s capacity to successfully overcome setbacks and challenges that are typical of the ordinary course of everyday life” or, to put it simply, “an ‘everyday’ resilience” (Martin & Marsh, 2008b, p. 169).” (p.833)
	Zong	2021	“students’ ability to overcome setbacks, challenges, and difficulties that are part of everyday academic life, Martin & Marsh, 2008)” (p. 75)
Cites a seminal text (e.g., Martin et al., 2008, 2009)	Martin	2009a	“Martin and Marsh (2006, 2008a, 2008b) have shown academic buoyancy to be a factor relevant to students’ ability to deal with academic setback in the ordinary course of academic life [...]” (p.801)
	Martin	2009b	“[...] ‘academic buoyancy’ that maps onto the many students who must negotiate the ups and downs of everyday academic life as distinct from acute and chronic adversities relevant to more traditional constructions of academic resilience.” (p.353)
	Martin	2013e	“[...] buoyancy is relevant to everyday adversity and difficulty that is relevant to all students (Martin & Marsh, 2009) [...]”. (p.11)
	Collie	2015	“[...] academic buoyancy is the personal attribute relevant to navigating everyday adversity (Martin, 2013).” (p.114)
	Bhardwaj	2017	“[...] Martin & Marsh’s model of academic buoyancy (2008), defines it as “withstanding and successfully responding to <i>routine</i> [my emphasis] school challenges and setbacks” (Putwain, Daly, Chamberlain, & Sadreddini, 2016) [...]” (p.82)
	Putwain	2019	“Academic buoyancy is the ability to ‘bounce back’ from the kinds of routine setbacks-and minor adversities experienced by the majority of students such as dips in motivation, competing deadlines, performance pressure, and receiving negative feedback on one’s work (Martin and Marsh, 2006; 2009).” (p.54)
	Yu	2019	“Academic buoyancy assists students to deal with the everyday adversities they experience in academic life (Martin & Marsh, 2009).” (p.123)
	Thomas	2020	“[...] learners’ ability to effectively overcome – or cope with – common academic stressors (i.e. bad grades, deadlines, etc.; Martin and Marsh 2008).” (p.3)
	Hoferichter	2021	“Academic buoyancy refers to everyday academic resilience and describes the ability to adaptively respond to daily school-related hassles, challenges, and setbacks (Martin, 2013).” (p.2)
Does not cite Martin et al. 2008	Putwain	2012	“[...] the student’s response to the academic setbacks, challenges, and pressures which are distinct from resilience in difference of kind (i.e., are relevant to most

			students) and difference of degree (i.e., found in typical rather than extreme circumstances).” (p.350)
	Malmberg	2013	“[...] the ability of students to ‘bounce back’ from everyday academic setback (academic buoyancy)” (p.262)
	Bakhshae	2018	“Academic buoyancy is defined as maintaining academic competence and positive adjustment against encountered adversities in adolescents in the academic context.” (p.1)
	Rustam	2018	“The capacity to deal with daily challenges in the academic context is known as academic buoyancy.” (p.553)
	Verrier	2018	“Academic buoyancy is the ability to overcome minor academic setbacks.” (p.659)
	Skinner	2020	“Academic buoyancy refers specifically to students’ everyday academic resilience—that is, to the set of behaviours that allow students to successfully navigate minor challenges and setbacks in school.” (p.5)
	Lei	2022	“Academic buoyancy, the capacity to withstand academic challenges and setbacks in school daily life” (p.2)

Appendix E: Measure of academic buoyancy by first author and year

First Author (Year)	Measure	Items	Likert Scale	Cronbach's α
Aydin (2019)	Academic Buoyancy Scale (Martin and Marsh, 2008)	ABS Four items "I'm good at dealing with setbacks at school - e.g. negative feedback on my work, poor result." "I don't let study stress get on top of me." "I think I'm good at dealing with schoolwork pressures." "I don't let a bad mark affect my confidence."	1 to 5	0.77
Azadianbojnordi (2020)	Academic Buoyancy Scale (Martin and Marsh, 2008)	ABS Four Items	1 to 5	0.82
Bakhshae (2017)	Husseinchari and Dahghanizadeh's (2012) questionnaire – the creators modelled this scale on the Martin and Marsh's (2008) 4 item ABS.	1 factor, 10 items. Items not reported. Contact made with the authors.	1 to 7	0.83
Bakhshae (2018)	Husseinchari and Dahghanizadeh's (2012) questionnaire – the creators modelled this scale on the Martin and Marsh's (2008) 4 item ABS.	1 factor, 10 items. Items not reported. Contact made with the authors.	1 to 7	0.83
Barnett (2012)	Amalgamation of items taken from 10 scales relating to the four quadrants of Martin and Marsh (2007) Motivation and Engagement Wheel (expectancy for success, task value, mastery-goal orientations, performance-avoidance goal orientation, anxiety, procrastination, and cognitive and metacognitive engagement).	(QUAD 1) Expectancy for Success (3 items): (pp.161–162) "I believe I will receive an excellent grade in English/Math class." "I'm confident I can do an excellent job on the assignments and tests in English/Math class." "I expect to do well in English/Math class." Mastery Goal (3 items): "I like class work best when it really makes me think." "I like work that I'll learn from even if I make mistakes."	1 to 7	> 0.70

	<p>Many items adapted from the MSLQ (Pintrich et al., 1993) and PALS (Midgley et al., 2000).</p>	<p>“An important reason why I do my work is because I want to get better at it.”</p> <p>Task-Value (3 items):</p> <p>“It is important that I learn the course material in English/Math.”</p> <p>“I like the subject matter in English/Math.”</p> <p>“I think the material in English/Math class is useful for me to learn.”</p> <p>(QUAD 2) Rehearsal (3 items):</p> <p>“When I study for English/Math class, I read my class notes over and over again.”</p> <p>“When I study for English/Math class, I make lists of important terms and memorise the lists.”</p> <p>“When I study for English/Math class, I memorise key words (or formulas) to remind me of important concepts.”</p> <p>Organization (2 items):</p> <p>“When I study for English/Math, I outline the material to help me organise my thoughts.”</p> <p>“When I study for English/Math, I go over my class notes and make an outline of important concepts.”</p> <p>Elaboration (2 items):</p> <p>“When I study for this class, I write brief summaries of the main ideas from the readings and class notes.”</p> <p>“I try to relate ideas in this subject to those in other classes.”</p> <p>Metacognitive Self-regulation (5 items):</p> <p>“When reading for English/Math class, I make up questions to help focus my reading.”</p> <p>“When I become confused about something I’m reading for English/Math class, I go back and try to figure it out.”</p> <p>“When studying for English/Math, I try to determine which concepts I don’t understand well.”</p>		
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		<p>“If I get confused taking notes in English/Math class, I make sure I sort it out afterwards.”</p> <p>“I ask myself questions to make sure I understand the material that I have been studying for English/Math class.”</p> <p>(QUAD 3) Test Anxiety (3 items):</p> <p>“When I have problems learning the material in English/Math, I get anxious.”</p> <p>“Before I start studying the material for English/Math, I feel tense and nervous.”</p> <p>“I feel queasy when I think of having to study and do the work in English/Math.”</p> <p>Performance-avoidance Goal (3 items):</p> <p>“The reason I do my work is so my teacher doesn’t think that I know less than others.”</p> <p>“One of my main goals is to avoid looking like I can’t do my work.”</p> <p>“An important reason I do my work is so that I don’t embarrass myself.”</p> <p>(QUAD 4) Academic Procrastination (3 items)</p> <p>“I generally postpone working on assignments for school.”</p> <p>“I am too lazy to work on assignments ahead of the deadlines.”</p> <p>“I have problems prioritising tasks.”</p>		
Calhoun (2019)	Academic Buoyancy Scale (Martin and Marsh, 2008)	ABS Four items	1 to 7	0.83
Carrington (2013)	Academic Buoyancy Scale (Martin and Marsh, 2008)	ABS Four items	1 to 7	> 0.80
Chong (2018)	Academic Buoyancy Scale (Martin and Marsh, 2008)	ABS Four items	1 to 7	0.87
Collie (2015)	Academic Buoyancy Scale (Martin and Marsh, 2008)	ABS Four items	1 to 7	T ₁ = 0.80 T ₂ = 0.79

Collie (2017)	Academic Buoyancy Scale (Martin and Marsh, 2006)	ABS Four items	1 to 7	Not specified but between 0.77 and 0.91
Colmar (2019)	Academic Buoyancy Scale (Martin and Marsh, 2008; 2009)	ABS Four items	1 to 5	Reading 0.72, Maths 0.70
Comerford (2015)	Student Buoyancy Instrument	“The instrument was assembled using 39 items drawn from the “Self-Efficacy”, “Planfulness”, “Anxiety”, “Industry” and “Locus of Control” scales available from the International Personality Item Pool (Goldberg et al., 2006).” (p.101) After revisions, 29 items were retained.		
Dahal (2018)	Adaptation of the Motivation and Engagement Subscales (Liem and Martin, 2012) and RCOPE (Pargament et al., 2000).	<p><i>Incomplete scale provided:</i></p> <ol style="list-style-type: none"> 1. “What is your country of origin?” 2. “Please indicate your age.” 3. “What is your Gender?” 4. “Level of study.” 5. “My commitment to my belief system is strong.” 6. “I think ‘fate’ controls my future.” 7. “Religion is important in my life.” 8. “I rely on my parents for help.” 10. “I ask for support from friends who have a similar cultural background.” 11. “My family is highly supportive of my degree.” 12. “In general, I am enthusiastic about doing academic tasks.” 13. “I have strong sense of connection with faculty and staff.” 14. “I am sure I can deal with the stress of study.” 15. “I have a strong belief in my own ability to be successful in my academic career.” 16. “In my culture, the decision is mostly taken by elders.” 17. “When I don’t succeed, I feel I am not good enough.” 18. “I feel less competent here than at home.” 	1 to 6	> 0.70

		19. "I feel like lecturers are distant and unapproachable." 20. "I feel helpless when I don't understand lecturers." 21. "My belief gives me strengths to continue when I fail an assignment." 22. "I am comfortable asking lecturers for help." 23. "I am keen to participate in anything that helps me study." 24. "I am willing to speak up to defend my rights as a student." 25. "The debt that I owe to my parents obliges me to do better." (pp.1480–1481)		
Datu (2018a)	Academic Buoyancy Scale (Martin and Marsh, 2008)	ABS Four items	1 to 7	0.83
Datu (2018b)	Academic Buoyancy Scale (Martin and Marsh, 2008)	ABS Four items		
Datu (2019)	Academic Buoyancy Scale (Martin and Marsh, 2008)	ABS Four items	1 to 7	0.74
Fong (2019)	Adapted Academic Buoyancy Scale (Martin and Marsh, 2008)	Six items: "I believe I'm mentally tough when it comes to exams." "I don't let academic stress get on top of me." "I'm good at bouncing back from a poor grade in my classes." "I think I'm good at dealing with academic pressures." "I don't let a bad grade affect my confidence." "I'm good at dealing with setbacks in class (e.g. bad grade, negative feedback on my work)." (p.7)	1 to 7	0.87
Ghorbani (2020)	Academic Buoyancy Scale (Martin and Marsh, 2008)	ABS Four items	1 to 7	0.80
Gilfillan (2019)	Academic Buoyancy Scale (Martin and Marsh, 2008)	ABS Four items	1 to 7	T ₁ = 0.80 T ₂ = 0.82
Hirvonen (2019)	Academic Buoyancy Scale (Martin and Marsh, 2008)	ABS Four items	1 to 5	0.83

Hirvonen (2020)	Academic Buoyancy Scale (Martin and Marsh, 2008)	ABS Four items	1 to 5	0.83
Hoferichter (2021)	Academic Buoyancy Scale (Martin and Marsh, 2008)	ABS Four items	1 to 5	0.83
Holliman (2018)	Academic Buoyancy Scale (Martin and Marsh, 2008)	ABS Four items	1 to 7	0.85
Jahedizadeh (2019)	EFL Student Buoyancy Questionnaire	27 item scale drawing on four main categories: sustainability, regularity adaption, positive personal eligibility and positive acceptance of academic life. Example items: "If I face any failure during my language learning (such as a low grade or teacher negative feedback), I can deal with it very well and never get disappointed, on the contrary I try to learn something for them." (<i>sustainability</i>) "Sometimes in language learning I make myself do things whether I want to or not (I specify a goal for myself, like learning twenty new words this week)." (<i>regularity adaption</i>) "I have enough energy to do what I have to do, for example the homework that the teacher assigns." (<i>positive personal eligibility</i>) "I can usually look at a situation in a number of ways, for example positive aspects of homework, exams, and teacher rigidity, not just the negative sides." (<i>positive acceptance of academic life</i>) (pp.167–168)	1 to 5	0.83
Khalaf (2021)	Adapted Academic Buoyancy Scale (Martin and Marsh, 2008)	ABS Four Items translated into Arabic	1 to 7	Reliability measured as Omega Coefficient Total: $\omega = 0.703$ Egyptian: $\omega = 0.724$ Omani: $\omega = 0.656$
Lei (2021)	Adapted Academic Buoyancy Scale (Martin and Marsh, 2008)	ABS Four Items translated into Chinese	1 to 7	0.86

Lei (2022)	Adapted Academic Buoyancy Scale (Martin and Marsh, 2008)	ABS Four Items translated into Chinese	1 to 7	0.86
Liem (2012)	Academic Buoyancy Scale (Martin and Marsh, 2008)	ABS Four Items	1 to 7	T ₁ : 0.81 T ₂ : 0.84
Malmberg (2013)	Academic Buoyancy Scale (Martin and Marsh, 2008) AND adapted Academic Buoyancy Scale (Martin and Marsh, 2008)	ABS Four items & adapted ABS Four items: "When I learn [subject], I don't let study stress get on top of me." "When I learn [subject], I think I'm good at dealing with pressure." "When I learn [subject], I don't let bad marks affect my confidence." "When I learn [subject], I'm good at dealing with setbacks (e.g. negative feedback on my work, poor results)." (p.263)	1 to 7	General 0.81, English 0.89, Maths 0.92, Physical Ed. 0.88
Mammarella (2018)	Academic Buoyancy Scale (Martin and Marsh, 2008) - Translated into Italian	ABS Four items	1 to 7	0.82
Martin (2008)	Academic Buoyancy Scale (Martin and Marsh, 2008)	ABS Four items	1 to 7	T ₁ = 0.80, T ₂ = 0.82
Martin (2009b)	Academic Buoyancy Scale (Martin and Marsh, 2008)	ABS Four items		
Martin (2009a)	Adapted Academic Buoyancy Scale (Martin and Marsh, 2008)	"Includes the 4 items; e.g., elementary school item: "I think I'm good at dealing with schoolwork pressures," $\alpha = 0.78$; high school item: "I think I'm good at dealing with schoolwork pressures," $\alpha = 0.80$; university item: "I think I'm good at dealing with university pressures," $\alpha = 0.84$." (p.805)	1 to 7	Elementary: 0.78 High school: 0.80 University: 0.84
Martin (2010)	Academic Buoyancy Scale (Martin and Marsh, 2008)	ABS Four items	1 to 7	T ₁ = 0.82, T ₂ = 0.82
Martin (2012)	Academic Buoyancy Scale (Martin and Marsh, 2008)	ABS Four items	1 to 7	0.78
Martin (2013a)	Academic Buoyancy Scale (Martin and Marsh, 2008)	ABS Four items	1 to 7	0.73

Martin (2013b)	Academic Buoyancy Scale (Martin and Marsh, 2008)	ABS Four items	1 to 7	T ₁ = 0.80, T ₂ = 0.79
Martin (2013c)	Academic Buoyancy Scale (Martin and Marsh, 2008)	ABS Four items	1 to 7	
Martin (2013d)	Academic Buoyancy Scale (Martin and Marsh, 2008)	ABS Four items	1 to 7	T ₁ = 0.81, T ₂ = 0.77
Martin (2013e)	Academic Buoyancy Scale (Martin and Marsh, 2006)	ABS Four items	1 to 7	
Martin (2014a)	Academic Buoyancy Scale (Martin and Marsh, 2008)	ABS Four items	1 to 7	Non-ADHD 0.75, ADHD 0.65
Martin (2014)	Academic Buoyancy Scale (Martin and Marsh, 2008)	ABS Four Items	1 to 7	Australian Chinese 0.76; Hong Kong 0.76; Mainland Chinese (Beijing) 0.80
Martin (2016)	Academic Buoyancy Scale (Martin and Marsh, 2008)	ABS Four items	1 to 7	T ₁ = 0.82, T ₂ = 0.90
Martin (2017)	Academic Buoyancy Scale (Martin and Marsh, 2008)	ABS Four items	1 to 7	China 0.80, North America 0.81, (UK) .82
Martin (2019)	Academic Buoyancy Scale (Martin and Marsh, 2008)	ABS Four items	1 to 7	T ₁ = 0.85 T ₂ = 0.81
Miller (2013)	<p>Psychological factors: (1) Harter's (1982) Self Perception Profile for Children: Global Self Worth subscale (2) KIDSCREEN Psychological health subscale</p> <p>School engagement factors: (3) KIDSCREEN School environment subscale (4) Pell and Jarvis' (2001) attitudinal scale</p>	Measured through six measures of wellbeing, which cover the three key dimensions (proximal factors) of academic buoyancy (psychological factors, school engagement factors, and family and peer relationships factors). Each dimension uses different scales and adaptations of these scales. (p.242)		(1) 0.71, (2) 0.72, (3) 0.74, (4) 0.78, (5) 0.77, (6) 0.77

	Family and peer factors: (5) KIDSCREEN autonomy and parent relations subscale (6) KIDSCREEN peer relationships subscale.			
Puolakanaho (2019)	Academic Buoyancy Scale (Martin and Marsh, 2008)	ABS Four items	1 to 5	$T_1 = 0.87$ $T_2 = 0.89$
Putwain (2012)	Academic Buoyancy Scale (Martin and Marsh, 2008)	ABS Four items	1 to 7	> 0.70
Putwain (2013)	Academic Buoyancy Scale (Martin and Marsh, 2008)	ABS Four items	1 to 5	0.76
Putwain (2014)	Academic Buoyancy Scale (Martin and Marsh, 2008)	ABS Four items	1 to 5	$T_1 = 0.76$
Putwain (2015)	Academic Buoyancy Scale (Martin and Marsh, 2008)	ABS Four items	1 to 5	> 0.70
Putwain (2016a)	Academic Buoyancy Scale (Martin and Marsh, 2008)	ABS Four items	1 to 5	0.76
Putwain (2016b)	Academic Buoyancy Scale (Martin and Marsh, 2008)	ABS Four items	1 to 5	0.78
Putwain (2019)	Academic Buoyancy Scale (Martin and Marsh, 2008)	ABS Four items	1 to 5	> 0.79
Putwain (2020a)	Academic Buoyancy Scale (Martin and Marsh, 2008)	ABS Four items	1 to 5	0.80
Putwain (2020b)	Academic Buoyancy Scale (Martin and Marsh, 2008)	ABS Four items	1 to 5	0.79
Rohinsa (2019)	Academic Buoyancy Scale (Martin and Marsh, 2008)	ABS Four items translated	1 to 4	0.80
Rohinsa (2020)	Adapted Academic Buoyancy Scale (Martin and Marsh, 2008)	Adapted ABS Four items, e.g. "I will not let academic stress overwhelm me" (p.148)	1 to 4	
Saalh (2020)	Adapted Academic Buoyancy Scale for Accounting Students (ABS-AS) (Piosang, 2016)	50 items based on five predictors: self-efficacy, control, academic engagement, low anxiety and teacher-student relationship.	1 to 3	Listening 0.97, Reading 0.93

Salmela-Aro (2020)	Adapted Academic Buoyancy Scale (Martin and Marsh, 2008)	Three items: “I am good at managing adversity that is related to studying.” “I don’t let study stress get on top of me.” I am good at handling study related pressure.” (p.951)	1 to 5	0.74
Shafi (2018)	Buoyancy Questionnaire	Mixture of 10 open and closed multi-choice questions. (p.419) (1) “How are you hoping to benefit from your feedback?” (2) “When you receive feedback on your assessments, rank the following in order of value to you (1 as highest, 5 as lowest): (a) Annotations on the script, (b) Running commentary, (c) General comment, (d) Descriptors that show the reason for the grade, (e) The grade, (f) Recommendations for improvement” (3) “What would your ideal feedback sheet contain?” (4) “What would be your preferred way of receiving feedback: (tick one) (a) On a standardised template received electronically, (b) Free text received electronically, (c) Recorded audio comments, (d) Individual tutorials, (e) Group tutorials, (f) Other? (please specify)” (5) “When you receive feedback, would you say you generally (tick one): (a) Read it carefully alongside your submission, (b) Just skim through it, (c) Just look at the grade, (d) Don’t read it” (6) “After receiving feedback, have you ever done any of the following? (tick all that apply) (a) Taken notes, (b) Made a plan for future assessments, (c) Sought advice from a tutor or other, (d) Sought help from a skills book or web source, (e) Returned to feedback when working on another assessment” (7) “Describe your thoughts when you get a disappointing grade” (8) “Describe how you feel when you get a disappointing grade” (9) “Describe what you do when you get a disappointing grade” (10) “If you get a disappointing grade, does the feedback help you manage this disappointment? (a) If yes, how?, (b) If no, why not?”		

Simonton (2020)	Academic Buoyancy Scale (Martin and Marsh, 2008)	ABS Four items	1 to 7	0.83
Strickland (2015)	Academic Buoyancy Scale (Martin and Marsh, 2008)	ABS Four items	1 to 7	0.87
Sudina (2021)	Foreign Language Buoyancy Scale (based on Martin & Marsh, 2008a, 2008b)	<p>“1. “I’m good at dealing with setbacks in my foreign language class.”</p> <p>2. “When it comes to learning a foreign language, I don’t let study stress get on top of me.</p> <p>3. “I think I’m good at dealing with foreign language schoolwork pressures.”</p> <p>4. “I don’t let a poor grade* in my foreign language class affect my confidence.”</p> <p>5. “If I receive a lower grade in my foreign language class than I hoped for, I do not let it get me down.”</p> <p>6. “When I make a language mistake, I analyze what I did wrong to avoid making the same mistake again.” (removed)</p> <p>7R. “Negative feedback on foreign language assignments discourages me.”</p> <p>8R. “When receiving criticism of my work in my foreign language class, I get stuck on the negatives.”</p> <p>Note. ‘R’ indicates negatively keyed items that have been reversed.</p> <p>*The word mark in the original scale was replaced with “grade” to better suit the U.S. context” (p.850)</p>	1 to 5	0.77
Symes (2015)	Adapted Academic Buoyancy Scale (Martin and Marsh, 2008)	ABS Four items	1 to 5	0.86
Thomas (2020)	Academic Buoyancy Scale (Martin and Marsh, 2008)	ABS Four items	1 to 5	0.80
Ursin (2020)	Adapted Academic Buoyancy Scale (Martin and Marsh, 2008)	<p>“Academic buoyancy scale for primary school children included four linguistically simplified items referring to one’s ability to deal with setback:</p> <p>“I am not bothered by a poor number”</p>	1 to 5	0.65

		<p>"I don't mind if I find schoolwork difficult"</p> <p>"I don't worry too much about school stuff, e.g., "undone homework""</p> <p>"I don't mind if I have too much schoolwork". (p.6)</p>		
Verrier (2018)	Academic Buoyancy Scale (Martin and Marsh, 2008) and adapted Academic Buoyancy Scale (Martin and Marsh, 2008)	<p>ABS Four items & adapted ABS Four items:</p> <p>"The student does not let stress get on top of them."</p> <p>"The student is good at dealing with schoolwork pressures."</p> <p>"The student does not let a bad mark affect their confidence."</p> <p>"The student is good at dealing with setbacks (e.g. negative feedback on their work, poor results)." (p.662)</p>	1 to 7	ABS 0.82, Adapted ABS 0.84
Vinter (2019a)	Adapted Academic Buoyancy Scale (Martin and Marsh, 2008)	<p>"Academic buoyancy was measured with seven items (questionnaire adapted from Martin & Marsh, 2006). Sample item: "I think I'm good at dealing with schoolwork pressures"." (p.61)</p>	1 to 6	0.91
Vinter (2019b)	Adapted Academic Buoyancy Scale (Martin and Marsh, 2008)	<p>"Academic buoyancy was measured with seven items (adapted from Martin & Marsh, 2006). Items included statements such as: "I'm good at dealing with setbacks at school (e.g. bad marks, negative feedback on my work)"." (p.7)</p>	1 to 6	0.89
Yu (2014)	Academic Buoyancy Scale (Martin and Marsh, 2008)	ABS Four items	1 to 7	0.80
Yu (2019)	Academic Buoyancy Scale (Martin and Marsh, 2008)	ABS Four items	1 to 7	0.80
Yun (2018)	Adapted Academic Buoyancy Scale (Martin and Marsh, 2008)	<p>Four items</p> <p>"Once I decide to do something for English learning, I am like a bulldog: I don't give up until I reach the goal."</p> <p>"In English class, I continue a difficult task even when the others have already given up on it."</p> <p>"When I run into a difficult problem in English language class, I keep working at it until I think I've solved it."</p> <p>"I remain motivated even in activities of English learning that spread on several months."</p>	1 to 6	0.87

		<p>"I believe I have ability to succeed even in English class." "Even if the work is hard, I'm confident I can learn it."</p> <p>(Online supplementary material, retrieved from https://doi.org/10.1017/S0272263118000037)</p>		
Zong (2021)	Academic Buoyancy Scale (Martin and Marsh, 2008)	ABS Four Items	1 to 7	0.74

Appendix F: Data extraction for experimental designs

Bibliographic details	Puolakanaho, A., Lappalainen, R., Lappalainen, P., Muotka, J., Hirvonen, R., Eklund., K., Ahonen, T., & Kiuru, N. (2019). Reducing stress and enhancing academic buoyancy among adolescents using a brief web-based program based on acceptance and commitment therapy: A randomised controlled trial. <i>Journal of Youth and Adolescence</i>, 48, 287-305.
Intervention(s)	Youth COMPASS: A web-based (web and mobile delivered) program based on Acceptance and Commitment Therapy. “Acceptance and Commitment intervention models combine mindfulness and acceptance with behavioural principles and understanding of personal values.” (p.288)
Outcome(s)	“... the acceptance and commitment-based Youth COMPASS program may be well suited for promoting adolescents’ wellbeing in the school context” (p.287)
Research question	Research questions reported verbatim by authors (p.290) <ol style="list-style-type: none"> 1. “To what extent can ninth-grade adolescents’ overall and school-related stress be reduced, and academic buoyancy enhanced, through the five-week web- and mobile-based acceptance and commitment intervention known as Youth COMPASS?” 2. “Do the outcomes in the two intervention groups (which differed from each other slightly in the amount of personal face-to-face support) differ from each other regarding their efficacy, and do they differ from the control group’s outcomes?” 3. “Do the adolescents’ poor academic skills moderate the efficacy of Youth COMPASS in reducing adolescents’ stress and enhancing their academic buoyancy?”
Country in which study carried out	Central Finland (two different municipalities)
Year in which study carried out	Autumn 2017
Design	Randomised Controlled Trial (RCT) design. Based on inclusion and exclusion criteria, a non-random subsample of participants ($n = 249$) was taken from a larger ($n \sim 800$) longitudinal “Stairway” project. This sub-sample received written consent to participate in the Youth COMPASS intervention. Participants were eligible to participate if they belonged to the larger longitudinal Stairway study, had written consent to participate, was a native Finnish speaker, and had previous achievement data concerning reading and math skills and achievement scores from grades 6 to 7. Randomisation was conducted in two phases. Firstly, an equal number of males and females with poor academic skills were selected. Secondly, an equal number of same-sex classmates with normally developing academic skills were chosen at random. All participants were then randomly allocated to one of three study conditions by an independent researcher: iACT face, iACT, or control. Overall stress, school stress and academic buoyancy were measured pre- and post- intervention.

Method of assignment to condition	Random allocation by an independent researcher
Blinded assessment of outcome?	Not stated
Attrition	<p>Six randomised adolescents withdrew from the intervention or could not be reached before starting the program, and no data was available for them (1% attrition). Pre-data were available from 243 and post-data from 239 adolescents.</p> <p>“The results indicated that the participants who were left out reported lower stress ($M = 2.43$, $SD = 1.4$, $n = 35$) than those who continued with the study ($M = 2.98$, $SD = 1.4$, $n = 204$) (2-tailed t-test: $t(237) = 2.23$; $p = 0.028$). The participants who dropped out of the study were mostly male (2-tailed t-test: $t(55.7) = 3.34$, $p = 0.001$). No other differences were observed.” (p.297)</p>
Implementation fidelity	Not stated
Sample: number and type of participants	Ninth grade students. Their mean age at the beginning of the study was 15.27 years. Sample $n = 249$: males ($n = 124$; 51%) and females ($n = 119$; 49%). Half of the sample were identified as having poor academic skills. Post randomisation, sample $n = 243$ and no data available for those who did not take part. Table on p.293 gives detailed breakdown of figures.
Intervention: number and type of participants	iACT face group: $n = 83$ iACT group: $n = 82$
Control: number and type of participants	Control group: ($n = 84$)
Setting	School setting (non-clinical)
Intervention characteristics	<p>Thirty-one acceptance and commitment approach-trained undergraduate psychology students received 18 hours of training with access to a licensed psychologist (4 hours minimum, plus 2 if needed).</p> <p>iACTface: received web- and mobile-delivered intervention, plus face-to-face meeting before (interview and discussion about current life situation) and after (interview about intervention experiences) the intervention. Coaches also gave students oral instructions about the intervention, how to work the web-based program and when to complete the assignments. During the intervention they sent adolescents text messages.</p>

	<p>iACT: same web- and mobile-based intervention except no face-to-face contact with coaches. They were given instruction sheets and had short weekly contact with coaches via text messages.</p> <p>The intervention was a five-week online program focusing on mindfulness (week 1), self-compassion (weeks 2 and 3) and adaptation skills (weeks 4 and 5). The program consisted of short texts, pictures, video clips, comic strips and audio exercises which were accessible by PC, laptop, tablet or mobile phone.</p> <p>Five modules were divided into an introduction and short exercises over three levels. Participants in the iACTface and iACT groups completed at least two exercises at each level to advance. The first exercise was mandatory and each week a minimum of six different exercises must have been completed. The intervention included 90 short exercises in total which lasted between 5 and 10 minutes.</p> <p>Coaches followed the progression of the participants to provide weekly feedback by text message. They asked three questions and if students replied they sent them encouraging feedback. If they didn't reply, a follow up message would be sent on day five. If no further contact was received they phoned the participant.</p>
Control/comparison characteristics	<p>The control group was not provided with intervention resources or feedback. They received normal school support, such as meeting with health professionals or personal support for learning difficulties.</p>
Outcome measures	<p>Measures for assessing academic skills (collected as part of the broader longitudinal study):</p> <ul style="list-style-type: none"> • Reading fluency – the Spelling Errors test, Word Identification test, Salzburg Reading Fluency Test • Math skills – Basic Arithmetic Test <p>Measures used in evaluate the intervention results:</p> <ul style="list-style-type: none"> • Overall stress • Schools stress – adapted Health Behaviour in School-Aged Children scale (Currie et al, 2012; Kämpfi, 2012) • Academic buoyancy – Academic Buoyancy Scale (Martin and Marsh, 2008) • Adherence to the intervention
Results as reported by authors	<p>Results reported Verbatim by authors:</p> <p>“Two different analyses were conducted, in which the intervention groups (i.e. iACTface and iACT) were contrasted with the control group (intention-to-treat analyses, $n = 243$ in the three groups), and gender was used as a covariate. The Mplus analyses and Wald test showed no statistically significant changes ($p > 0.05$) in any of the outcome measures: The two different intervention groups did not differ from the control group in their changes during the intervention. Moreover, no differences were found in the changes between the male and female participants in these groups, although there were gender differences in the initial levels of stress and buoyancy in all the analysed groups ($p < 0.001$).” (p.297)</p>

Effect size as calculated by Puolakanaho et al.	Effect sizes taken from the <u>per-protocol</u> analysis (p.298) Between-group effect size: small (Cohen's $d = 0.22$ stress, $d = 0.18$ school stress, and $d = 0.27$ buoyancy) Within-intervention effect size: small (Cohen's $d = 0.14$ stress, $d = 0.01$ school stress, and $d = 0.28$ buoyancy) Within-control effect size: small (Cohen's $d = 0.08$ stress, $d = 0.17$ school stress, and $d = 0.01$ buoyancy)
Conclusions as reported by authors	Conclusions reported Verbatim by authors: “[...] this kind of intervention could be used as a preventive and early tool for alleviating stress and promoting coping skills among adolescents.” (p.301) “The results suggest that acceptance and commitment models and programs are feasible for early intervention among young people.” (p.302) “[...] Mobile technology may be of assistance in youth interventions and may provide elements—such as enhanced self-knowledge and more autonomy over one's actions—that promote the targeted goals of acceptance and commitment therapy. This, in turn, opens new directions for enhancing the health and wellbeing of adolescents, which can be applied in diverse settings, including schools.” (p.302)

Bibliographic details	Putwain, D., Gallard, D., & Beaumont, J. (2019). A multi-component wellbeing programme for upper secondary students: Effects on wellbeing, buoyancy and adaptability. <i>School Psychology International</i>, 40(1), 49-65.
Intervention(s)	BePART: A Multi-component Wellbeing Intervention (BePART is an acronym for Be Positive, Ambitious, Resilient and Thoughtful) A multi-component wellbeing programme drawing on elements of positive psychology, cognitive behavioural therapy and mindfulness.
Outcome(s)	“Findings show how a relatively short intervention can beneficially impact on student outcomes. Booster sessions may be required to maintain the benefits for wellbeing and adaptability” (p.49)
Research question	“Studies have yet to examine, however, if school-related wellbeing, adaptability, and academic buoyancy can be enhanced by intervention. The aim of the present study was to address this gap in the extant literature.” (p.54)
Country in which study carried out	England
Year in which study carried out	Carried out GCSEs in 2016 (year 11) Study carried out in autumn and spring terms of year 12 – 2016/2017 academic year
Design	Mixed factorial design (between participants factor had two levels. Wait-list design RCT, block randomisation (no detail). Outcome measured were collected over three points in time.

Method of assignment to condition	“A blind block randomisation procedure was used by a member of college staff to allocate participants to groups that were concealed from the research team.” (p.55)
Blinded assessment of outcome?	Not stated
Attrition	Students could not opt-in or out of the intervention as it was a compulsory part of their timetable. Participation in the evaluation of BePART was voluntary (approx. 20.06% $n = 134$ of the year group did not want to take part).
Implementation fidelity	A strategy was not implemented to assess the fidelity of quality of the intervention. “It is likely that fidelity and quality differed across the different intervention groups in such a way that would have influenced outcomes (e.g., Forman et al., 2013; Owens et al., 2014).” (p.60)
Sample: number and type of participants	534 participants (male $n = 217$, female $n = 317$) Mean age 16.71 years White ($n = 508$), Asian ($n = 16$), Black ($n = 2$), other ($n = 4$), mixed ($n = 4$) Free School Meals ($n = 37$) Attainment: mean GCSE score C (“typically achieving”)
Intervention: number and type of participants	Early intervention $n = 266$ participants (no further information provided)
Control: number and type of participants	Wait-list control $n = 271$ (no further information provided)
Setting	Delivered in the college classroom. “BePART was delivered to all participants as part of their personal, social, and health education lessons (these are compulsory lessons taken alongside the academic programme of study).” (p.56)
Intervention characteristics	One hour-long lesson per week over six weeks in the autumn term, six weeks after the students had started college. Delivered by a college staff with a student support role who received training from the programme developers. Self-reported data collected by staff. Students were not given the opportunity to opt-in or out of the intervention as the lessons were compulsory. Participation in the evaluation was voluntary.

Control/comparison characteristics	One hour-long lesson per week over six weeks in the spring term. Presumed to be the same delivery as the intervention group as not directly specified.
Outcome measures	Primary outcome: School-related wellbeing (six-item scale developed by Loderer, Vogl and Pekrun, 2016). Secondary outcomes: Academic buoyancy (four-item scale developed by Martin and Marsh, 2008). Adaptability (nine-item scale developed by Martin et al., 2012).
Results as reported by authors	<p>Change scores reported. Results reported Verbatim by authors</p> <p>School-related wellbeing:</p> <p>“There was a main effect of time, $F(2, 1044) = 3741.67, p < 0.001, = 0.878$ (from T₁ to T₃, school-related wellbeing declined), but not intervention, $F > 1$, that was qualified by a time intervention interaction, $F(2, 1044) = 13.06, p < 0.001, = 0.024$. From T₁ to T₂, the rate of decline in school-related wellbeing was less for the early intervention group, $t(262) = 37.70, p < 0.001, d = 1.111$ compared to the late intervention group, $t(260) = 54.19, p < 0.001, d = 1.661$. From T₂ to T₃, $t(270) = 13.35, p < 0.001, d = 0.308$, compared to the early intervention group, $t(262) = 17.09, p < 0.001, d = 0.381$. In summary, participation in BePART slowed reductions in school-related wellbeing.” (p.58)</p> <p>Adaptability:</p> <p>“There was a main effect of time, $F(2, 1044) = 3.16, p = 0.04, = 0.006$, and intervention, $F(1, 522) = 25.91, p < 0.001, = 0.047$, that was qualified by a time intervention interaction, $F(2, 1044) = 27.40, p < 0.001, = 0.050$. From T₁ to T₂, adaptability increased for the early intervention group, $t(262) = -3.85, p < 0.001, d = -0.074$, and decreased for the late intervention group, $t(260) = 6.20, p < 0.001, d = 0.115$. From T₂ to T₃, adaptability increased for the late intervention group, $t(270) = -4.05, p < 0.001, d = -0.077$, and decreased for the early intervention group, $t(262) = 5.24, p < 0.001, d = 0.109$. In summary, participation in BePART temporarily increased adaptability.” (p.58)</p> <p>Academic buoyancy:</p> <p>“There was a main effect of time, $F(2, 1044) = 40.62, p < 0.001, = 0.072$, and intervention, $F(1, 522) = 29.54, p < 0.001, = 0.054$, that was qualified by a time intervention interaction, $F(2, 1044) = 27.40, p < 0.001, = 0.050$. From T₁ to T₂, buoyancy increased for the early intervention group, $t(262) = -2.74, p = 0.007, d = -0.062$, and decreased for the late intervention group, $t(260) = 9.41, p < 0.001, d = 0.058$. From T₂ to T₃, buoyancy decreased for the early, $t(262) = 5.24, p < 0.001, d = 0.195$, and late intervention groups, $t(270) = 8.41, p < 0.001, d = 0.174$. In summary, these results are equivocal.” (p.59)</p>
Effect size as calculated by the	<p>Effect sizes calculated by the authors of this review. Cohen’s d calculated by the difference between means in the intervention (early) and control (late) groups, divided by the standard deviation of the control group (late).</p> <p>Time 2: $(3.41-3.28)/0.7 = 0.19$ (d = 0.19)</p> <p>Time 3: $(3.28-3.17)/0.83 = 0.13$ (d = 0.13)</p>

authors of this review	
Conclusions as reported by authors	Academic buoyancy and adaptability are malleable constructs and therefore amenable to intervention. “The findings presented in this study show how school-related wellbeing and adaptability, and possibly academic buoyancy, can be positively impacted by a six-week programme” (p.61)

Appendix G: Twelve binary logistic regression models to predict unauthorised absence at KS3

From original sample of $N=536,530$, unauthorised absentees $n=204,308$ (38%), not unauthorised absentees $n=333,222$ (62%).

In each model $n=406,616$, there is a 50% split of unauthorised absentees and not unauthorised absentees.

Model Number	BASE			BLOCK 1 Pupil's Characteristics			BLOCK 2 Primary Indicators			BLOCK 3 Secondary Indicators		
	Not UA	UA	Total	Not UA	UA	Total	Not UA	UA	Total	Not UA	UA	Total
1	0.0	100.0	50.0	70.8	49.6	60.2	71.1	58.2	64.7	71.1	58.5	64.8
2	0.0	100.0	50.0	70.8	49.6	60.2	71.1	58.2	64.7	71.1	58.5	64.8
3	0.0	100.0	50.0	70.0	50.5	60.3	71.1	58.2	64.6	71.1	58.6	64.8
4	0.0	100.0	50.0	69.9	50.6	60.2	71.1	58.2	64.6	71.1	58.6	64.8
5	0.0	100.0	50.0	70.0	50.5	60.3	71.0	58.2	64.6	71.0	58.6	64.8
6	0.0	100.0	50.0	70.0	50.6	60.3	71.2	58.2	64.7	71.1	58.5	64.8
7	0.0	100.0	50.0	69.9	50.6	60.3	71.2	58.2	64.6	71.0	58.6	64.8
8	0.0	100.0	50.0	70.0	50.6	60.3	71.1	58.2	64.7	71.1	58.5	64.8
9	0.0	100.0	50.0	70.0	50.5	60.3	71.3	58.2	64.7	71.2	58.6	64.9
10	0.0	100.0	50.0	70.6	50.1	60.3	71.1	58.3	64.7	71.1	58.6	64.8
11	0.0	100.0	50.0	69.6	51.0	60.3	71.1	58.2	64.6	71.1	58.5	64.8
12	0.0	100.0	50.0	70.5	50.1	60.3	71.1	58.2	64.7	71.1	58.6	64.8
Average	0.0	100.0	50.0	70.2	50.4	60.3	71.1	58.2	64.7	71.1	58.6	64.8

Key: UA = unauthorised absentee

	Model	1	2	3	4	5	6	7	8	9	10	11	12	Ave.
		Exp(B)	Exp(B)	Exp(B)	Exp(B)	Exp(B)	Exp(B)	Exp(B)	Exp(B)	Exp(B)	Exp(B)	Exp(B)	Exp(B)	Exp(B)
Block 1	Age	1.014	1.014	1.014	1.014	1.014	1.014	1.014	1.014	1.014	1.014	1.014	1.014	1.014
	Gender	0.942	0.942	0.942	0.941	0.939	0.941	0.938	0.940	0.939	0.936	0.945	0.934	0.940
	FSM	1.913	1.913	1.911	1.886	1.899	1.892	1.911	1.907	1.921	1.916	1.910	1.921	1.908
	FSM missing	176.233	176.233	188.922	194.123	188.502	202.349	210.169	189.652	188.449	181.399	195.892	188.322	190.020
	Ethnicity	0.887	0.887	0.887	0.893	0.889	0.887	0.894	0.890	0.887	0.884	0.887	0.894	0.889
	First language	0.731	0.731	0.731	0.727	0.735	0.726	0.728	0.731	0.726	0.730	0.732	0.721	0.729
	First language missing	1.350	1.350	1.356	1.330	1.356	1.296	1.283	1.355	1.378	1.389	1.307	1.340	1.341
	SEN	0.957	0.957	0.971	0.965	0.969	0.970	0.971	0.973	0.969	0.972	0.977	0.966	0.968
	SEN missing	0.852	0.852	0.840	0.844	0.846	0.841	0.844	0.852	0.851	0.836	0.841	0.846	0.845
Block 2	KS1 attainment	0.965	0.965	0.965	0.965	0.965	0.965	0.964	0.965	0.965	0.964	0.965	0.965	0.965
	KS1 attainment missing	1.004	1.004	1.001	0.977	0.978	0.939	0.992	0.998	0.957	1.001	1.004	0.974	0.986
	KS1 authorised absence	1.012	1.012	1.012	1.012	1.012	1.012	1.012	1.012	1.012	1.012	1.012	1.012	1.012
	KS1 authorised absence missing	0.898	0.898	0.896	0.917	0.909	0.959	0.907	0.899	0.950	0.881	0.897	0.919	0.911
	KS1 unauthorised absence	1.041	1.041	1.040	1.040	1.040	1.042	1.040	1.040	1.040	1.040	1.040	1.039	1.040
	KS1 persistent absence	0.450	0.450	0.437	0.467	0.458	0.469	0.447	0.459	0.460	0.457	0.466	0.460	0.457
	KS2 attainment	0.989	0.989	0.990	0.989	0.989	0.990	0.990	0.990	0.989	0.990	0.990	0.989	0.990
	KS2 attainment missing	0.850	0.850	0.847	0.855	0.866	0.866	0.839	0.876	0.850	0.875	0.818	0.860	0.854
	KS2 authorised absence	1.024	1.024	1.024	1.024	1.024	1.024	1.024	1.024	1.024	1.024	1.024	1.024	1.024
	KS2 authorised absence missing	1.316	1.316	1.332	1.328	1.298	1.306	1.332	1.290	1.316	1.317	1.378	1.333	1.322
	KS2 unauthorised absence	1.069	1.069	1.068	1.069	1.068	1.070	1.067	1.070	1.070	1.069	1.069	1.069	1.069
KS2 persistent absence	0.497	0.497	0.514	0.514	0.492	0.503	0.509	0.490	0.513	0.526	0.499	0.498	0.504	
Block 3	North	1.161	1.161	1.164	1.169	1.165	1.161	1.148	1.167	1.158	1.157	1.157	1.158	1.161
	North East	0.967	0.967	0.958	0.950	0.944	0.962	0.967	0.949	0.959	0.960	0.956	0.935	0.956
	Residential mobility	1.375	1.375	1.370	1.370	1.362	1.379	1.379	1.368	1.365	1.383	1.374	1.387	1.374
	Residential mobility missing	0.839	0.839	0.825	0.827	0.841	0.839	0.844	0.829	0.840	0.829	0.838	0.824	0.835

Appendix H: Twelve binary logistic regression models to predict persistent absence at KS3

From original sample of $N=536,530$, persistent absentees $n=70,415$ (13%), not persistent absentees $n=466,115$ (87%)

In each model $n=140,830$, there is a 50% split of persistent absentees and not persistent absentees.

Model Number	BASE			BLOCK 1 Pupil's Characteristics			BLOCK 2 Primary Indicators			BLOCK 3 Secondary Indicators		
	Not PA	PA	Total	Not PA	PA	Total	Not PA	PA	Total	Not PA	PA	Total
1	0.0	100.0	50.0	76.6	49.0	62.8	76.7	66.9	71.8	76.7	67.4	72.0
2	0.0	100.0	50.0	76.5	48.9	62.7	76.6	66.9	71.7	76.5	67.3	71.9
3	0.0	100.0	50.0	76.4	48.8	62.6	76.4	66.8	71.6	76.5	67.3	71.9
4	0.0	100.0	50.0	76.4	48.8	62.6	76.6	66.9	71.8	76.6	67.4	72.0
5	0.0	100.0	50.0	76.5	48.8	62.7	76.5	66.8	71.6	76.5	67.2	71.8
6	0.0	100.0	50.0	76.5	48.9	62.7	76.6	66.8	71.7	76.6	67.3	71.9
7	0.0	100.0	50.0	76.7	48.8	62.8	76.6	66.8	71.7	76.5	67.3	71.9
8	0.0	100.0	50.0	76.4	48.9	62.7	76.6	66.8	71.7	76.5	67.2	71.9
9	0.0	100.0	50.0	76.6	48.9	62.8	76.5	66.8	71.7	76.4	67.2	71.8
10	0.0	100.0	50.0	76.5	48.8	62.7	76.6	67.0	71.8	76.5	67.4	72.0
11	0.0	100.0	50.0	76.6	48.8	62.7	76.7	67.0	71.8	76.6	67.5	72.0
12	0.0	100.0	50.0	76.5	48.8	62.6	76.3	66.8	71.6	76.3	67.3	71.8
Average	0.0	100.0	50.0	76.5	48.9	62.7	76.6	66.9	71.7	76.5	67.3	71.9

Key: PA = persistent absentee

	Model	1	2	3	4	5	6	7	8	9	10	11	12	Ave.
		Exp(B)	Exp(B)	Exp(B)	Exp(B)	Exp(B)	Exp(B)	Exp(B)	Exp(B)	Exp(B)	Exp(B)	Exp(B)	Exp(B)	Exp(B)
Block 1	Age	1.029	1.025	1.027	1.027	1.029	1.027	1.027	1.026	1.028	1.029	1.030	1.031	1.028
	Gender	0.838	0.844	0.841	0.839	0.843	0.853	0.844	0.845	0.847	0.847	0.861	0.844	0.846
	FSM	2.096	2.095	2.088	2.111	2.083	2.079	2.150	2.078	2.080	2.090	2.085	2.099	2.095
	FSM missing	18.200	19.360	19.585	19.644	19.241	21.951	20.774	21.116	20.236	21.546	18.889	21.772	20.193
	Ethnicity	1.348	1.361	1.358	1.348	1.329	1.367	1.366	1.333	1.354	1.370	1.373	1.372	1.357
	First language	1.326	1.279	1.308	1.340	1.339	1.314	1.289	1.345	1.318	1.301	1.311	1.321	1.316
	First language missing	1.885	1.999	2.031	1.954	1.853	1.743	1.899	2.009	1.994	1.801	2.152	1.990	1.943
	SEN	1.347	1.325	1.313	1.312	1.343	1.360	1.318	1.295	1.343	1.315	1.297	1.312	1.323
	SEN missing	0.638	0.655	0.644	0.635	0.647	0.636	0.634	0.626	0.642	0.645	0.649	0.635	0.641
Block 2	KS1 attainment	0.972	0.974	0.975	0.975	0.977	0.977	0.976	0.977	0.974	0.975	0.970	0.975	0.975
	KS1 attainment missing	0.968	0.960	0.996	0.926	1.016	0.985	0.978	0.989	0.911	0.955	0.993	0.967	0.970
	KS1 authorised absence	1.022	1.023	1.022	1.022	1.022	1.023	1.022	1.023	1.022	1.023	1.022	1.022	1.022
	KS1 authorised absence missing	0.936	0.968	0.894	0.959	0.911	0.966	0.938	0.960	0.998	0.955	0.886	0.966	0.945
	KS1 unauthorised absence	1.026	1.028	1.027	1.026	1.026	1.029	1.028	1.027	1.028	1.028	1.027	1.029	1.027
	KS1 persistent absence	0.479	0.474	0.486	0.508	0.487	0.480	0.513	0.517	0.530	0.478	0.481	0.549	0.499
	KS2 attainment	0.989	0.988	0.988	0.988	0.987	0.989	0.989	0.987	0.988	0.988	0.989	0.988	0.988
	KS2 attainment missing	0.699	0.708	0.796	0.750	0.791	0.706	0.770	0.709	0.774	0.760	0.761	0.655	0.740
	KS2 authorised absence	1.066	1.066	1.066	1.066	1.066	1.066	1.067	1.066	1.066	1.067	1.067	1.065	1.066
	KS2 authorised absence missing	1.440	1.373	1.246	1.329	1.250	1.347	1.254	1.343	1.237	1.305	1.310	1.404	1.320
	KS2 unauthorised absence	1.068	1.061	1.062	1.063	1.065	1.067	1.065	1.063	1.062	1.062	1.066	1.064	1.064
KS2 persistent absence	0.368	0.365	0.378	0.393	0.380	0.362	0.364	0.401	0.403	0.371	0.379	0.398	0.380	
Block 3	North	1.078	1.080	1.077	1.087	1.080	1.079	1.078	1.089	1.083	1.089	1.085	1.061	1.081
	North East	1.029	1.067	1.024	1.050	1.035	1.045	1.027	1.021	1.038	1.081	1.054	1.018	1.041
	Residential mobility	1.599	1.539	1.580	1.556	1.539	1.539	1.529	1.555	1.515	1.523	1.518	1.528	1.543
	Residential mobility missing	0.524	0.533	0.527	0.519	0.537	0.511	0.537	0.505	0.538	0.549	0.511	0.528	0.527