



# The University of Nottingham

School of Psychology

Doctorate in Applied Educational Psychology

EVALUATING THE IMPACT OF A MINDFULNESS BASED INTERVENTION  
ON YEAR 5 CHILDREN'S SOCIAL AND EMOTIONAL SKILLS, OPTIMISM  
AND MINDFUL AWARENESS

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By

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# Abstract

Within existing evaluation research, mindfulness (Kabat-Zinn, 1994) has been identified as a potential intervention that could help to promote children's wellbeing (Zelazo & Lyons, 2012). The evidence base into mindfulness interventions in schools highlights that much of the research is carried out outside of the UK. The current study therefore presents an evaluation of the impact of a mindfulness based intervention on Year 5 children's social and emotional skills, optimism and mindful awareness. The intervention was carried out on a whole class of Year 5 children and was intended as a universal intervention to promote wellbeing (DfE, 2016). The current study adopted a mixed methods research design that used both quantitative (pupil; n=35, teacher; n=2, parent; n=33) and qualitative (n=24) investigations. The quasi-experimental quantitative strand was prioritised within the current study and was used to measure the impact of the mindfulness based intervention on self rated mindful awareness (using the Child and Adolescent Mindfulness Measure; Greco and Baer, 2006), optimism (using the Resiliency Scales for Children and Adolescents; Prince-Embury, 2006) and self, teacher and parent rated social and emotional skills (using the Strengths and Difficulties Questionnaire; Goodman et al 1998). The qualitative strand aimed to explore participants' perceptions of the intervention through focus groups. The results showed that the mindfulness based intervention did not have a statistically significant impact on pupil rated mindful awareness or optimism but indicated a positive impact on pupil and parent rated social and emotional skills but a negative impact on teacher rated social and emotional skills. The focus groups highlighted that the intervention was perceived as a 'sensory experience', with participants reporting improved self and social awareness. The findings are discussed in relation to the existing literature, the methodological limitations and reliability and validity of the current study. The findings also highlight a number of potential avenues for future research and discuss a number of implications in relation to schools, local authorities and educational psychologists.

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# List of Acronyms

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<b>Acronym</b>	<b>Description</b>
CAMM	<i>Child and Adolescent Measure</i>
CASEL	<i>Collaborative for Academic, Social and Emotional Learning</i>
EP	<i>Educational Psychologist</i>
EPS	<i>Educational Psychology Service</i>
HCPC	<i>Health and Care Professions Council</i>
LA	<i>Local Authority</i>
MBSR	<i>Mindfulness Based Stress Reduction</i>
MBCT	<i>Mindfulness Based Cognitive Therapy</i>
BPS	<i>British Psychological Society</i>
PSHE	<i>Personal, Social, Health and Economic Education</i>
RCT	<i>Randomised Control Trial</i>
RE	<i>Religious Education</i>
RSCA	<i>Resiliency Scales for Children and Adolescents</i>
SATs	<i>Standardised Assessment Tests</i>
SENCo	<i>Special Educational Needs Coordinator</i>
SDQ	<i>Strengths and Difficulties Questionnaire</i>
TEP	<i>Trainee Educational Psychologist</i>
UK	<i>United Kingdom</i>
USA	<i>United States of America</i>

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# 1 Introduction

## ***1.1 Background to the Current Research***

The purpose of the current research is to evaluate the impact of a mindfulness based intervention on the optimism, social and emotional skills and mindful awareness of Primary school children in Year 5. The research reflects a current priority for developing evidence-based practice within educational research (Frederickson, 2002) and reflects current government priorities for promoting positive mental health outcomes for young people (DfE, 2016). The study was conducted by a trainee educational psychologist (TEP) undertaking professional doctoral training at the University of Nottingham. The current research was conducted under the supervision of the TEP's employing local authority, a city in the East Midlands, and the University of Nottingham, where the TEP received regular research supervision.

My interest in the area developed from previous professional roles working with vulnerable children in mainstream secondary schools. Much of this work involved developing the social and emotional skills of pupils on an individual basis so that they were able to engage with their learning. This led to an interest in how interventions aiming to develop social and emotional skills could be of benefit to wider groups of children within whole classes as an early intervention rather than with individual targeted populations. Finding the time to promote social and emotional skills within the schools was often in competition with the pressures of the school to focus on academic attainment (Durlak, Weissberg, Dymnicki and Taylor, 2011).

Evaluating the effectiveness of interventions plays an important role in the job of an Educational Psychologist. This study allowed me the opportunity to combine my prior knowledge and understanding of the school context with my interest and experience of social and emotional skills within the learning environment.

I chose to use the MindUP Curriculum (The Hawn Foundation, 2011) in the current research because it is easily accessible to schools, provides a step by step approach to each mindful session, and includes an evidence base that links mindfulness to the brain in relation to social and emotional skills (Diamond,

2010). This intervention enables children to understand more about their own mental processes, which is a crucial aspect of mindfulness. One of the benefits of the MindUP Curriculum (The Hawn Foundation) is that it provided numerous opportunities for the skills taught and learnt within the sessions to be implemented more widely throughout the classroom curriculum.

There are few studies that have explored mindfulness as a whole class intervention to develop children's social and emotional skills (Stevahn, Johnson, Johnson, Oberle & Wahl, 2000). Furthermore, despite the fact that the MindUP Curriculum is being expanded to the UK population, there is little research evaluating the effectiveness of it with this population (The Hawn Foundation, 2011). This study therefore intends to evaluate the effectiveness of the MindUP Curriculum, as a universal intervention, in promoting children's social and emotional skills, optimism and mindful awareness.

## ***1.2 Empirical Rationale for the Current Research***

The current study was designed to facilitate an evaluation of a school and mindfulness based intervention where extensive prior training in mindfulness was not essential for the understanding and delivery of the intervention. The study was designed to address limitations present within the existing mindfulness based evaluation research with children. Within this literature, mindfulness based interventions with children is largely based outside of the UK with a specific focus on target populations. Therefore, the current research was designed to facilitate a real-world application of an existing American mindfulness based intervention in a UK school context as a universal whole-class approach to promote the optimism, social and emotional skills and mindful awareness of primary aged children in Year 5. The current literature is heavily weighted towards quantitative research approaches, with few studies looking at qualitative approaches (Bernay, Graham, Devcich, Rix and Rubie-Davies, 2016; Hennesley, 2011; Costello and Lawler, 2014). A mixed-methods research design was adopted in order to draw on the strengths of both quantitative and qualitative approaches whilst maintaining an emphasis on the quantitative research strand. This design was used to evaluate the impact of the intervention and gain participants' perceptions of the intervention experience. Within the

published, peer-reviewed literature, the current research presents one of the few evaluations of a mindfulness based intervention in the United Kingdom context (Vickery and Dorjee, 2016; Kuyken, Weare, Obioha, Ukoumunne, Vicary, Motton, Burnett, Cullen, Hennelly and Huppert, 2013).

### **1.3 Summary of Chapters**

**Chapter 1: Introduction** – The first chapter provides a summary of the background to and rationale for the current research study. This is followed by a brief overview of the content of each of the following chapters.

**Chapter 2: Literature Review** – This chapter will outline and define a number of key concepts in relation to definitions of mental health and wellbeing and the origins and theoretical foundations of mindfulness in relation to its application for children in school settings. This chapter's focus will narrow and a systematic review will be carried out in order to present the existing research surrounding mindfulness in school settings. The literature review will finish with an explicit rationale for conducting the current research with research questions pertaining to the reviewed empirical evidence.

**Chapter 3: Methodology** – The methodology chapter provides a general overview of the methods through which the research questions were investigated in real-world evaluation research followed by specific details of the current mixed-methods research design. This chapter will also include an epistemological discussion, which locates the design of this study within a pragmatist epistemological paradigm.

**Chapter 4: Results** – The results chapter presents the quantitative and qualitative data and analysis separately. Each measure's analysis begins with details of the approach used followed by presentation of the results. The chapter concludes with a summary of the integrated findings of the current study in relation to initial hypotheses.

**Chapter 5: Discussion** – The discussion provides a summary and interpretation of the current results in relation to existing research evidence. The discussion reviews the reliability and validity of the current study by evaluating the mixed-methods methodology and identifies the potential methodological

strengths and limitations. The chapter concludes with a review of the implications of the current findings for research and professional practice and provide possible avenues of exploration for future research in this area in relation to the professional practice of an Educational Psychologist.

**Chapter 6: Conclusion** – A final summary of the current findings is presented and interpreted long with the implications.



## **2 Literature Review**

### ***2.1 Introduction***

Chapter 2 presents the literature review. The chapter begins by introducing the core concepts of social and emotional wellbeing, emotional literacy and social and emotional competence, with a specific focus on children in the school setting. It discusses relevant interventions which aim to promote the competencies associated with social and emotional wellbeing, and then narrows the focus specifically on mindfulness as an intervention. Research into the current benefits of mindfulness is then explored within the adult population. The chapter then goes on to present a systematic review of the research studies evaluating the impact of mindfulness based interventions specifically in school settings with school aged children, identifying the age range, measures and design method. The chapter will finish with an explicit rationale for conducting this research and the research questions pertaining to the reviewed empirical evidence.

### ***2.2 Promoting Wellbeing in UK Schools***

Teaching and learning in schools has changed considerably over the last 50 years and there is now a strong emphasis on the social, emotional and academic components of education (Zins, Weissberg, Wang and Walberg, 2004). Within the learning process, emotions are considered an important factor since they can either facilitate or impede the academic engagement, work ethic, commitment and school success that children ultimately experience (Durlak, Weissberg, Dymnicki, & Taylor, 2011). Elias, Zins, Weissberg, Frey, Greenberg and Haynes (1997) argue that this is essentially because it is our relationships with others and our emotional state that affect how and what we learn. It is now considered more important than ever that schools and families are able to address these educational processes effectively in order to benefit all students (Durlak et al, 2011). Blum and Libbey (2004) highlighted that many children unfortunately lack social and emotional competencies and as a result become less connected to school as they progress. They argue that this lack of

connection has a negative impact on their academic performance, behaviour and wellbeing.

In the UK, the Department for Education outlines the need for schools to teach pupils about mental health and social and emotional wellbeing as part of the educational curriculum, specifically within developmental Personal, Social, Health and Economic (PSHE) education (DfE, 2016). Within these guidelines, it is viewed that learning about mental health and social and emotional wellbeing is fundamental to keeping pupils safe because it provides a good opportunity to promote the development of healthy coping strategies and provides an understanding of their own emotions as well as the emotions of others (DfE, 2016). Lessons that promote mental health and emotional wellbeing provide the vehicle for pupils to develop strategies to keep themselves healthy and safe so that they can progress throughout their education and their lives (DfE, 2016). It is becoming increasingly important for schools to have a clear awareness of the extent and nature of mental health problems in children and young people and of their responsibility to be part of the response. Despite this, it still remains a concern that teaching about mental health and wellbeing raises significant challenges for teachers, including time, resources and insufficient background knowledge (DfE, 2016).

### ***2.3 Mental Health and Emotional Wellbeing***

When considering mental health and wellbeing, Pretty et al (2010) promote the use of positive psychology because it enables people to consciously build on feelings of happiness and cope with stress, which facilitates an appreciation of the moment. Mindfulness has been highlighted as an important approach in the promotion of wellbeing (Tatum, 2009) and is considered an important principle in helping teachers to understand more about the mental processes associated with mental health and wellbeing (Tatum, 2009; Diamond, 2010). However, in the UK, the terms mental health and emotional wellbeing refer to similar competencies described within the USA (Weare, 2004). Considering the different origins to the term social and emotional wellbeing and mental health helps us to understand their use and identify where overlaps with the terms within the USA exist, as often terms may be used interchangeably without

explicit definitions. According to Stewart-Brown (2000), social and emotional wellbeing is a combination of a range of feelings including energy, confidence, openness, enjoyment and happiness, all of which balance with each other to create a holistic and subjective state.

Weare (2015) made the distinction between social and emotional wellbeing and mental health in order to support schools in delivering well-designed and implemented interventions and approaches that draw on the latest evidence base. According to Weare (2015), 'social and emotional wellbeing' involves being in a state of positive mental health and wellness. It refers to having a *"sense of optimism, confidence, happiness, clarity, vitality, self-worth, achievement, having a meaning and purpose, engagement, having supportive and satisfying relationships with others and understanding oneself, and responding effectively to one's own emotions"* (Weare, 2015: p3).

Weare (2015) then referred to 'mental health problems' as relating to a wide range of social and emotional challenges, difficulties, conditions and illnesses that can overwhelm a person's mental health (Weare, 2015). Such challenges include stress and burnout, anxiety, depression, attachment difficulties and behaviour problems. Weare's (2015) definition suggests that social and emotional wellbeing and mental health are closely related to an individual's ability to manage challenges and difficulties in order to feel confident, happy and engaged in life. Within the literature however, there are a wide range of terms used to describe what is meant by 'wellbeing' and there is an ongoing debate about which terms are most appropriate in which circumstances. Terms that are frequently used include 'emotional literacy' (Steiner and Perry, 1997; Weare, 2004) 'emotional intelligence' (Goleman, 1996), 'emotional and social competence' (Topping, 1998), 'emotional and social wellbeing' (Stewart-Brown, 2000) and 'mental health' (Mental Health Foundation, 2005). Within the published literature exploring emotional literacy and social and emotional competence, the definitions are often explicitly defined, perhaps because the definitions themselves are more specific. It is within the literature around mental health and well being where definitions often become unclear and are used interchangeably because of a lack of explicit definitions in relation to the particular research study.

## **2.4 Emotional Literacy**

Steiner and Perry (1997) were amongst the first to use the term 'emotional literacy' to describe the ability to understand, listen to, and express the emotions of oneself as well as others in a productive way. Similarly, Sharp (2001) believes emotional literacy relates to *the ability to recognise, understand, handle, and appropriately express emotions* (pg1).

Weare (2004) supports this, defining emotional literacy as being:

*"The ability to understand ourselves and other people, and in particular to be aware of, understand and use information about the emotional states of ourselves and others with competence. It includes the ability to understand, express and manage our emotions and respond to the emotions of others, in ways that are helpful to ourselves and others"* (pg2).

In addition to this, Weare (2004) outlines key competencies within emotional literacy that are important socially and emotionally to the individual. These include:

- The importance of self-understanding;
- Understanding and managing emotions;
- Understanding social situations and making relationships.

Importantly, emotional literacy definitions provide us with evidence to suggest that it is not a single entity but rather a cluster of competencies referring to the way in which children learn different skills (Sharp, 2001). With this in mind, Weare (2004) highlights that emotional literacy focuses on practice which allows the idea that individuals start at different points and progress at different rates. This leads us to suggest that emotional literacy is a phenomena which is developed and learned rather than fixed and unchangeable, suggesting that the competencies can be broken down into specific objectives and taught (Weare, 2004). Importantly, Weare (2004) emphasised that the development of emotional literacy should be promoted continuously rather than being confined to specific teaching times or an 'emotional literacy hour'.

Importantly, Weare and Gray (2002) highlighted that emotional literacy was often the preferred terminology used within UK literature by educational professionals compared to other terms such as mental health and wellbeing (Stewart-Brown, 2002) or emotional intelligence (Goleman, 1996; Kelly, 1999). The term emotional literacy is used to describe similar competencies outlined by Goleman's (1996) definition of emotional intelligence (Southampton Psychology Service, 2003). Goleman (1998) identified emotional intelligence as a concept which encompasses self-awareness, self-regulation, motivation, empathy and social skills. It acknowledges the capacity for recognising our own feelings and those of others, for motivating ourselves and for managing emotions well in ourselves and in our relationships (Goleman, 1998; pg 317). However, researchers have argued that using the word emotion in emotional intelligence implies a specific focus on emotional competencies rather than social competencies (Goleman, 1996). Weare (2004) highlighted both social and emotional competencies in her definition of emotional literacy which highlighted a range of emotional skills and personality characteristics including motivation and social skills.

## ***2.5 Social and Emotional Learning***

Social and Emotional Learning is another key concept that is used within the literature surrounding mental health and wellbeing. According to the work of the Collaborative for Academic, Social and Emotional Learning (CASEL, 2016), social and emotional learning refers to the process through which children and adults effectively acquire and apply the necessary knowledge, attitudes and skills required to understand and manage emotions, set and achieve positive goals, feel and show empathy for others, establish and maintain positive relationships, and make responsible decisions. CASEL (2016) identifies there to be five sets of cognitive, affective and behavioural competencies that are all interrelated. These competences, as outlined by CASEL (2016), are as follows:

**Self-awareness:** being able to recognise own emotions and thoughts and how they influence our behaviour as well as assessing our strengths and limitations to help us maintain a well-grounded sense of confidence and optimism.

**Self-management:** being able to regulate own emotions, thoughts and behaviours, in different situations, in order to handle stress, control impulses and persevere for longer.

**Social awareness:** being able to understand different perspectives and empathise with others as well as appreciate similarities and differences.

**Relationship skills:** being able to establish and maintain healthy relationships through clear communication, active listening, cooperation, preventing, managing and resolving interpersonal conflicts, resisting social pressure and seeking help when needed.

**Responsible decision making:** being able to make constructive, considerate, respectful, ethical, and academic choices about social interactions and behaviour.

Cook, Greenberg and Kushe (1994) found that a lack of social and emotional learning skills could lead to internalising and externalising behaviour as well as peer rejection. In addition to this, Snyder (2001) later found that if social and emotional skills are not developed at an early stage in young children it can lead to academic problems, school drop-out and poor grades, as well as antisocial behaviour. This could suggest that emotionally and socially competent behaviour and positive peer relationships are dependent on the successful integration of cognitive, social, emotional and behavioural skills (Cook, Greenberg and Kushe, 1994).

## **2.6 Summary of Key Terms**

The literature surrounding mental health and social and emotional skills highlights a specific focus on the development of children's mental wellbeing and emotional literacy. The definitions of key concepts within the literature surrounding emotional literacy, social and emotional skills and mental health highlight some common competencies including: self-awareness, motivation, social skills, empathy and self-regulation (Goleman, 1996; Weare, 2004; Sharp, 2001).

Overlaps within the definitions imply the importance of this field in relation to education policy in supporting schools to promote children's mental health (DfE, 2016). Weare (2004) argued that the literature surrounding mental health often presents the term within the context of mental illness. As a result, much of the literature where mental health is considered refers to levels of psychiatric morbidity in relation to the prevalence of mental health problems (Stewart-Brown, 2002). Furthermore, the literature surrounding mental health presents the label in relation to services that deal with mental illness and problems in individuals, suggesting that mental health is often considered to be more meaningful within a health context (Stewart-Brown, 2002). This suggests that the term mental health may be less relevant for use within educational research, as per the current study. In particular, it appears that Weare's (2004) definition of emotional literacy and CASEL's (2016) work around social and emotional learning are closely related in their key definitions to social and emotional wellbeing.

Whilst Weare's (2004) definition of emotional literacy provides a sound understanding of UK based terminology surrounding social and emotional wellbeing, for the purposes of the current study, the focus will be on the development of children's social and emotional skills. The current study will use the terminology 'social and emotional skills' since this combines social and emotional competencies, as within Weare's (2004) definition of emotional literacy, but also explicitly draws on 'self-management' of behaviours emphasised within the CASEL (2016) definition of social and emotional learning. In addition, and of particular relevance for use in school settings, the term 'skill' implies knowledge, attitudes and behavioural components (CASEL, 2016), all of which the current research explores.

## ***2.7 The Contribution of the School***

Weissberg, Walberg, O'Brien and Kuster (2003) emphasised how the life experiences of children have rapidly changed over the last century, with increased economic and social pressures on families, weakening of community institutions that nurture children's social, emotional and moral development, and

easier access by children to media that encourage health damaging behaviour being among some of these changes. Given these contextual demands, it is not surprising that schools are under increasing pressure to implement effective educational approaches that help to promote academic success, enhance health and wellbeing and prevent problem behaviours (Kolbe, Collins and Cortese, 1997).

It is becoming more openly recognised that practices that increase pupils' social and emotional skills alongside their academic knowledge is what constitutes effective education (Schonert-Reichl and Weissberg, 2014). Ravitch (2000) believed that in order for schools to be effective, their overarching goal must concentrate fundamentally on the mission of teaching and learning for all children. More specifically, Greenberg et al (2003) argued that education should teach young people to interact socially in skilled and respectful ways as well as practice positive, safe and healthy behaviours with their peer group, family, school and community in order to contribute ethically and responsibly. These skills should be taught alongside the academic skills that enable pupils to be culturally literate, intellectually reflective and committed to lifelong learning. However, with an increased attention on the school-based promotion of pupils' social and emotional wellbeing (Roeser and Eccles, 2014), the reality is that schools today are facing increased pressure to give more attention to children's social and emotional needs whilst also improving academic performance (Jones and Bouffard, 2012). As a result, schools are expected to do more than ever for their children but with increasingly diminishing time and resources (Jones and Bouffard, 2012).

Raver and Zigler (1997) indicated that the social, emotional, and behavioural adjustment of children is as important for their school success as their cognitive and academic preparedness. This is because according to Ladd, Kochenderfer and Coleman (1997), children who find it difficult to pay attention and follow teacher instructions, struggle to get along with other children, find it difficult to control their negative emotions, are more likely to do less well in school and, according to Shores and Wenby (1999), are at a greater risk of being rejected by their classmates. Diamond (2011) provided support for these findings, arguing that "*academic achievement, social and emotional competence and*



*physical and mental health are fundamentally and multiply inter-related. The best and most efficient way to foster any of those is to foster all of them*" (Diamond, 2011, p789). This research might therefore suggest that strengthening children's capacity to regulate their emotions and behaviour (particularly when exposed to several life-stressors), as well as make meaningful relationships, through the development of their emotional literacy and social and emotional competence, can provide an important protective function for school success (Webster-Stratton and Reid, 2004).

## **2.8 Social and Emotional Learning Programmes in Schools**

The research into social and emotional learning supports the perspective that children with positive social and emotional skills are more resilient and better able to manage their emotions when confronted with stressful situations (Durlak et al., 2011). This is because these competencies provide protective factors which include self-awareness, self-management, social awareness, relationship skills and responsible decision making (Collaborative for Academic, Social, and Emotional Learning, 2013), all of which contribute to children's positive well-being.

Hertzman and Power (2006) argue that the promotion of children's social and emotional skills is particularly important during the transition period from childhood to adolescence. Eccles and Roeser (2009) argued that this developmental period (where the ages of 9 and 10 are considered the "preadolescence" period and the ages of 11 and 12 are considered to be the "early adolescence" period) denotes the period in which children's personalities, behaviours and competencies establish themselves and persist into adolescence and adulthood. Schonert-Reichl and Lawlor (2010) therefore believed that specific social and emotional interventions may be warranted during these time periods because intellectual, cognitive, physical and social and emotional changes occur. Eccles (1999) found that children tend to become more self-aware during this developmental period, as well as become more reflective and better able to plan.

## **2.9 Optimism**

According to Dweck (2006), interventions that aim to promote social and emotional skills help children with their sense of hopefulness and optimism. Dweck (2006) argues that hope and optimism enable achievement because children who are optimistic are more likely to work harder and not give up. In addition to this, children who are optimistic will persevere for longer and ultimately experience success which, in turn, will lead to more success (Prince-Embury, 2006). This is because being optimistic is a vital component of resilience and increases the likelihood that the individual will be able to cope with adverse circumstances (Prince-Embury, 2006).

Schonert-Reichl et al (2015) defined optimism as referring to the general beliefs and expectations of a person. They argue that although optimism has been closely related to positive mental health outcomes in adults, there is less information known about the role of optimism in childhood and pre-adolescence. Landa, Martos, and Lopez-Zafra (2010) found that research into optimism with adults suggests that those who are more optimistic experience greater success in the workplace, greater satisfaction in relationships, greater sense of purpose and self-acceptance and lower chances of depression and anxiety. Research on optimism during childhood highlighted similar patterns of benefit, finding that when children are more optimistic, their achievement motivation is higher and their levels of peer acceptance are higher (Oberle, Schonert-Reichl, and Thomson, 2010) which leads to greater life satisfaction (Shulman, 1995). There is also evidence to suggest that optimism in children can protect against feelings of depression or sadness, which may be particularly prevalent during adolescence (Abramson, 2000). This research therefore highlights the importance of optimism being a significant protective factor against mental health problems to promote during pre-adolescence to enable individuals to flourish.

In general, research has suggested that people who are optimistic believe that good things will happen to them. This is because, as suggested by Nes & Segerstrom (2006), positive future expectations are what help optimists to be better at managing stress, evaluating situations differently and engaging in

more adaptive coping behaviours. When considering the development of resilience as part of a child's social and emotional competence, it is important to gain an understanding of the function that optimism plays in this. This is because research has found that qualities that are associated with resilience, such as optimism, often surface in childhood and persist into the adult years (Masten and Tellegen, 2012). This is important because it is during the early-adolescent years that children have increased self-awareness and this impacts on their optimistic thinking and positive perceptions of where they belong in their social and academic environments (Rubin et al, 2006); both of which are lasting and can either promote a healthy wellbeing or result in tendencies to become depressed or anxious in adulthood (Beck et al, 1979). Furthermore, Eccles (2004) highlighted that during early adolescence, children face greater stress both socially and academically which tests their resilience. Therefore, the research into the effects of optimism suggests that it is important for the development of a healthy well-being.

### ***2.10 Promoting Social and Emotional Skills through Mindfulness***

Schools today are facing increasing pressure to improve academic performance whilst also focusing on the social and emotional needs of children (Jones and Bouffard, 2012). Given these pressures, along with demands on time and resources, Durlak et al (2011) argue that it is essential that educators, teachers and psychologists are able to implement short-term, evidence-based curricular approaches that can be implemented in schools which are cost-effective and are able to optimise the learning and social and emotional adaptation of children. According to Zelazo & Lyons (2012), one way of promoting and supporting the development of social and emotional skills during childhood is through the practice of mindfulness. Mindfulness, which refers to a mental state rather than a set of practices, is considered to be beneficial to children because it refers to the ability to focus on thoughts, feelings and perceptions (Kabat-Zinn, 1994), all of which are key components to social and emotional competence. Mindfulness based interventions in schools could therefore be seen as an appropriate approach to tackle these challenges as they can simultaneously

provide the prevention and the education, and thereby address a wide range of needs and unfulfilled potentials of students (Zelazo & Lyons, 2012).

### **2.10.1 What is Mindfulness?**

Mindfulness is a concept which originated in Buddhist philosophical thinking and meditation practice. It involves learning to direct our attention to our experiences as they unfold, moment by moment, with open minded curiosity and acceptance (Kabat-Zinn, 2003). Mindfulness involves being in the present moment so that we can to *respond* to negative stressors rather than *react* to them (Tang et al, 2007).

Within the literature, mindfulness has been regarded as an important contributor to promoting social and emotional wellbeing. The concept of mindfulness, as originally highlighted by Kabat-Zinn (1990) involves the process of bringing non-judgemental attention to our moment-by-moment experiences. Bishop et al (2004) argue that mindfulness "*is often described as a feeling of being present and alive in the moment*" (p.232, 2004). Keng, Smoski and Robins (2011) suggest that mindfulness approaches link closely to the theoretical and empirical associations with psychological wellbeing since over the last 50 years, the psychological processes involved in mindfulness approaches (Germer, 2005) have been explored more widely within the clinical context, and in particular as an alternative approach to psychotherapy (Ambrose-Oji, 2013).

Mindfulness, which is a natural and cultivatable cognitive skill (Kabat-Zinn, 1982) is associated with psychological wellbeing in adults and adolescents (Brown and Ryan, 2003; Miners, 2008). However, within the research surrounding the benefits of mindfulness, Kabat-Zinn's earlier work in the 1980s was considered to be at the forefront. His clinical work used mindfulness approaches as a treatment which led to the development of Mindfulness-Based Stress Reduction (MBSR) and Mindfulness-Based Cognitive Therapy (MBCT) programmes, which aimed to reduce stress, anxiety and depression (Bishop et al, 2004). These programmes highlighted that mindfulness can be developed using secular techniques, derived from Buddhist meditation practices (such as awareness and acceptance of thoughts within the present moment and a

greater awareness of emotions and physical sensations; Kabat-Zinn, 1982), which have been trialled with adults and some children and adolescents (Burke, 2009). Kabat-Zinn's (1982) research into the positive effects of mindfulness on the promotion of wellbeing in adults led to a greater understanding around the potential that mindfulness has to promote social and emotional skills in children and young people (Miners, 2008), and has been influential in the development of mindfulness based interventions in schools (Beauchemin, Hutchins and Patterson, 2008). Furthermore, as Khong (2009) suggested, mindfulness as an approach has evolved over the years; starting off as an alternative therapy and now being viewed as a complimentary therapy. Despite the core principles of mindfulness (being present in the moment) remaining unchanged, its practice and applications have diversified and expanded (Leary and Tate, 2007) due to a shift from a predominantly clinical approach in clinical settings, to the facilitation of mindfulness in more natural settings such as schools (Ambrose-Oji, 2013).

Mindfulness has become an increasingly popular concept in the last 20 years. It has been shown to help adults gain a clearer understanding of their thoughts, emotions and physical sensations in relation to how they may impact on a healthy well-being and quality of life (Kabat-Zinn, 1990; 2003). According to Kabat-Zinn, Lipworth and Burney (1985), mindfulness should not be considered a therapeutic intervention that can be applied to the individual. Rather, it should be considered a process that can ideally become an aspect of lifelong practice. This is because the power is within the individual to utilise it. Flook et al (2010) provide more recent support for this, arguing that practicing mindfulness or "mindful awareness practices" is similar to practicing a sport or playing a musical instrument in that proficiency is developed through repetition and continuous practice.

Kabat-Zinn (2003) highlighted that mindfulness is conceived as a set of practices that help to cultivate a state of mind, which can be reached through exercises such as meditation, which are designed to develop focused attention. Both theory and empirical research suggest that mindfulness practices with adults can have a positive impact. Hölzel et al (2011) found that mindfulness

practices in adults can increase awareness of moment to moment experience as well as promote reflection, self-awareness and regulation and empathy.

Within the literature, there are a number of different terms used to explore mindfulness programmes (Chiesa and Malinowski, 2011). The most commonly used term within the literature is *mindfulness based interventions*, which according to Burke (2009) refers to the therapeutic approaches that are grounded within mindfulness. Mindfulness based interventions essentially involve a range of meditation practices (such as group-based meditation practices, MBSR, MBCT) and psychological interventions (such as Dialectic Behaviour Therapy and Acceptance and Commitment Therapy) which are commonly linked through the concept of mindfulness (Chiesa and Serretti, 2010). The key practices involved within the MBCT and MBSR involve mindfulness meditation (such as body scan and core practices) which aim to bring awareness to bodily sensations intentionally through approaches such as mindful breathing, seeing, smelling, hearing and touching (Burke, 2009; Chiesa and Malinowski, 2011). The key practices within the psychological interventions aim to help a person connect with the present moment. Mindfulness based intervention will therefore be the adopted terminology used throughout the current research in order to describe the practices and intervention used in the current research. This is because the intervention used deep belly breathing, attentive listening and mindful attention, all of which are practices involved in Kabat-Zinn's (1982) MBSR and MBCT programmes and are considered key meditation practices within mindfulness based interventions (Chiesa and Serretti, 2010). Further details of the mindfulness based intervention can be found in Chapter 3, Section 3.7.

### **2.10.2 Mindfulness with Adults**

Amongst the research into the effects of mindfulness, there is strong evidence to suggest that mindfulness can be effective in improving the physical and psychological health and well-being of adults. Baer (2003) found that practising mindfulness can reduce stress, anxiety and recurrent depression and have an impact on underlying emotional and social skills. Mindfulness can also have a positive impact on one's ability to feel in control, make meaningful relationships

and accept a variety of experiences (Baer, 2003). Salmon et al (2004) reported similar findings and highlighted that mindfulness can help adults to manage difficult feelings, feel calm, and become more resilient, compassionate and empathic. Research by Jha, Krompinger and Baime (2007) also highlighted that mindfulness can have an impact on intellectual skills and can help at improving sustained attention, memory and concentration (Chambers, Chuen Yee Lo and Allen (2008).

The current research with adults suggests that mindfulness can be beneficial to wellbeing. This could imply that mindfulness may also be beneficial for children and provide a valuable opportunity to promote children's social and emotional competence. However, much of the research into the benefits of mindfulness focuses specifically on target populations of adults in order to improve their 'mental health' (Weare, 2012). There is little evidence exploring the benefits that mindfulness can have on universal populations of adults (Baer, 2003) in promoting social and emotional skills.

### ***2.10.3 Mindfulness in Schools***

Given the promising evidence base exploring the effectiveness of mindfulness based interventions with adults, researchers are now developing adapted mindfulness based interventions for use with children and adolescents (Weare, 2012). Although the research into the effects of mindfulness based interventions with children appears to still be in its infancy, initial reviews and pilot studies suggest that mindfulness based interventions are feasible with children and adolescents in both clinical and non-clinical samples (Burke, 2009).

Much of the research into mindfulness might lead to the suggestion that mindfulness practices could constitute the foundation and pre-condition for learning (Zenner, Herrnleben-Kurz and Walach, 2014). This is because the fundamental skills within mindfulness of being aware of our thoughts and attending to them could be applied to the classroom to help children to learn to regulate their attention and emotions, as well as to stop their mind from wandering so that they are able to better deal with feelings of frustration and can self-motivate (Zenner et al, 2014). This taps into the fundamental practice within schools of promoting children's mental health and wellbeing (DfE, 2014).

Weare and Nind (2011) argue that schools can provide ideal settings for mindfulness based interventions because they can be brought directly to target groups of children as a preventative approach at low cost to the school, with a fairly quick impact, whilst also being enjoyable. According to Jones (2011) mindfulness has as much of a place within the education system as exams. This is because it prepares pupils for life outside of school and does not interfere with pupils' religious or cultural beliefs, allowing it to be implemented within a multi-cultural classroom (Lubelska, 2012). Goodman (2005) and Kabat-Zinn's (1990) earlier work highlight that it is their openness to experience, readiness to learn and creativity that allow children to benefit from the experiences of mindfulness.

Napoli, Krech and Holley (2005) highlighted how mindfulness can be of great benefit to children. They argued that teaching children techniques to deal with stress is becoming increasingly important in schools because children are faced with so many environmental stressors each day. According to Ballinger and Heine (1991), stress reduction programmes such as mindfulness are associated with improvements in academic performance, attention, self-esteem, mood, concentration and behaviour problems (Napoli, 2002).

### ***2.11 Limitations and Contradictions***

Exploration of the current research evidence base into mindfulness based interventions reveals a number of limitations within the validity of the conclusions. Across the studies that were reviewed, there was a wide variation in the experimental designs adopted, the type of data that was gathered, the sample populations and the nature of the interventions. The studies that have been carried out so far into the effects of mindfulness based interventions also have methodological limitations; one of the most notable of which being the small sample sizes (Weare, 2012). This highlights the need to be tentative when drawing conclusions.

The growing interest surrounding mindfulness based interventions may be of interest to educational psychologists (Davis, 2012; Kostanski, & Hassed, 2008). Educational psychologists (EPs) may be well placed to support in evaluating the effects of mindfulness with children. Fallon, Woods and Rooney (2010)



highlight, for example, that EPs are well positioned within the school context to support schools in implementing preventative interventions as well as delivering mindfulness interventions directly.

There is a large amount of empirical support for the positive benefits of mindfulness training with adults. Despite this, there still remain relatively few studies that explore the equivalent positive benefits of mindfulness with children. Although the small amount of research that has examined the effects of mindfulness on children has yielded some promising findings, this work appears to have mostly focused on *reducing* mental health problems such as anxiety and depression and has been carried out outside of the United Kingdom. There has also been little research that explores the benefits of mindfulness with children in relation to promoting social and emotional skills (Schonert-Reichl and Stewart Lawlor, 2010) and even fewer studies that have looked at the benefits of mindfulness in typically developing children within regular mainstream classrooms (Schonert-Reichl et al, 2015). The following section therefore presents a systematic literature review of the relevant studies exploring the benefits of mindfulness based interventions within school settings.

To address the limitations and contradictions within the mindfulness literature, as well as highlight the areas of strength, a systematic review will be carried out to review the current research findings and generate a holistic picture of the extent of mindfulness based interventions carried out in school settings with 'well-being' being explored as the outcome measure.

## **2.12 Systematic Literature Review**

A systematic literature review refers to a set of processes used to combine different kinds of evidence in order to establish what is known from existing research and how it is known (Gough, 2007). This approach allows the reviewer to make decisions about whether research findings within a particular area are not only consistent across different contexts, but can also be generalised too (Gough, 2007). Systematic literature reviews allow hypotheses to be refined and justified by the reviewer to ensure that any methodological limitations that are present in previous research can be avoided in the proposed research

(Mulrow, 1994). Gough (2007) highlights five stages within a systematic literature review:

1. Formulate review question and develop protocol
2. Define studies to be considered (inclusion criteria)
3. Search for studies (search strategy)
4. Screen studies (check they meet inclusion criteria)
5. Describe studies (systematic map of research)

In addition to this, Gough (2007) discussed the 'weight of evidence' framework, which is used to assess the quality and relevance of the applied research through the systematic synthesis.

<b>Weight of Evidence A</b>
Generic, non-review specific judgement about quality of evidence e.g. generally accepted criteria by those who generally use and produce evidence.
<b>Weight of Evidence B</b>
Review specific judgement about the appropriateness of a specific form of evidence for answering the current review question e.g. the relevance of research design
<b>Weight of Evidence C</b>
Review specific judgement about the relevance of the focus of the evidence for the review question e.g. type of sample, method of data gathering or analysis
<b>Weight of Evidence D</b>
Overall assessment of the extent that a study contributes evidence to answering a review question, typically a combination of A, B and C

**Figure 1-2: Details of the Weight of Evidence Framework for use in applied research (Gough, 2007)**

A systematic approach was applied in the current review of mindfulness based interventions in schools literature using Gough's (2007) guidelines. The following section will present a systematic literature review to explore the review question:

*What can existing evaluation research tell us about the impact of mindfulness based interventions on the wellbeing of school aged children in school settings?*

Studies within the systematic review were considered according to their sample population (school aged children) the outcome measures and the setting of the intervention. The research design of the studies was also reviewed, since the use of Randomised Control Trials are often the preferred design methods when exploring questions of intervention efficacy (Cook and Campbell, 1979). Scott, Shaw and Joughin (2001) argued that systematic reviews that focus on RCTs within the research design are considered to be important sources of evidence-based practice using applied research (Scott et al, 2001). However, true RCT designs are rare when working within a school environment (Capella, Massetti and Yampolsky, 2009) and as a result, quasi-experimental studies were included in the review of the literature (refer to section 3.3.5 for further details around RCTs). Based on this, Gough's (2002) 'Weight of Evidence C' strategy was adhered to in the current study since the type of sample, method of data gathering and the outcome measures were considered closely when weighing the evidence within the evaluation of the studies.

The following section includes details of search strategies; inclusion criteria and a systematic map of the studies reviewed by presenting a general map of both the qualitative and quantitative research evidence reviewed. The systematic literature review will discuss the strengths and limitations of the studies as a whole and detail some key features of individual studies (See Table 2-1 for overview of studies). As with much of the literature into mindfulness, the current studies exploring mindfulness in schools have demonstrated methodological limitations, a range of different outcome measures and unclear findings leading to conclusions regarding the efficacy of the evidence base as a whole to be tentative. The current research study aims to build upon these findings and contribute to a synthesis of research evidence by addressing the limitations of the existing research.

### ***2.12.1 Current Systematic Review Procedure***

#### **Eligibility Criteria:**

The twenty studies in the current systematic literature review, which included both quantitative and qualitative studies, were identified using a mixture of general and review specific criteria (see table 2-1).

<b>Feature</b>	<b>Inclusion Criteria</b>	<b>Exclusion Criteria</b>
Type of Publication	Peer reviewed journals Masters dissertations	Non-peer reviewed journals Magazines Books
Language of Publication	English/translated to English	
Date	1990 to present	Prior to 1990
Research Design	Quantitative – RCT, Quasi-experimental, pre-post test Qualitative	
Participant Sample	School age children 4-20, targeted samples, universal samples	Adults, university students, populations with clinically diagnosed mental health difficulties, significant learning difficulties, interventions carried out on school staff only
Intervention	Mindfulness based interventions,	Other methods of intervention (tai-chi, yoga)
Outcome Measures	Quantitative measures of wellbeing; Anxiety, depression, emotion regulation, wellbeing, resilience, optimism	Behavioural measures only

**Table 2-1: Table of inclusion and exclusion criteria for quantitative and qualitative studies**

All studies in all languages were reviewed, whether published or unpublished, including dissertations and research reports. Unpublished sources were used given the low number of published research studies into school-based mindfulness interventions with children. It was considered to be particularly important to include unpublished studies in the review to highlight any further

research into academic school settings, as opposed to clinical settings, where much of the research is carried out. In addition to this, the use of doctoral dissertations and theses in the review helps to eliminate any bias in publication, since dissertations are written regardless of their outcomes.

The inclusion criteria for the systematic review meant that studies were selected if the following criteria were met:

- Interventions were based on mindfulness
- Mindfulness based interventions took place in a school setting
- Participants were age ranged from 4 to 20 years old
- Outcomes of intervention were looking at aspects of wellbeing such as anxiety, depression and emotional regulation.

Interventions were included based on whether they were to do with mindfulness. Other methods of intervention used alongside mindfulness, such as meditation or tai-chi, were excluded due to the uncertainty about the extent to which the outcomes of the research could be solely attributed to mindfulness. Additionally, mindfulness based interventions that were carried out predominantly on school staff and parents were excluded as the review aimed to look at the effects of the intervention on school-aged children and adolescents. Having said this, research studies where school staff participated in the study alongside the children to gain a fuller understanding of the child were accepted. Both quantitative and qualitative research studies were looked at in the review.

### **Information Sources:**

Between October, November and December 2014 and January, February and March 2016, systematic searches were performed on a number of recognised databases and catalogues including Web of Knowledge, NUsearch, Google Scholar, PsychARTICLES, ERIC and SciVerseHub. Studies were searched within these databases with no year or language restrictions applied.

### **Search:**

Several search strategies were used to create the initial pool of candidate studies and ensure that all appropriate studies were extracted. Google Scholar was the initial and main search strategy used to select the relevant studies. This is because it offered an accessible starting point for the relevant studies, was easy to use, and enabled more specific criteria of information to be typed into the search bar. In addition, it allowed for a broader search of the academic literature in relation to relevant articles, theses, and abstracts. The terms *mindfulness interventions and well-being in schools*, and *mindfulness interventions on children to improve wellbeing in school settings*, were typed into the search bar. After the removal of studies that fell into the exclusion criteria, as well as duplicates, the full text articles and theses of relevant studies were retrieved for review.

### **Study Selection:**

The reference lists of already selected studies were then used to help identify any further studies that had not already been extracted from the initial search, and this led to terms such as *mindfulness based interventions in schools and children*, *mindfulness based practice in schools* being entered into Google Scholar. Additional searches on Web of Knowledge and NUsearch were then carried out to extract any other studies that Google Scholar did not produce. Within the list of studies that each search produced, more of the studies were excluded than included because of the specific inclusion criteria and small number of studies that were relevant to this.

### **Data Collection Process:**

Extraction of data from each of the studies was carried out independently by the researcher. Data information on methodology and outcomes of the study were extracted by the researcher.

### **Data Items:**

The items of data that were extracted from the studies for comparison included the number and ages of participants, sample size and population (whole classes vs. target groups), study design, outcome measures of intervention (anxiety, depression, attention, wellbeing etc), whether pre-test, post-test or

follow up measures were used, whether participants received any compensation for participating, the length of the mindfulness intervention and whether previous experience of relaxation/meditation was considered within the participants' experience.

## **Results**

### **Study Selection:**

Twenty studies met the selection criteria. The main reason that studies were excluded from the review at this stage was due to the setting in which the intervention was carried out or the additional meditation or relaxation techniques that were used in conjunction with the mindfulness based intervention. For example, several studies were excluded because the setting was not school based and was carried out in a clinic or other non-school setting such as a university, and other studies were excluded because they involved teaching another relaxation technique such as yoga or tai chi alongside the mindfulness based intervention. One study was also excluded at this stage because the data was based solely on teacher-reports. One qualitative dissertation study was excluded from the review because the mindfulness based intervention was based on interviews and questionnaires about what mindfulness is, rather than active mindfulness sessions. Refer to figure 2-1 for a flow diagram of how the review was conducted and the study selection process.

### **Study Characteristics:**

For a full table of study characteristics see Table 2-2.

Study authors and date.	Setting	Age, Grade, Gender	Country	Measures	Duration of intervention	Study design	Sample size	Pre/post/follow-up measures	Outcome
1. Napoli, Rock Krech and Holley (2005)	Elementary school	Ages = 6-9, Grade = 1 <sup>st</sup> , 2 <sup>nd</sup> , 3 <sup>rd</sup> Gender=M=120, F=108	USA	Attention	12 bimonthly sessions for 12 weeks	Randomised Control Trial	228	Pre/post measures	Decrease in test anxiety and increase in selective attention.
2. Broderick and Metz (2009)	Private Catholic high school for girls. Suburban	Ages = 16-19, Grade=post-16,	USA	Emotion regulation skills	Twice a week over 5 weeks. 32-43 minutes	Non-randomised control group design	120	Pre/post measures	Reduction in negative affect and increase in feeling calm / relaxed.
3. Schonert-Reichl and Stewart Lawlor (2010)	Elementary school, urban	Age = 9-13 Grade = 4 <sup>th</sup> – 7 <sup>th</sup> Gender= M=127, F=119	Canada	Well-being and social and emotional competence	Once a week, 10 weeks, 40-50 minutes	Quasi-experimental study	246	Pre/post measures	Significant improvements in social and emotional competence and optimism.
4. Semple, Reid and Miller (2005)	Elementary school	Age = 7-8 Grade = 2 Gender = M=3, F=2	USA	Anxiety	6 weeks, 45 minutes, once a week.	Within subjects, pre-post design	5	Pre/post measures	Improvements in academic functioning, internalising/externalising problems
5. Huppert and Johnson (2010)	Private boys' school	Age = 14-15 Grade = 10 Gender = boys	UK	Resilience and psychological well-being	40 minutes weekly, 4 weeks	Non-randomised control group design	171	Pre/post measures	Improvement in well-being dependent on amount of practice.
6. Lau and Hue (2011)	Two Public schools	Age = 14-16 Grade = 10-11 Gender = not specified	China (Hong Kong)	Well-being, stress and depression	6 weekly 2 hour sessions (12 hours) + full day (7 hours) retreat	Non-randomised control trial	100	Pre/post measures	Decrease in depression, <b>NO</b> difference to mindful attention awareness.
7. Franco, Mañas,	Compulsory	Age = 16-18 Grade = 12-	Spain	Anxiety and Self-concept	10 weekly 1 hr 30 mins sessions +	Randomised Control Trial	61	Pre/post measures	Improvement in academic



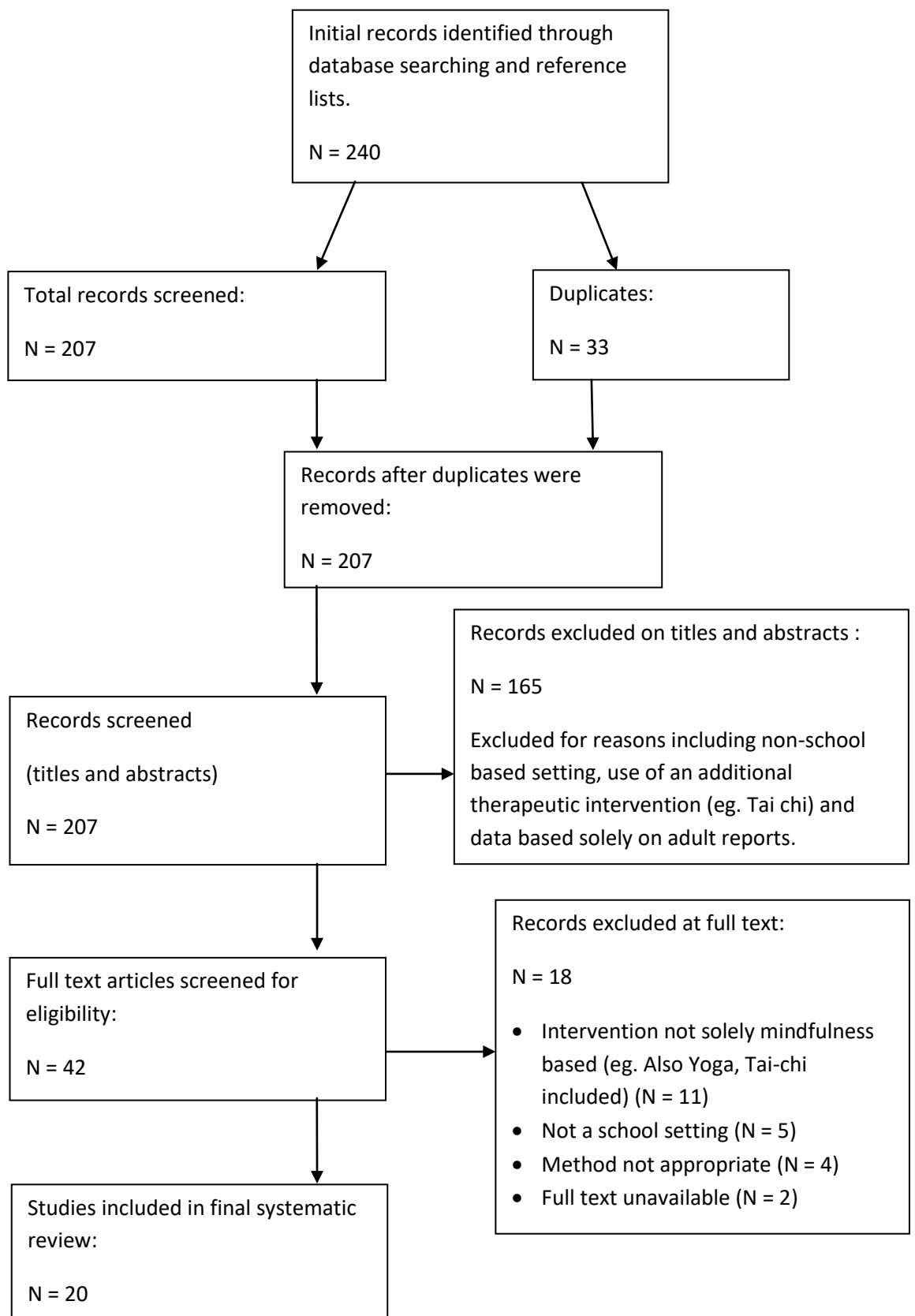
Cangas and Gallego (2011)	Secondary Education	13 Gender = M=31, F=29			daily 30 mins practice				performance, increase in self-concept, decrease in anxiety.
8.Beauchemin, Hutchins and Patterson (2008)	Private secondary school, residential	Age = 13-18 Grade = 8-13 Gender = M=71%, F=21%	USA	Anxiety, social skills and academic performance	Initial 2 x 45 mins training sessions, sessions of 5-10 minutes at beginning of each class period, 5 days a week for 5 weeks	Pre/post no control design	34	Pre/post measures	Anxiety decreased, enhanced social skills and improved academic performance.
9.Raes, Griffith, Van der Gucht and Williams (2013)	Secondary school	Age = 13-20 Grade = 9-12 Gender = not specified	USA	Depression	8 weekly 100 min sessions + 15 mins daily practice	Randomised Control Trial	408	Pre/post measures and 6 month follow-up	Significantly reduced levels of depression following 6-month follow-up.
10.Hennelly (2011)	Mixed-gender state secondary schools	Age = 14-17 Grade = 10-12	UK, Oxfordshire	Ego resilience and well-being	Interviews	Controlled mixed-methods longitudinal study	68	Pre/post measures and 6 month follow-up	<b>No significant findings.</b> Levels of mindfulness correlated with affect and anxiety.
11.Corbett (2011)	Elementary school	Age = 8-11 Grade = 4-5 Gender = M = 57, F = 50	USA	Anxiety, emotional regulation	12 x 30 minute sessions over 5 weeks	quasi-experimental non-equivalent groups design	107	Pre/post measures	Significant differences between participant and control groups' mindfulness, ego-resilience and well-being. Immediate effects were exceeded by sustained effects.
12.Thomas and Atkinson (2016)	Primary School	Age = 8-9 Grade = 4 Gender =	UK	Attention skills	6 weekly 1 hour sessions	Randomised Control Trial with quasi-	30	Pre/post measures and follow up at 8	Significantly positive immediate and

		M = 15, F = 15				experimental intervention cross-lag		weeks and 14 weeks	sustained impact upon the attention of pupils in experimental group.
13.Flook, Goldberg, Pinger and Davidson (2015)	Public School Setting (pre-school)	Age = 4-5 Grade = pre-school M = 33, F = 34	USA	Executive function, self-regulation and pro-social behaviour	Two 20-30 minute lessons each week over 12 weeks totalling 10 hours of training	Randomised Control Trial	68	Pre/post measures	Significant improvements in social competence and earned higher report card grades in domains of learning, health, and social-emotional development.
14.Kuyken, Weare, Obioha, Ukoumunne, Vicary, Motton, Burnett, Cullen, Hennelly and Huppert (2013)	Secondary School	Age 12-16	UK	Mental health and well-being	9 weeks, universal intervention with curriculum. weekly	Randomised Control Trial	522	Pre/post measures and follow up at 3 months	Intervention group reported fewer depressive symptoms post-treatment and at follow-up and lower stress and greater well-being at follow-up.
15.Schonert-Reichl, Oberle, Stewart Lawlor, Abbott, Thomson, Oberlander,	Suburban Elementary Schools	Age = 9-11 Grade = 4 & 5	Canada	Executive functions, stress physiology, well-being, pro-sociality and peer acceptance	12 lessons taught approximately once a week, with each lesson lasting approximately 40–50 min. Also core mindfulness practice (every day	Non-randomised controlled parallel group	99	Pre/post measures	Improved cognitive control and stress physiology, increase in empathy, wellbeing, optimism and

and Diamond (2015)				and math grades.	for 3 minutes 3 times a day)				mindfulness, decreased depression, aggression and increase in peer acceptance
16. Vickery and Dorjee (2016)	Elementary Schools	Age = 7-9 Grades = 3 and 4 Gender = M = 36, F = 35	UK	Emotional well-being	8 weeks (12 30 minute sessions delivered either in 1 hourly or 1.5 hourly sessions depending on flexibility of school)	Non-randomised control trial	71	Pre/post measures and 3 month follow up	Decreases in negative affect
17. van de Weijer-Bergsma, Langenberg, Brandsma, Oort & Bögels (2014)	Elementary School	Age = 8-12	Amsterdam	Emotional functioning	Twelve 30- min sessions were delivered in 6 weeks.	Randomised control trial	208	Pre/post measures and follow up at 7 weeks	Some primary prevention effects on stress and well-being were found immediately after training and at follow-up. Effects on mental health problems also became apparent at follow up
18. Edwards, Adams, Waldo, Hadfield, Biegel (2014)	Secondary School	Age = 12-17 Gender = M = 8, F = 12	New Mexico, USA	Perceived Stress, Mindfulness, Self-Compassion, and Psychological Symptoms	Eight weekly 50 minute sessions	A quasi-experimental, extended baseline, repeated measures design	20	Pre-Pre-test, Pre-test, and Post-test (8 weeks after pre-test).	No significant changes in mindfulness, self-compassion, perceived stress, depression, anxiety or hostility occurred for participants prior the start of the mindfulness

									group but results showed there were increases in students' Mindful Attention Awareness Scale scores following the mindfulness group intervention
19. Bernay, Graham, Devcich, Rix & Rubie-Davies (2016)	Primary (Pre-adolescent)	Age = 9-12 M = 61, F = 63	New Zealand	student well-being	Weekly one-hour sessions. Teachers provided a CD with guided meditation for further practice with the class during the week.	Mixed methods – questionnaires , interviews and behaviour observations	124	Pre-test, post-test and follow up at 3 months	Increase in immediate well-being but dropped back to normal levels at baseline
20. Costello and Lawler (2014)	Secondary	Age = 11-12 M = 17, F = 46	Dublin, Ireland	Perceived levels of stress	Daily mindfulness practices over a five-week period. The duration of the practices varied between a minimum of 3 minutes during the first week to a maximum of 12 minutes in the final week.	Mixed methods – interpretive qualitative (thematic analysis on perceived experiences) and quantitative measures (perceived stress)	63	Pre-test and follow-up	Reductions in stress post intervention

**Table 2-2: A table to show the study characteristics of mindfulness based interventions in school settings**



**Figure 2-2: A flow diagram to show the study selection process**

### **General Study Characteristics:**

Of the twenty studies that had been selected, eighteen were published in peer-reviewed journals and two studies were published Master's dissertations. The earliest of the studies was published in 2005, of which there were two (Table 2-2; study 1 and 4), and the most recent in 2016, of which there were three studies (Table 2-2; studies 12, 16 and 19). Eight of the studies selected were based in the United States of America (USA) (Table 2-2; studies 1, 2, 4, 8, 9, 11, 13 and 18), five studies were carried out in the United Kingdom (UK) (Table 2-2; studies 5, 10, 12, 14 and 16), two studies in Canada (Table 2-2; studies 3 and 15) and the remaining six studies were based in China (study 6), Spain (study 7), Amsterdam (study 17), New Zealand (study 19) and Ireland (study 20). In total, 2,753 participants were involved in the research studies into mindfulness based interventions; 1,189 of which were instructed in mindfulness, and 1,083 were in the control or comparison group. Not all studies specified the number of participants in the intervention and control groups. Not all of the studies were randomised control trials, and not all that were, detailed the numbers of participants distributed in the intervention and control groups. The age range of students varied from grades 3 to 12 and reflected an age range of 4-20 years old. Sample sizes of studies varied dramatically with the smallest study containing only 5 children (Table 2-2; study 4) compared to the largest sample size of 522 school-aged children (Table 2-2; study 14).

Of the twenty studies reviewed, one study was carried out with pre-school aged children (Table 2-2; study 13), nine studies carried out mindfulness based interventions at primary school level (grades 3-6) (Table 2-1, studies 1, 3, 4, 11, 12, 15, 16, 17 and 19), nine were at secondary school level (grades 7-11) (Table 2-2; studies 5, 6, 7, 8, 9, 10, 14, 18 and 20), and two studies with post-16 aged youngsters (Table 2-2; studies 2 and 7). School types within the studies varied; nine of the studies used participants from public primary schools (Table 2-2; studies 1, 3, 4, 11, 12, 15, 16, 17 and 19), seven from public secondary schools (Table 2-2; studies 6, 7, 9, 10, 14, 18 and 20), one from a private Catholic 'high' or further education school (study 2), two from private secondary schools (one of which was an all-boys school) (Table 2-2; studies 5 and 8), and one from a pre-school setting (study 13).

## **Interventions**

The mindfulness based interventions varied in relation to the length and frequency that they were implemented within the studies. The shortest intervention (Table 2-2; study 20) consisted of daily mindfulness practices over a five-week period, with the duration of the practices ranging between three minutes and 12 minutes. The study that had the longest mindfulness based intervention (Table 2-2; study 7) consisted of one and a half hour weekly sessions over the course of 10 weeks, alongside thirty minutes mindfulness practice each day (that was compulsory to the mindfulness intervention). All of the studies, apart from one (Table 2-2; study 20,) included pre and post-test measurements, usually in the form of a questionnaire, and eight of the studies also included a follow up measure (Table 2-2; studies 9, 10, 12, 14, 16, 17, 19 and 20), varying from 7 weeks to 6 months. The majority of pre and post measures were carried out by a third author within the study who was not involved as a mindfulness trainer in the studies; but one study's measures were carried out by the participants' health teacher. Within the studies, not all participants had previous personal experiences of other mindfulness or relaxation practices, and within the studies some participants had a training session initially whilst others did not.

## **Results of Individual Studies:**

### **Study Quality Assessment**

Of the twenty studies, six used a randomised control design (RCT) (Table 2-2; studies 1, 7, 9, 13, 14 and 17) and five used non-randomised control trials (Table 2-2; studies 2, 5, 6, 15 and 16). Two of the studies used a pre-post design, one was within subjects (Table 2-2; study 4) and the other was a no-control design (Table 2-2; study 8). Three studies used quasi-experimental designs (Table 2-2: studies 3, 11 and 18), one of which was a non-equivalent groups design (study 11), and another was a repeated measures (study 18). Two studies used a mixed methods design, combining questionnaires with interviews (Table 2-2; studies 19 and 20) and one study was a controlled mixed methods longitudinal study (Table 2-2; study 10) and another study was a

randomised Control Trial with quasi-experimental intervention cross-lag (Table 2-2; study 12).

### **Outcome Measures**

Within the studies, a range of measures were applied to investigate the outcomes of mindfulness training interventions. The studies fell into distinct groupings depending on what part of a child's well-being the studies were looking at. Below is a list of the key measures that were applied in the studies to examine the outcomes of mindfulness based interventions:

**Improved attention and academic performance:** Five of the twenty studies focused on improving attention and academic performance through the mindfulness based intervention (Table 2-2, studies 1, 8, 12, 13 and 15). Two of the studies focused on improved attention as an outcome of mindfulness training (Table 2-2; studies 1 and 12) and another study looked at mindfulness as an intervention to improve academic performance and reduce anxiety (Table 2-2; study 8).

**Reduction in anxiety, stress and depression:** Nine of the studies looked at the effects of a mindfulness based intervention on reducing and/or preventing anxiety, stress and/or depression (Table 2-2; studies 4, 6, 7, 8, 9, 11, 15, 18 and 20). Two studies focused specifically on reducing depression (studies 6 and 9), one of these studies was also coupled with reducing stress (study 6). Three studies looked at reducing anxiety levels (alongside other measures such as academic performance, self concept and emotion regulation) as a possible outcome of mindfulness based interventions with school aged children (Table 2-2; studies 7, 8 and 11). Two studies focused specifically on the impact of mindfulness on 'perceived stress' (Table 2-2; 18 and 20).

**Overall increase in resilience, emotional regulation, self-concept and self-management:** Almost all of the studies make reference to an increase in resilience, emotional regulation, self-concept or self-management alongside another outcome measure such as anxiety or attention. Four of the twenty studies specifically measure anxiety, attention or depression independently from any of the outcome measures mentioned above (Table 2-2; studies 1, 4, 9 and



12). One of the studies specifically looked at the impact on 'student wellbeing' (Table 2-2, study 19).

### **Participant and School Selection**

One study (Table 2-2; study 3) had 57% of participants with English as their first language, 23% with Chinese or Korean as their first language, and 20% with Spanish, Russian or Polish as their first language. All studies within the review had participants who were competent in English. The selection of schools varied across the studies. The majority of schools were selected at random within particular areas of the country in which the research was being carried out. However, in one study (Table 2-2; study 6) the schools were selected because the RE teachers were 'enthusiastic and supportive' of mindfulness as a practice, which was relatively new to that country. Another study (Table 2-2; study 5) selected their schools because the RE teachers were already mindfulness practitioners and they wanted to train participants in mindfulness and practice in a research study. The majority of participants took part in the study on a voluntary basis with no compensation for participating; however, in one study (Table 2-2; study 4) participants were selected based on teachers' referral of anxious children. One study (Table 2-2; study 6) rewarded participants with a book token following completion of the study and another study (Table 2-2; study 4) gave participants a cartoon sticker after their participation.

The number of participants assigned to the experimental and control condition varied across the studies. In one study (Table 2-2; study 2), the ratio of participants to the experimental condition (120) compared with participants to the control condition (17) varied drastically. Within some of the studies (Table 2-2; studies 1, 2, and 6), participants dropped out or were absent for more than one of the sessions. In particular, study 6 included only those participants who had attended 80% of the programme sessions in their sample due to complications in the recruitment process.

## **Whole Class Interventions**

Of the twenty studies, six evaluated the impact of a mindfulness based intervention on a whole class of children, (Table 2-2, studies 2, 3, 13, 14, 15, 20) showing there is relatively limited evaluation of the contribution of this component of intervention, despite its potential benefits. Only one of these studies was carried out in the UK (study 14) and one was carried out in Ireland (study 20). Furthermore, none of these studies evaluated children's social and emotional skills in relation to them being a universal cluster of competencies. Measures were selected based on target populations (eg. anxiety, stress attention etc). Therefore, the evaluations of whole class interventions within the existing research, only evaluate the effectiveness in promoting children's mental health and well-being based on targeted populations of children with 'mental health'. Furthermore, the two studies carried out on whole class interventions in the UK and Ireland (studies 14 and 20) focused specifically on secondary-aged pupils whereas the remaining four studies included a mix of primary and secondary school children (studies 2, 3, 13 and 15).

## **Discussion**

This systematic review examined the effects of mindfulness based interventions on the wellbeing of children and adolescents. Of the twenty studies reviewed, seventeen (85%) reported a significant positive benefit of mindfulness outcomes (see Table 2-2). One study (Study 6, Table 2-2) reported a decrease in depressive symptoms but no significant difference in overall mindful attention following the intervention; one study reported no significant changes in mindfulness, self-compassion, perceived stress, depression, anxiety or hostility but increases in students' Mindful Attention Awareness Scale scores following the mindfulness group intervention; and one study (Study 10, Table 2-2) reported no significant differences but found a correlation between levels of mindfulness and anxiety. Limiting the analysis to random and non-random controlled trials, seventeen of the twenty studies (85%) showed significant benefits from mindfulness based interventions which suggests that better designed studies, where there is an experimental and a control group, provide the strongest evidence for effectiveness. However, evidence from the twenty

studies into the effects of mindfulness based interventions on well-being suggest positive benefits to school-aged children and adolescents.

Mindfulness based interventions in schools have proven to produce positive outcomes, but this does vary depending on the independent variables within each study. Five of the twenty studies looked at the effects of mindfulness based interventions on anxiety levels; four of these found a reduced level of anxiety following mindfulness based interventions and one found no difference; two studies looked at the effects of mindfulness on depression, both of which found a reduction in symptoms of depression, although one of these studies found no difference to mindful awareness following the intervention, and the remaining studies looked at the effects of mindfulness on resilience, well-being, emotion regulation and 'perceived stress' levels; all of which found improvements. Thus, not only do mindfulness based interventions appear to consistently produce positive outcomes, but those outcomes appear to stretch across a variety of states of well-being.

### **Strengths:**

One of the twenty studies reviewed provides a particularly rigorous test of effectiveness (Study 9, Table 2-2); using a large sample of participants across a large age range, a randomised control design, and an extensive follow-up period (6 months). The fact that this study found statistically significant benefits on the curative and preventative effects of a mindfulness based intervention on depression compared to the control condition at follow-up further strengthens the reliability of mindfulness outcomes. This could therefore suggest that the above analyses provide strong evidence to support the effectiveness of mindfulness based interventions in school settings.

### **Limitations:**

The most important limitation of the findings within this systematic review derive from the variability of differences within the studies such as study design, participants, interventions and even outcome measures. For example, differences such as school background, social background and how an intervention was accepted within a particular school context influence its effects

in relation to reliability and validity. For example, the difference between participants attending the mindfulness based intervention because their school has been selected and their teachers have chosen their classes compared to participants voluntarily participating in the intervention. The implementation of the intervention also makes a difference to the reliability and validity of the interventions; whether the teacher themselves implement the programme or whether outside trainers implement the programme. The majority of schools were selected at random within particular areas of the country in which the research was being carried out. However, in one study (Study 6, Table 2-2) the schools were selected because the RE teachers were 'enthusiastic and supportive' of such a practice, which was relatively new to that country and another study (Study 5, Table 2-2) selected their schools because the RE teachers were already mindfulness practitioners and they wanted to train participants in mindfulness and practice in a research study. In addition, as mentioned before, previous qualifications or personal experience of mindfulness related techniques between instructors and participants are also important when addressing internal validity within studies.

Differential attrition or mortality also poses a threat to the validity of the studies within the review. Within some of the studies (Studies 1, 2, and 6 Table 2-2), participants dropped out or were absent for more than one of the sessions. This affected the sizes of the groups and arguably thereby created a bias between the groups. In particular, study 6 included only those participants who had attended 80% of the programme sessions in their sample due to complications in the recruitment process. This questions the reliability of the outcomes of the mindfulness based interventions given such differences in group sizes. In addition to this, in one study (Study 2, Table 2-2), the ratio of participants to the experimental condition (120) compared with participants to the control condition (17) varied drastically, threatening the validity of the study.

### ***2.13 Summary of Systematic Literature Review***

This analysis suggests that mindfulness based interventions for children and adolescents generally produce positive outcomes to their well-being, namely reduced anxiety and depression, increased attention and academic

performance, and improved resilience, emotion regulation and social and emotional competence. However, there may be a bias within the results due to methods of sampling and it seems clear that further work is needed to control the differences in studies. In addition, the amount of studies into mindfulness based interventions in school settings within the UK is very limited, which leads to a reliance on studies sourced predominantly from the USA. Having said this, the available evidence into the effects of mindfulness based interventions highlight promising results of improved wellbeing outcomes and so further research might look into these outcomes more specifically within the UK.

In summary, the analysis of the twenty research studies has identified tentative evidence that mindfulness based interventions can lead to positive psychological well-being, resilience, increased attention, as well as reductions in stress, depression and anxiety in school aged children. However, the studies have also revealed a number of issues within the wider evaluation of the literature, which result from limitations within the methodology as well as the country in which the research is carried out. The majority of the research into the effects of mindfulness in school settings remains specific to the USA. The current systematic literature review has therefore highlighted the need for further research into the positive effects of mindfulness in school settings to be carried out in the United Kingdom in order to broaden the research base and identify the impact on a UK population.

### ***2.14 Summary of the Literature Review***

The literature review has presented a definition of social and emotional skills in relation to the expectations that UK schools are now being given. Discussion of what mindfulness is and how it can be used to improve social and emotional skills was explored in relation to its many applications across a variety of universal and targeted populations. Discussion of mindfulness and issues of its practice were also addressed in order to explore its application within the current population. This identified that much of the current research into the effects of mindfulness is carried out with an adult population. Discussions of the theoretical foundations of mindfulness suggested that as an intervention, it has the potential to positively impact on participants' attention, wellbeing and stress

levels. Literature considered within a systematic review suggests that these outcomes could also be particularly beneficial for children. The evidence provided within the systematic literature review provides some support for the idea that mindfulness based interventions can impact positively on children's well-being. However, the validity of these findings was limited by methodological limitations within the research and the fact that much of the current research is carried out outside of the UK. Furthermore, despite the new government guidelines emphasising the importance of promoting the mental wellbeing of all children in school (DfE, 2016), few studies have evaluated mindfulness on whole classes of children. None of the studies evaluated whole class interventions aiming to promote children's social and emotional skills which limits the evidence base for the effectiveness of the whole class interventions on promoting children's social and emotional skills. Furthermore, of the twenty studies, only two used a mixed methodology (study 19 and 20). All other studies implemented a quantitative analysis that adopted either a randomised/non randomised control design or a quasi-experimental design.

The research highlights the need for further research into the positive effects of mindfulness in school settings to be carried out in the United Kingdom in order to broaden the research base. The current review has also highlighted the need for the research to include more studies using mixed methodologies in order to triangulate the findings. The issues highlighted in the literature review set the scene for the current research study.

### ***2.15 The Current Research Study***

The current study has been designed to evaluate the impact of a 12 week mindfulness based intervention on Year 5 aged children's social and emotional skills, optimism and mindful awareness. The current study aims to provide a contextualised evaluation of a mindfulness based intervention known as the MindUP Curriculum (The Hawn Foundation, 2011) in order to contribute to the field of mindfulness evaluation research.

The following section presents the unique contribution of the current study and the current research questions. The methodology chapter then provides details

of the current study's methodology and how it was developed to answer these questions.

### **2.15.1 Unique Contribution**

Of the range of studies evaluating mindfulness based interventions in school settings, few have focused specifically on the benefits of whole-class interventions at promoting social and emotional skills. Most studies focus broadly on target populations within 'wellbeing' outcomes. There were few studies which specifically focused on whole class interventions to promote social and emotional skills in the UK population. This highlights a reliance on literature sourced mainly from the USA and Canada. The current study therefore aims to expand on the limited evidence into the effects of whole-class mindfulness based interventions within the UK in school settings.

A mixed-method methodology will be adopted which will explore both quantitative and qualitative research strands. The researcher is interested primarily in the quantitative evaluation of the intervention efficacy and therefore the emphasis within the current study is on a fixed, experimental design involving a quasi-experimental design. However, the study will also incorporate elements of a flexible naturalistic inquiry design (Lincoln & Guba, 1985) and will involve group interviews with participants in order to triangulate quantitative data and facilitate a secondary qualitative evaluation of the participants' perceptions of the mindfulness based intervention.

### **2.15.2 Research Questions:**

The mixed methods methodology will be determined by the current research questions:

**Research Question 1:** Does participation in a mindfulness based intervention have an impact on the mindful awareness of primary school children in year 5?

- **Alternate Hypothesis 1:** There will be statistically significant differences in changes to year 5 pupil's mindful awareness scores, as measured by the Child and Adolescent Measure, following participation in a mindfulness based intervention.

- **Null Hypothesis 1:** There will be no statistically significant differences in changes to pupils' mindful awareness scores, as measured by the Child and Adolescent Measure, following participation in a mindfulness based programme.

**Research Question 2:** Does participation in a mindfulness based intervention have an impact on the optimism of primary school children in year 5?

- **Alternate Hypothesis 2:** There will be a statistically significant difference in changes to pupils' optimism scores, as measured using the optimism subscale of the Resiliency Scales for Children and Adolescents, following participation in a mindfulness based programme.
- **Null Hypothesis 2:** There will be no statistically significant difference in changes to pupils' optimism scores, as measured using the optimism subscale of the Resiliency Scales for Children and Adolescents, following participation in a mindfulness based programme.

**Research Question 3:** Does participation in a mindfulness based intervention increase pupil rated social and emotional skills in Year 5 children at a mainstream Primary School?

- **Alternate Hypothesis 3a:** There will be a statistically significant decrease in pupil-rated 'total difficulties' scores, as measured by the Strengths and Difficulties Questionnaire, following participation in a mindfulness based intervention.
- **Null Hypothesis 3a:** There will be no change in pupil-rated 'total difficulties' scores, as measured by the Strengths and Difficulties Questionnaire, following participation in a mindfulness based intervention.
- **Alternate Hypothesis 3b:** There will be a statistically significant increase in pupil-rated pro-social behaviour scores, as measured by the Strengths and Difficulties Questionnaire, following participation in a mindfulness based intervention.



- **Null Hypothesis 3b:** There will be no statistically significant differences in pupil-rated 'pro-social behaviour' scores, as measured by the Strengths and Difficulties Questionnaire, following participation in a mindfulness based intervention.

**Research Question 4:** Does participation in a mindfulness based intervention increase teacher rated social and emotional skills in Year 5 children at a mainstream Primary School?

- **Alternate Hypothesis 4a:** There will be a statistically significant decrease in teacher-rated 'total difficulties' scores, as measured by the Strengths and Difficulties Questionnaire, following participation in a mindfulness based intervention.
- **Null Hypothesis 4a:** There will be no change in teacher-rated 'total difficulties' scores, as measured by the Strengths and Difficulties Questionnaire, following participation in a mindfulness based intervention.
- **Alternate Hypothesis 4b:** There will be a statistically significant increase in teacher-rated 'pro-social behaviour' scores, as measured by the Strengths and Difficulties Questionnaire, following participation in a mindfulness based intervention.
- **Null Hypothesis 4b:** There will be no statistically significant differences in teacher-rated 'pro-social behaviour' scores, as measured by the Strengths and Difficulties Questionnaire, following participation in a mindfulness based intervention.

**Research Question 5:** Does participation in a mindfulness based intervention increase parent rated social and emotional skills in Year 5 children at a mainstream Primary School?

- **Alternate Hypothesis 5a:** There will be a statistically significant decrease in parent-rated 'total difficulties' scores, as measured by the Strengths and Difficulties Questionnaire, following participation in a mindfulness based intervention.

- **Null Hypothesis 5a:** There will be no change in parent-rated 'total difficulties' scores, as measured by the Strengths and Difficulties Questionnaire, following participation in a mindfulness based intervention.
- **Alternate Hypothesis 4b:** There will be a statistically significant increase in parent-rated 'pro-social behaviour' scores, as measured by the Strengths and Difficulties Questionnaire, following participation in a mindfulness based intervention.
- **Null Hypothesis 5b:** There will be no statistically significant group differences in parent-rated 'pro-social behaviour' scores, as measured by the Strengths and Difficulties Questionnaire, following participation in a mindfulness based intervention.

**Research Question 6:** What are pupils' perceptions of the mindfulness based intervention?

## **3 Methodology**

### ***3.1 Introduction***

The methodology within Chapter 3 outlines four key research paradigms (positivism, constructivism, post positivism and pragmatism) that are pertinent to methodology within real world research. The researcher then outlines the rationale for adopting a pragmatic epistemological worldview within the current research. The chapter will then explore and consider qualitative and quantitative methods of research before outlining the rationale for a mixed-methods research design for the current research as well as the potential threats to internal and external validity and the ways in which the current study addresses these issues. The chapter then presents the design, measures and intervention chosen followed by the sampling procedures and quantitative measures used. The chapter concludes by exploring the important ethical considerations within the current study.

### ***3.2 Methodology and Research Paradigms in Real World Research***

Methodology has been highlighted as an approach to systematic enquiry which is guided by research paradigms (Mertens, 1998). A research paradigm refers to a way of looking at the world through particular philosophical assumptions in order to guide and direct thinking and action. This influences the methodology that a researcher uses to explore and interpret reality and knowledge (Mertens, 2015). Guba and Lincoln (2005) help to define research paradigms through exploring questions about ontology (What is the nature of reality?), epistemology (What is the nature of knowledge) and methodology (How can the knower obtain the desired knowledge and understanding?). Positivism, constructivism, post-positivism, and pragmatism are considered to be four key research paradigms within research methodology. This chapter aims to explore these paradigms and consider how they address the ontological and epistemological beliefs within each paradigm. This discussion is intended to highlight and outline the researcher's rationale for adopting the pragmatic paradigm within a mixed methods methodology in the current study; with the

aim being to highlight the researcher's epistemological standpoint in the current study.

### **3.2.1 Positivism**

The positivist paradigm assumes that the nature of reality is dependent on the existence of one reality (Robson, 2002), and it is the job of the researcher to try and understand this reality (Howitt & Cramer, 2008). Positivists assume that there is a single reality which follows constant, lawful and unchanging principles which are objective and factual; allowing the knowledge of the reality to be "value-free" because it is extracted from direct experience or observations (Robson, 2002). Researchers within the positivist paradigm claim that "scientific knowledge is utterly objective and only scientific knowledge is valid, certain and accurate" (Crotty, 1998, p. 29; Cohen, Manion & Morrison, 2009). However, the positivist paradigm has been rejected by many researchers in contemporary real world research (Groff, 2004). Lincoln and Guba (1985) argue that the paradigm is not applicable to human behaviour within the social sciences. Specifically, they argued that a significant limitation of the positivist paradigm is its reliance on objectivity which indicates a conceptualisation of science which is limited, overly deterministic and reductionist (Lincoln and Guba, 1985).

### **3.2.2 Constructivism**

In response to the criticisms raised from the positivist paradigm, constructivism emerged and was recognised as being the dominant opposing paradigm. The constructivist paradigm assumes that reality is socially constructed by people within the research process and researchers should try to understand the complexity of the world of lived experience from the point of view of those who live it (Schwandt, 2000). In contrast to the positivist paradigm, the constructivist paradigm emphasizes that research cannot be independent of the values of the researcher because it is a product of them. The ontology of constructivism identifies multiple, socially constructed realities which are determined by subjective individual experience (Lincoln and Guba, 1985). This aspect of the paradigm implies that the knower and the known cannot be separated from each other because they each influence each other (Lincoln & Guba, 1985). However, researchers opposing the constructivist paradigm have argued that

research questions cannot be clearly defined before the research takes place which means that questions will continue to evolve as the research progresses (Mertens, 2015). Furthermore, the constructivist paradigm must gather a number of different perspectives from a number of different people (Mertens and McLaughlin, 2004) in order to address individual experience and meaning. The constructivist paradigm continues to be criticised by positivists, who view cause and effect evidence based practice approaches within their paradigm to not be present within programme evaluation of the constructivist paradigm (Patton, 2002). As a result of the ongoing debate surrounding the fundamental opposition of the positivist and constructivist paradigms, alternative approaches have emerged.

### **3.2.3 Post-Positivism**

The post-positivist paradigm evolved in order to address the limitations identified within the positivist paradigm. In particular, post-positivists attempt to address the issue of objectivity within the positivist paradigm, and came to reject the idea that the area of study was limited only to what could be observed. Essentially, although post-positivists still accept the importance of objectivity and generalisability, they believe that a positivist ethos should be applied, whereby researchers claim to know the world based on probabilities rather than certainties (Robson, 2002). The post positivist paradigm therefore is typically associated with fixed research designs, thereby continuing to support evidence-based practice evaluation as within the positivist, as well as attempting to determine the most effective course of action through the use of quantitative methods. Groff (2004) highlighted how the post-positivist paradigm has both elements of constructivist ontology as well as positivist epistemology. However, researchers criticised this, arguing that the post-positivist paradigm was attempting to combine opposing ontologies within a single paradigm, which can lead to internal contradictions (Mertens, 2015). The post-positivist paradigm was described as a 'clumsy and emergent' attempt to continue with the positivist movement (Lincoln and Guba, 1985, p. 28).

### **3.2.4 Mixed Methods – Pragmatism**

In an attempt to address the limitations of the positivist and constructivist debate, the pragmatic paradigm emerged, which also provides a framework for mixed methods research (Tashakkori and Teddlie, 2010). Within the pragmatic paradigm, which adopts a pragmatist philosophy (James, 1907), the researcher is free to study what is of interest and value to them and they are able to study this in any different way that they deem appropriate in light of the research question (Tashakkori and Teddlie, 1998). This means that rather than focusing on the nature or truth of reality, the researcher focuses on 'what works' in relation to the research question that is being investigated. This allows the researcher's selection of research methods to be guided by their research questions. A mixed methodology falls within the pragmatic paradigm allowing quantitative and qualitative methods to be used within a single research study. Through the triangulation of different types of data, the researcher is able to identify the complexity of different phenomena without the strict limitations constrained to either the positivist or the constructivist paradigm (Cohen et al, 2009). Within the current study, a mixed methods approach will be adopted. This will allow the researcher to explore questions of the efficacy of the mindfulness based intervention, whilst also tapping into and addressing the experiences of the participants after the intervention has finished.

### **3.2.5 Epistemology in the Current Study**

The current study's purpose was to evaluate the impact of a mindfulness based intervention on primary school children's social and emotional skills, optimism and mindful awareness. The researcher predominantly focused on post-positivist research questions into the effects of the intervention but also wanted to facilitate a naturalistic element within the evaluation of the intervention in order to allow an insight into the children's experiences of it. Therefore, a pragmatic ontological and epistemological standpoint was adopted by the researcher, leading to a mixed methods methodology. The quantitative methodology provides a contribution to evidence-based practice and programme evaluation research, whilst the naturalistic element contributes to

further insights into the children's experiences of the mindfulness based intervention.

### **3.2.6 The Current Study's Research Design**

This section offers an overview of the different research designs that fall within methodological approaches, outlined above, in order to highlight the influence of the current study's epistemology upon the research design. Within the current study, the researcher adopted a multi-strand mixed methods design which implemented investigations into both quantitative and qualitative methods. Quantitative methods were prioritised within an experimental design, which were enhanced through the use of qualitative methods. This mixed methods design enabled the depth of quantitative findings to be enhanced through methodological triangulation (Cohen et al, 2009); that is, the qualitative strand aimed to facilitate exploration of participants' perceptions of the intervention.

### **3.3 Research Designs in Evaluative Research**

According to Robson (2002), evaluation research involves assessing the impact or effectiveness of an intervention, practice or service in order to provide evidence to inform programme improvement, development and professional practice (Shaw et al., 2006). Robson (2002) identified two forms of programme evaluation:

1. *Formative evaluation*, which is process-based and seeks to help in the development of the programme; and
2. *Summative evaluation*, which is outcome-based and seeks to consider the impact and effectiveness of the programme.

Formative evaluations are often associated with flexible research designs whilst summative evaluations are associated with fixed research designs. Adopting a mixed-methods approach however, can allow both summative and formative questions within a single entity to be addressed. An overview of fixed, flexible and mixed methods research designs will now be presented in order to position the researcher in relation to the current research design.

### **3.3.1 Fixed Research Designs**

Fixed research designs, which reflect a post-positivist methodology, are usually concerned with quantitative or numerical data and statistical analyses (Robson, 2002). Experimental and quasi-experimental designs are involved in fixed research designs; both of which allow the researcher to manipulate the independent variables in order to evaluate the impact upon the dependent variables. Experimental fixed research designs can allow for cause and effect relationships to be established between variables (Howitt and Cramer, 2008) and rather than focusing specifically on individual changes, they emphasise a focus on group effects (Robson, 2002). The use of fixed designs is often highly regarded by post-positivists because the generalisation of findings can be supported by the fact that they have scientific validity and reliability.

### **3.3.2 Internal and External Validity in Fixed Research Designs**

Validity within fixed research designs refers to whether the research study actually measures what it sets out to measure (Cohen et al, 2009). The validity of a study highlights how accurate and trustworthy the results are (Robson, 2002). The following section explores the two key types of validity: internal and external validity.

### **3.3.3 Internal Validity in Fixed Research Designs**

Internal validity refers to how accurate the data and research findings are in describing what is under investigation. If a study has good internal validity, it is viewed that any changes in the dependent variable (i.e. social and emotional skills, optimism and mindful awareness) are a result of the effect of the independent variable (the mindfulness based intervention) (Mertens, 2015). However, Campbell and Stanley (1963) identified a list of extraneous variables that can threaten the internal validity of a study. Extraneous variables refer to any unintended variables which can affect and cause change in the dependent variables. Below the key extraneous variables are discussed:

1. History refers to changes that happen during the length of the study that are not part of the research process and can influence the results. A control



group was included in the current study in order to reduce threat of history to the validity of the results. Participants in this group were exposed to the same events as those in the experimental group, with the exception of the intervention programme itself, in order to ensure that both groups would experience any threat from history.

2. Testing refers to the threat to validity that is caused from the experiences gained from a pre-test. Participants may become “test-wise” if they are given similar testing at post-test as at pre-test. Within the current study, all participants completed pre- and post-tests and the researcher deemed it likely that any potential effect from testing would be present in both groups. Threat to internal validity caused by testing was therefore considered as being low.
3. Instrumentation arises when there is a change in the instrument used to measure the dependent variable between pre- and post-test. Instrumentation was not considered to be a threat to validity in the current study because the same measures were used at both pre- and post-test.
4. Maturation refers to change in the participants during the duration of the study. This change includes growth in the form of developmental, biological or psychological change that may impact on the study’s outcomes. In order to control the threat of maturation in the current study, a control group was used. It was viewed that participants in both the experimental and control group were likely to experience the same kind of maturational changes over the intervention period, particularly given that both groups were from Year 5 classes. The intervention period was small, which further reduced the threat of maturation in the current study.
5. Regression as a threat to validity occurs when participants are chosen based on unusual, atypical or extreme scores. Testing at a later stage could produce an increase in scores purely because of ‘regression to the mean’ which highlights the role that chance plays in test scores and the fact that achievement cannot be measured with absolute precision. In order to reduce

this threat in the current study, whole classes were used which enabled a representation of the full range of abilities to be achieved. Also, statistical tests of normal distribution and variance were used at pre-test to ensure that scores were similar between groups.

6. Experimental Mortality is when participants drop out of the study during the intervention, creating differences in the experimental and control groups. Mortality threats in the current study were considered to be low because the intervention period was short.
  
7. Differential Selection is when differences in characteristics between participants in the study impact on and account for some of the changes found in the results of the study. Typically, differential selection is controlled for through random allocation to experimental and control groups but the current study did not randomly assign classes to the conditions. However, both classes were from the same school, reducing the likelihood of contextual factors and school ethos contributing towards changes in the results.
  
8. Experimental Treatment Diffusion threatens the validity of a study when aspects of the intervention diffuse into the control group. In the current study, because the experimental and control group were in the same school, it is possible that experimental treatment diffusion poses a threat to the validity of the results. The potential limitation of this intervention drift will be discussed in the interpretation of the data in Chapter 5.
  
9. Compensatory Equalisation of Treatments refers to the unfairness posed when the experimental group receive something that the control group does not. Although initially intended, changes to curriculum demands meant that the control group were not a waitlist control group, thereby threatening the validity of the findings. This will be discussed in Chapter 6.
  
10. Compensatory Rivalry by the Control Group threatens the validity of the results when participants in the control group try harder to improve their

performance because they believe that any changes in the experimental group threatens their way of working.

### **3.3.4 External validity in Fixed Research Designs**

External validity in fixed research designs refers to the extent to which the findings of the study can be generalised to the wider population and within different contexts. LeCompte and Goetz (1982) identified there to be four key threats to external validity that were similar to those found in internal validity: selection strategies, uniqueness of setting, participant history and relationship between the construct studied and the participant sample. By planning research designs carefully before data collection commences, threats to internal and external validity can be controlled and reduced (Mertens, 2015). In fixed research designs, validity can be enhanced through the sampling strategy of the participants, the measurement instruments and the statistical procedures that are carried out during the analysis phase (Robson, 2002).

### **3.3.5 Fixed Research Designs: Quasi-Experimental Designs**

Within fixed research designs, there are two types of possible experimental designs: true experimental designs and quasi-experimental designs. According to Robson (2002), the main characteristic of true experimental designs is the “golden standard” random allocation of participants to the differing groups within the design. By randomly assigning participants to these groups, the chances that the differing groups are equivalent increases and this means that there is more chance that changes within the groups are not due to different variables within the groups. However, Capella, Massetti and Yampolsky (2009) argue that random allocation is not always possible, particularly when working within the constraints of a school environment, because it can be difficult to allocate participants randomly into different experimental groups when they are divided into classrooms. Instead, Borman et al (2007) highlighted the use of quasi-experimental designs in research, which are considered “almost” true experimental designs and are important when the participants have *not* been randomly assigned to either experimental or control groups. Quasi-experimental designs are considered to be more applicable to real life settings (Cohen et al, 2009) because they allow the variable of interest to be studied in its natural

setting. Although researchers claim that quasi-experimental designs increase threats to internal validity, Bamberger, Rugh and Mabry (2006) assert that in real world research, it is almost never possible to assign participants to experimental and control groups randomly because it involves splitting up intact groups. The researcher viewed the use of a quasi-experimental design to be appropriate within the current study because the mindfulness based intervention was implemented as a whole-class intervention and as a result required the study of intact groups of year 5 classes.

### ***3.3.6 Flexible Research Designs***

Although fixed research designs are beneficial because they can identify patterns from large groups of individuals based on social phenomena, they do not capture the subtleties and complexities found within individuals like flexible research designs do (Robson, 2002). Flexible research designs are typically associated with the constructivist methodological paradigm and the researcher is considered to be the 'instrument' rather than there being a reliance on specialist tools and instruments as with fixed research designs (Chesney, 2001). Flexible research designs are considered to be associated with identifying the personal experiences of participants (Mertens, 2015).

### ***3.3.7 Validity in Flexible Research Designs***

Within flexible research designs are certain criteria for assessing the quality of qualitative research. The criteria parallel the concepts of validity and reliability found within post-positivist, fixed research designs (Mertens, 2015). Guba and Lincoln (1989) and Mertens (2015) highlighted five key criteria for assessing quality within flexible qualitative research designs. See Table 3-1 for a summary of each criteria as well as related strategies to enhance the quality in each domain:

<b><i>Criteria for quality judgement</i></b>	<b><i>Equal post-positivist concept</i></b>	<b><i>Ways to enhance quality</i></b>
Credibility	Internal validity	Prolonged or persistent engagement Member checks Peer debriefing Negative case analysis Progressive subjectivity Triangulation
Transferability	External validity	Thick description to enable applicability/generalisation Multiple cases
Dependability	Reliability	Dependability audit – quality and appropriateness
Confirmability	Objectivity	Confirmability audit in conjunction with dependability audit
Transformative/Authenticity	None	Fairness Ontological authenticity Community Attention to voice Critical reflexivity Reciprocity Catalytic authenticity Social change

**Table 3-1: A table to show the details of quality assessment criteria for flexible research designs**

Within flexible research designs, triangulation has been identified as a valuable and widely used strategy (Cohen, Manion and Morrison, 2000). Triangulation involves using more than one source in order to enhance the rigour of the research (Robson, 2002). Within the current research design, more than one method of data collection was used (data triangulation) and quantitative and qualitative approaches were combined (methodological triangulation) (Denzin, 2012) in order to enhance scientific rigour and reduce threats to the validity of relying solely on the findings of one methodological approach.

### ***3.3.8 Flexible Research Methods: Focus Groups***

Within flexible research designs, there are typically three key methods of data collection: participant observation, interviews and document/records review (Mertens, 2015). According to Mertens (2015), interviewing is considered an important method of data collection within flexible research designs. Interviews

can be flexible in their delivery; they can be structured or unstructured, individual or in groups, in person or via electronic means (Robson, 2002). Interviews enable researchers to access individuals' perceptions of an experience (Lincoln and Guba, 1985) and involve the exploration of views between two or more people on an area of mutual interest (Cohen et al, 2009).

Group interviews are a type of data collection that occurs in a group context (Robson, 2002). Fontana and Frey (1994) highlighted that the term group interview is often used interchangeably with the term 'focus group' (Bogardus, 1926). Focus groups are a data collection strategy for research that rely on the interaction within the group rather than the interviewer and participant (Krueger & Casey, 2009). Focus groups serve as an important research tool not only within the design of the research but also because they incorporate the interviewer as the human measurement instrument (Mertens, 2015) or group facilitator (Lewis, 1992); guiding the interactions between participants. Krueger and Casey (2009) identified some key characteristics of focus groups:

1. They typically involve five to ten people and must be small enough so that everyone within the group has an equal opportunity to share insights but large enough so that there is a diversity of perceptions.
2. They involve participants who have something in common and of interest to the researcher, which is determined by the purpose of the study.
3. They provide qualitative data in the form of collecting a range of opinions across several different groups that can then be compared and contrasted.
4. They have a pre-determined focused discussion where the questions are open-ended and easy for the participant to understand.
5. They are used to determine perceptions, feelings and thoughts about different issues, products and services.

There have been numerous advantages identified in focus groups as compared with individual interviews (Watts and Ebbutt, 1987). Watts and Ebbutt (1987) argued that focus groups can be cost effective, less intimidating for participants, and a particularly valuable research tool within primary school settings with primary school children (Lewis, 1992). Importantly however, Silverman (1986)

argued that focus groups can be limited in their interpretation in that the responses of the individuals within the groups cannot be generalised to different contexts.

Within the current research, fixed and flexible research designs will be combined in a single approach. The following section outlines the rationale for this decision.

### **3.3.9 Mixed Methods Design**

Within mixed method research designs, which primarily work within the pragmatist paradigm, researchers are able to choose the type and sequence of data collection because the design reflects the data collection strategy (Mertens, 2015). Mixed methods designs have emerged from the qualitative quantitative debate, as an alternative because they allow for the combination of fixed (quantitative) and flexible (qualitative) designs in one research study in order to answer different aspects of overarching research questions (Teddlie and Tashakkori, 2009). They focus on both narrative and numeric data in their analyses (Teddlie and Tashakkori, 2009). Teddlie and Tashakkori (2009) argued that the combination of methods is determined by the research questions and the purpose of the research should ultimately lead to the strategy of data collection in mixed methods research (Greene, 2007). Onwuegbuzie and Johnson (2006) highlight that mixed methods research allows the researcher to capitalise on the assets of one method over another. This means that both summative and formative questions can be explored in mixed methods evaluation research and as a result, the evaluation in mixed methods research has more breadth and depth than that found in a single method (Onwuegbuzie and Johnson, 2006).

### **3.3.10 Quality in Mixed Methods Research Designs**

As previously discussed, mixed methods designs involve combining the findings from both quantitative and qualitative methods in order to answer overarching research questions. Within the research assessing the quality of mixed methods research designs, the quality evaluation of mixed methods mirrors that within flexible and fixed research designs. The quality of quantitative research is

judged through the post-positivist paradigm for its reliability, validity and objectivity of the findings, whereas the quality of the qualitative research is judged from the constructivist paradigm on its dependability, credibility and confirmability (Lincoln, 2009). In particular, Teddlie and Tashakkori (2009) highlighted how inference quality (which compares to internal validity and trustworthiness) and inference transferability (which compares to external validity and transferability) are quality features within mixed method designs that can be enhanced by factors such as design appropriateness, fidelity, consistency and adequacy of data analysis, as well as interpretive rigour, efficacy of method and data interpretation. The next section will discuss the application of a mixed methods research design in the current study.

### ***3.4 Research Design in the Current Study***

The use of quantitative data on its own, to confirm specific hypotheses, have been criticised for being restrictive due to the potential ignorance to other possible outcomes of the intervention (Cook-Sather, 2006). Rather than relying solely on the use of quantitative questionnaires, participant voice and personal experience can be identified through the use of qualitative data. Cook-Sather (2006) emphasised the importance of this in contemporary real world educational research and highlighted that the greatest learning opportunities can be extracted from research when the qualities of both qualitative and quantitative are combined as in mixed methods research. Within the current research, a mixed methods approach was adopted. Much of the previous research into the impact of mindfulness based interventions has solely employed quantitative designs; with only a few that have also accounted for pupil voice and have allowed participants to share their perceptions of the intervention (Biegel et al, 2009; Metz et al, 2013).

The current study adopts a multi-strand mixed methods research design that uses both quantitative and qualitative investigations in parallel. The quantitative methods were prioritised within the current study and the use of qualitative methods aimed to expand on and enhance the quantitative findings through methodological triangulation (Cohen et al, 2009). A quasi experimental design was used to evaluate the impact of the mindfulness based intervention on



participants and focus groups were used to facilitate further exploration of the participants' perceptions of the intervention. The next section will provide a brief overview of the research strands within the study and this will be preceded by a summary of the sample selection, intervention, measures and administration of them, and data analysis procedures.

### **3.4.1 Quantitative Strand: Quasi-Experimental Design**

A two-group pre-test/post-test quasi-experimental design formed the quantitative element in the current study. The quasi-experimental design was chosen primarily because of its capacity to support inferences of causation between dependent and independent variables (Shadish et al, 2002). The dependent variables that were being measured in the current study were participants' perceptions of their social and emotional skills, optimism and mindful awareness. In order to triangulate the children's self-reported perceptions, teachers' and parents' perceptions of the children's social and emotional skills were also measured. One two-form entry school, from a large east midlands city authority participated in the study.

### **3.4.2 Qualitative Strand: Focus Groups**

After participants in the experimental group had completed the 12 week mindfulness based programme, the researcher facilitated three structured focus groups with participants that participated in the mindfulness based intervention. There were three groups of eight participants. The focus group interviews lasted approximately 20 minutes each. The researcher followed a script in the focus groups to introduce the purpose of the group and ensure that all groups received the same information:

*'I would like to ask you about your thoughts and feelings about the Mindfulness based intervention that you have taken part in over the past 12 weeks. I would like to hear from everyone so I will make sure you all get a chance to speak, if you want to.'*

The researcher then asked the participants in each focus group three open ended questions about their experiences of the mindfulness based intervention:

1. 'What did you like about the mindfulness based intervention?'
2. 'What did you not like about the mindfulness based intervention?'
3. 'Do you think anything has changed for you since you took part in the mindfulness based intervention? If so, tell me about that'.

Each participant in each of the focus groups was provided with the opportunity to respond to each question. The researcher aimed to facilitate a balance between the majority and the minority voices in each of the groups. Focus group interviews were chosen to illuminate the quasi-experimental design because previous research by Watts and Ebbutt (1987) found them to be time effective as well as able to provide a small group setting for participants that is reassuring, thereby enabling participants to provide a range of responses. The researcher had not gained parental consent to record participants' responses in the focus groups and therefore audio recording was not used during the focus groups. This could limit the reliability of the data that was gathered because the participants' responses were transcribed by the researcher during the focus groups which may have resulted in some loss of data.

### **3.5 Data Analysis**

A mixed methods approach was used in order to complete the data analysis (Teddlie and Tashakkori, 2009). The findings from each research strand were first considered in isolation in order to address the individual research strands and were then combined together so that meta-inferences could be made in relation to the overall efficacy of the mindfulness based intervention. The quantitative data was analysed using statistical evaluation of the group differences and the qualitative data was analysed using a surface-level thematic analysis. A full description and review of these approaches will be provided in the results section in Chapter 4.

### **3.6 Sample**

The researcher's role as a Trainee Educational Psychologist (TEP) within the Local Authority Educational Psychology Service (LA EPS) means that access to

the target community was readily available for the current research. This is because the TEP was working closely with schools, teachers, parents and pupils on a daily basis, as part of everyday practice. The researcher therefore used opportunistic sampling in the current study based on the convenience and availability of participants from the target population who were willing to take part in the study (Patton, 2002). This sampling method is often criticised because the findings are not considered to be representative (Robson, 2002); however it is often the most commonly used sampling method, particularly in real world settings where access to target populations can be difficult (Mertens, 1998). Mertens (2015) argued that when using this sampling method, the researcher should be aware of the limitations and acknowledge the fact that the findings cannot easily be generalised outside the given population pool.

Initial invitation letters were emailed to 10 head teachers working in the primary schools of the local area where the researcher was working as a TEP (See Appendix 1). The schools that were selected for this were known to the TEP either because they were her link schools or because EPs within the service had discussed with their link schools and they had expressed an interest. Three head teachers expressed their interest in taking part in the research following the information provided in the email. Following further face to face consultations with the head teachers and the Special Educational Needs Coordinators (SENCo) of the three schools that expressed their interest, two of the schools came to the decision that the intervention would not be feasible in their school at that time and one school agreed to take part in the research (refer Appendix 2).

The total participant sample included 35 Year 5 children from one primary school, two class teachers and 33 parents, within a large east midlands city authority. The sample included 19 males and 16 females between the ages of 9 and 10, with an average age of 9 years and 4 months. Table 3-2 presents an overview of the final participant numbers. The participating school was situated north of the City, with 40% of children speaking English as an additional language and approximately 75% of pupils being from minority ethnic groups.

<b>Participant</b>	<b>Number in class (N)</b>	<b>Number of consent (N)</b>
Class Teacher (Intervention)	1	1
Class Teacher (Control)	1	1
Pupils (Intervention)	25	20
Pupils (Control)	25	15
Parents (Intervention)	25	20
Parents (Control)	26	15

**Table 3-2: A table to show the final number of participants involved in the study**

In quasi-experimental research, fifteen participants per variable are considered enough for statistical analysis (Borg and Gall, 1989). A sample size of above thirty is considered to be necessary for statistical analysis (Cohen et al, 2007). The pupil sample size within the current research (n = 35) is therefore deemed to be adequate for the statistical analysis carried out in the results section in Chapter 4.

### ***3.6.1 Allocation of classes to experimental and control group***

Within the selected school, one of the classes requested a preference to receive the intervention first. This is because the class teacher had an understanding of the basic principles associated with mindfulness practice because of previous roles within schools. Therefore, this class was assigned to the experimental condition and the other class was the control group.

## ***3.7 Intervention***

### **MindUP Intervention**

The mindfulness based intervention that was used in the current study was the MindUP curriculum (The Hawn Foundation, 2011) which is an American mindfulness based comprehensive, classroom-tested, evidence based intervention (Refer to Appendix 5 for a copy of the typical lesson structure of the sessions within the MindUP curriculum). Although an American-based intervention for mindfulness, the MindUP Curriculum was chosen because it is an easy to administer classroom-tested and evidence-based curriculum that follows a step-by-step approach aimed at teaching children to foster their social and emotional awareness in order to become more mindfully aware. The

MindUP curriculum has been developed through psychological theory and has been informed by developmental neuroscience research (Diamond, 2012), social and emotional learning (Greenberg, Weissberg, Utne O'Brien, Zins, Fredericks, Resnik and Elias, 2003), contemplative science and mindfulness (Roeser and Zelazo, 2012) and positive psychology. The MindUP curriculum consists of 12 lessons which are arranged into four units:

Unit1: Getting Focused (Lessons 1-3)

Unit 2: Sharpening your Senses (Lessons 4-9)

Unit 3: It's all about Attitude (Lessons 10-12)

There are core mindfulness practices within the programme, recommended to be completed three times a day for 3 minutes each. The core practice focuses on breathing and attentive listening. The MindUP Curriculum includes lessons that promote attention and self-regulation skills (such as mindful smelling and mindful tasting), positive mood and social and emotional leaning. Within the programme is an additional three sessions (13-15) that encourage pupils to implement and generalise the skills learnt in sessions 1-12 more widely into their classroom curriculum. These additional sessions were administered by the class teacher. Details relating to the limitations of using an American-based intervention will be discussed in the discussion in Chapter 5.

#### **Implementation of intervention:**

The MindUP Curriculum was taught on a weekly basis, over a period of 12 weeks, and lasted approximately 50-60 minutes per session. The school agreed and set aside an hour each week, during school hours, for the intervention to take place. The intervention was carried out in place of the children's regular PSHE lessons.

The researcher led the mindfulness sessions each week and the class teacher observed and supported. This researcher believed that by providing the class teacher with the necessary skills and understanding related to mindfulness it would help them to move towards creating a nurturing culture of mindfulness within the classroom (Zakrzewski, 2014). It was hoped that consistency of

approach could be ensured by the researcher leading the sessions, and the class teacher would develop the necessary skills to ensure implementation of the key concepts of the mindfulness sessions following completion of the intervention. In conjunction with the recommendations for successful implementation of the MindUP Curriculum (The Hawn Foundation, 2011), the Year 5 class teacher was encouraged to integrate the core aspects of each of the sessions into the wider main classroom in order to 'connect to the curriculum' and link each lesson to content-area learning to reinforce and reflect on the learning of each lesson.

### ***3.8 Treatment Fidelity***

In order to reduce possible threats to validity in the current research, treatment fidelity was considered. Treatment fidelity refers to “strategies that monitor and enhance the accuracy and consistency of an intervention to ensure that it is implemented as planned and that each component is delivered in a comparable manner to all study participants over time” (Smith, Daunic and Taylor, 2007, p.121). Cohen et al (2009) disputed that researcher bias can be caused by poor treatment fidelity because it poses a significant risk to the validity of the research (Mertens, 1998). Therefore, during the course of the 12 week mindfulness intervention, two treatment fidelity checks were undertaken by another Trainee Educational Psychologist, who was not involved in the research. The sessions in which the fidelity checks were to be undertaken were randomly selected before the intervention started to reduce bias in the selection process. The sessions were randomly selected by the Trainee by selecting two numbers out of a hat. A fidelity checklist was devised before the intervention started (Refer to Appendix 6 for a copy of fidelity checklists) to reduce bias, and there was no previous involvement in or understanding of the MindUP Curriculum by the person undertaking the fidelity checks. Unfortunately, the researcher did not carry out implementation fidelity checks between sessions, to see how often the class teacher had completed the core practice and connected the session content to the wider classroom. This could limit the validity of the findings and the limitations of this will be discussed in more detail in Chapter 5.

### **3.9 Control Group**

The control group continued to follow their usual school routine whilst the experimental group participated in the intervention. The control group was informed of their involvement in the research and were asked to complete the same questionnaire measures as the experimental group. Within the information letters sent to parents (Appendix 3), parents were informed that their child's class may be asked to participate in the intervention. Initially the control group were intended to act as a wait-list control group. The teacher responsible for the control class was offered the mindfulness based intervention after the experimental group had completed theirs but unfortunately declined the opportunity to receive the intervention on behalf of her class because of time pressures created by curriculum demands (refer for Appendix 10 for debrief letter to parents of control class). This raises ethical issues around equalisation of treatment and the potential rivalry held by the control group at not receiving the intervention (Campbell and Stanley, 1963). This also highlights questions around the ability of a mindfulness based intervention to fit into the school curriculum as the control teacher explained that curriculum demands meant that it was not a feasible option in relation to time pressures at that time. The ethical issues associated with this change in procedure will be discussed in Chapter 5.

Following completion of the mindfulness intervention, parents of the children in the control group were provided with a debrief letter (Appendix 10) informing them that their child's class had not been chosen to participate in the intervention. For further details refer to section 3.11.1 for information around informed consent and 3.11.4 for information around debriefing procedures.

### **3.10 Measures**

#### **3.10.1 Child and Adolescent Mindfulness Measure (CAMM)**

The *Child and Adolescent Mindfulness Measure* (CAMM; Greco and Baer, 2006) was used to measure participants' mindful awareness and is a measure that aims to assess the extent to which children and adolescents observe their internal working experiences, act with awareness and accept internal

experiences without judgement (Refer to Appendix 7). This measure was used to identify any changes in the children's mindful awareness following the completion of the mindfulness based intervention. Although originally intended for use with children of 10 and over (Greco and Baer, 2006) more recent research suggested that the CAMM can be suitable for children over the age of 9 provided that they have a good understanding of the questions (Greco, Baer and Smith, 2011). The CAMM is a 10 question measure that is rated using a 5-point Likert scale (Never true, rarely true, sometime true, often true, always true) and includes questions such as "I push away thoughts I don't like" and "I stop myself from having feelings that I don't like". The items of the CAMM are reverse scored, with lower scores indicating more self-reported mindful awareness. Pupils completed this measure pre and post test to identify any self-reported changes in mindful awareness following the completion of the mindfulness based intervention.

Previous research indicates that the CAMM is a standardised measure (Greco and Baer, 2006) and has been shown to have good internal consistency with a Cronbach's alpha coefficient of .80 (Greco et al, 2011; Cronbach, 1951).

### ***3.10.2 Resiliency Scales for Children and Adolescents (RSCA)***

Optimism was assessed using the Sense of Mastery subscale from the Resiliency Scales for Children and Adolescents (Prince-Embury, 2006) (Refer to Appendix 8). Items within this subscale were designed to reflect the concept of optimism and reflect individual expectations of positive outcomes in most situations (Scheier & Carver, 1985). Items reflect the general expectation that "life is fair" and "good things will happen". The particular questions within this subscale that measure optimism were questions 1,2,3,4,18,19,10. These questions were rating using a five-point Likert scale which assesses children's positive perspective on the world and the future in general. Ratings (Never, Rarely, Sometimes, Often and Almost Always) are averaged and higher scores represent higher levels of optimism. Pupils completed this subscale to identify any self-reported changes in optimism following the completion of the mindfulness based intervention. The RSCA is a set of scales that was readily



available and used widely across the local authority in which the researcher was based.

Cronbach's alpha coefficient was used to examine the internal consistency of the items within the subscale (Cronbach, 1951). Thomson, Schonert-Reichl and Oberle (2014) found support for the reliability and validity of the optimism subscale. Internal consistency of the Sense of Mastery Scale found reliability at .93 alpha coefficient. When assessing the test-retest reliability, the coefficient for the Sense of Mastery Scale was .91 and .81 for optimism specifically showing that the optimism subscale shows stability over time (Prince-Embury, 2006). The RSCA is representative of a US population and therefore caution should be taken when applying the findings to a UK population.

### ***3.10.3 Strengths and Difficulties Questionnaire (SDQ)***

The *Strengths and Difficulties Questionnaire* (SDQ; Goodman et al 1998) was used to obtain measures of psychosocial strengths and behaviours within self regulation and mental well-being (Refer to Appendix 9). This questionnaire asks about positive and negative attributes which are divided between 5 scales: emotional symptoms, conduct problems, hyperactivity and inattention, peer relationship problems and pro-social behaviour. This questionnaire was completed by pupils, parents and the class teachers at pre-test and post test in order to facilitate validation of data across the children, parents and class teachers. Statements are answered based on a rating scale, consisting of 'not true', 'somewhat true' and 'certainly true'. The emotional symptoms, conduct problems, hyperactivity and peer relationship problems subscale scores add together to make a total difficulties score. The SDQ pupil version is originally intended for use with children aged 11-17 (Goodman, 1997); however, Muris et al (2004) carried out some research into the psychometric properties of the self-report version of the SDQ in children aged 8 to 13 to see whether the self-report version of the SDQ could be used with children younger than 11. The findings suggested that most of the psychometric properties of the SDQ were comparable to those found in older children but Muris et al (2004) highlighted the importance of checking the child understands each of the items on the SDQ as well as the rating scale before completion. They also advised using the

teacher and parent versions of the SDQ when using it on younger children. The SDQ was a questionnaire that was widely available and used regularly within the local authority that the researcher was working.

The SDQ has been designed to meet the needs of researchers, clinicians and educationalists (Goodman, 1997) and is considered to have good test-retest reliability with adequate criterion validity (Goodman, 2001). The reliability of the SDQ was investigated by many. Goodman (2001) judged the reliability of the teacher, parent and pupil versions to be satisfactory with a Cronbach's alpha coefficient of .73. This shows that items within the SDQ correlate strongly with each other (Brace, Kemp and Snelgar, 2009). Test-retest stability was satisfactorily reported after 4-6 months and moderate correlations were found among parent, teacher and pupil SDQ scores.

#### ***3.10.4 Administering the Measures***

In order to ensure that all participants received equal access to questionnaires, support from a class teacher was made available to all participants to guard against biases created by differences in children's reading abilities. The class teachers administered the SDQ, MAS and CAMM pupil questionnaires to the children in each condition of the research study. The class teacher read each item on the questionnaire twice and the participants then marked their answers accordingly on their questionnaires. The class teacher (rather than the researcher) was asked to read the questionnaires to their classes at pre and post test to reduce the likelihood of experimenter effects, particularly at post-test. Participants were encouraged to keep their answers as private as they could from other children. Further support was offered to children who had special education needs in completing the questionnaires. The control and experimental teachers completed the SDQ independently. The class teachers sent out the SDQs home for parents to complete independently and monitor their return.

#### ***3.10.5 Teacher-Report Measures***

The class teachers for both of the Year 5 classes had been involved with the children in each class when they were in Year 4. This is because the classes

switched around often for subjects such as English and Maths. This meant that both teachers in the experimental and control groups knew the children well, thereby reducing the bias of a new class teacher, who was unfamiliar with all the children, completing the pre-test measures.

### **3.10.6 Change in Raw Scores**

The effectiveness of the intervention was indicated through changes in raw scores from pre- to post-test in all measures within the current study. Within the SDQ measures, although it is possible to classify the total difficulties measures as normal, borderline or abnormal, the SDQ measure within the current study was not used as a clinical screening tool for mental health problems (Goodman, 1997).

### **3.11 Ethical Considerations**

As a chartered Trainee practitioner Educational Psychologist and subsequent member of the HCPC and BPS, all codes of conduct and ethics were adhered to as set down by these professional bodies in relation to the present research. The research followed the standards set out in the *British Psychological Society's Code of Ethics and Conduct (2009)* and the *Health and Care Professions Council Standards of Conduct, Performance and Ethics (2012)*. Full ethical approval for this research was obtained from the University of Nottingham's School of Psychology Ethics Committee in June 2016. Since the sample in the current study involved working with a population of children under the age of 16, there were a number of ethical considerations that were considered. There were a number of guidelines outlined within the British Psychological Society guidance (BPS, 2009) which will now be discussed in relation to the current research.

#### **3.11.1 Informed Consent**

Ethical considerations in relation to informed consent when working with a population of children under 16 were given particular attention in line with the BPS (2010a, 2010b) guidelines. Informed consent ensures that participants have enough information and opportunity to understand the purpose of

participation as well as any potential risks (BPS, 2009) of the research so that they can make an informed decision about their participation.

Since the participants were under the age of 16, written parental consent was obtained for participants to take part in the research project. The researcher collected written parental consent for participants to take part in the research project i.e. to complete the written measures, have teacher and parent questionnaires completed and take part in the focus groups (See Appendix 4). Parents were informed that the intervention would be delivered by a trainee educational psychologist who would be under the supervision of her employing local authority and would receive regular research supervision from the University of Nottingham. Consent was voluntary and on an opt-in basis (Appendix 3). Opt-in consent was gained from parents to allow their child to complete the measures (Appendix 3). Parents were asked to sign a consent form (Appendix 4) if they consented to their child completing the measures. This applied to both the experimental and the control group. Children for whom parental consent had not been gained did not complete the measures. Opt-out consent was requested from parents who did not wish for their child to be involved in the mindfulness based intervention (Appendix 4), which was taking place as a whole class intervention. If parents wished for their child not to be involved in the intervention, they were requested to indicate this on the consent form, and speak to the class teacher and/or researcher (Appendix 4). There were no parents who opted-out for their child to be involved in the mindfulness based intervention.

An information and consent letter was provided to parents as well as the school, outlining the purpose and aims of the study and requesting parental consent for their child's questionnaire data to be used in the analysis of the current study (see Appendix 3). The letter informed participants (pupils and parents) of their right to withdraw without negative consequences. Parents signed and returned the permission slip to school if they consented for theirs and their child's questionnaire data to be used in the analysis (see Appendix 4).

### ***3.11.2 Research Participant Protection***

It is important to identify any potential risk to physical or psychological harm, discomfort or stress in order to protect research participants (BPS, 2009). All participants were made aware of where they could go to receive further support, both in and out of school and were made aware of key members of staff within school that they could seek out if they required any additional support. In addition to this, the safeguarding and child protection policy of the local authority and the school would have been used should a child have disclosed any information viewed as a safeguarding or child protection issue.

### ***3.11.3 Confidentiality***

The names of all participants as well as the name of the school remained anonymous in the write up of the research project. Participants' data were assigned to an identification number for the analysis. All information collected for the research was electronically stored securely in password protected documents and kept separate from casework records and school information. The data collected was kept confidential and not discussed with members of staff within the schools, parents, nor other children. All data remained anonymous within the write up of the research project.

### ***3.11.4 Deception and Debriefing***

The BPS (2009) emphasises the importance of debriefing research participants following the completion of their participation with a view of informing them of the outcomes and nature of the research. Pupils and parents were informed about the details of the research and the nature of the measures that were taken but were not informed of the hypothesised relationship between the measures and the mindfulness based intervention until all measures were complete in order to enhance the validity of the findings. The researcher provided all pupils with a verbal debrief and parents with a written debrief (see Appendix 10). A separate debrief was provided for the parents of pupils in the experimental and control group. The debrief letter for parents in the control group informed them that their child's class had not be selected to participate in

the intervention. The researcher provided parents with a copy of her contact details should they have any further questions.

#### ***3.11.5 Monitoring and Duty of Care:***

A wait-list mindfulness based intervention was offered to the participants in the control group, in order to avoid withholding a potentially beneficial intervention from the participants. The wait list control group were offered the intervention following completion in the experimental group. The researcher delivered the intervention and therefore was in weekly contact with the school throughout the study. The researcher also had weekly meetings as well as email contact with the class teacher in order to review each week's session and discuss the aims of the following week's session.

### ***3.12 Summary of the Methodology***

This chapter has discussed some of the issues of methodology in real world research in order to highlight the researcher's ontological and epistemological approach in relation to the research design for the current study. Following a brief discussion of the opposing methodological positions, the researcher highlighted a change of emphasis in the current study, exploring the use of a pragmatic paradigm within a mixed method methodology. Predominantly, post-positivist methods were emphasised within the current research design in order to evaluate the efficacy of the mindfulness based programme; but a constructivist strand also enabled the quantitative findings to be enhanced. This chapter then detailed the research design of current study involving a quasi-experimental design using self-perceptions of optimism and mindful awareness as well as parent, teacher and self-reports of social and emotional skills as outcome measures. The qualitative strand involved focus group interviews as a means of identifying participants' perceptions of the intervention. The intervention and sampling issues were then discussed; followed by a description of the quantitative measures. The chapter finishes with an overview of the ethical considerations of the current study. The results are now presented

## 4 Results

### 4.1 Quantitative Analysis

### 4.2 Approach to Data Analysis

#### 4.2.1 Statistical Evaluation of Group Differences

Typically, when analysing quantitative data within experimental group design research, a statistical evaluation of group differences is involved. According to Kazdin (2003) this process involves the exploration of whether people who differ on an independent variable (ie. the mindfulness based intervention) may be distinguished statistically on a dependent variable (ie. outcome measures). An important part of the statistical evaluation process involves testing hypotheses, which essentially refers to the prediction that comes from your theory (Field, 2009). There are two important hypotheses; the experimental hypothesis (which assumes that there *will* be an effect of the independent variable on the dependent variable) and the null hypothesis (which assumes that there will be *no* effect). Therefore, statistical evaluation of group differences involves testing the null hypothesis in order to ascertain the likelihood (p value) that any differences observed between the groups following the introduction of an independent variable, would have occurred by chance. This is in a population where the null hypothesis is true (Shadish et al, 2002). Significance is typically tested at  $p < 0.05$  which means that if the probability is calculated as sufficiently low, the null hypothesis can be rejected because a significant difference has been detected in the data (Field, 2009). Before the data is analysed using inferential statistical tests however, the researcher must carry out descriptive statistical tests which can be presented numerically, graphically or in tables. The inferential statistical analyses that follow the descriptive analysis allow the researcher to make conclusions about the null hypothesis (Shadish et al, 2002).

#### 4.2.2 Parametric and Non-Parametric Tests

There are two types of inferential tests; parametric and non-parametric (Cohen et al, 2009). The main difference between the two types of test is that parametric tests require a number of assumptions to be met about the

population from which the sample was drawn before they can be used (Pallant, 2013):

- That the data is interval or ratio.
- That the data is of equal variance (homogenous).
- That the data is normally distributed.

Non-parametric tests make few assumptions about the nature of the data and as a result are often regarded as being less sensitive than parametric tests. However, Pallant (2013) identifies non-parametric tests to be particularly useful where the assumptions for parametric tests have not been met or on data that is measured nominally or ordinally (Field, 2009; Pallant, 2013). Whilst parametric tests explore hypotheses in relation to the population mean, non-parametric tests explore the hypotheses in relation to the frequency measures of central tendency known as the median (Argyrous, 2011). Cohen et al (2009) highlight that parametric tests are often preferred to non parametric tests because they hold more statistical power which enables significant differences to be detected even with smaller sample sizes. However, Field (2009) argues that non-parametric tests may be more sensitive on smaller sample sizes where there are outliers and the distribution of data is not normal. Furthermore, whilst non-parametric tests are often criticised because they highlight an increased chance of Type II errors, Field (2009) argued that this only applies when the data sample is *normally* distributed. Dancey & Reidy (2007) argue that decisions about the selection of test to be used to analyse a data set should be guided by the extent to which the data have met the necessary assumptions.

### **Normal Distribution**

A normal distribution refers to a data set whereby the greatest number of scores clusters towards the middle or 'centre' of the distribution on the measurement scale (Field, 2009). The distribution of data is tested in a number of ways (Robson, 2002; Field, 2009; Pallant, 2013):

#### ***Visual Inspection of Box Plot and Histogram.***

Visual inspections of frequency graphs are considered a common method of identifying normal distribution within a data set. Within the current study,



distribution of data was explored through the visual analysis of normality frequency plots (i.e. box plots and histograms) for each dependent variable (mindful awareness, optimism, social and emotional skills) (Robson, 2002). A normal distribution on a frequency graph can be observed and characterised by a symmetrical bell-shaped curve (Field, 2009). Scores that deviate away from the central distribution of scores indicate that the data may not be normally distributed. When this occurs, a more accurate analysis of the distribution is needed.

### ***Inspection of 'Skewness' and 'Kurtosis'***

When visual inspection of the distribution indicated a non-normal distribution, the skewness and kurtosis of the data set are explored. Skewness and kurtosis refers to the two main ways in which the distribution of data may deviate from the normal distribution (Field, 2009). Skewness (the symmetry of the data distribution) and kurtosis (the peaked concentration of scores around the central distribution of data) are when distributions are not symmetrical and are clustered towards one end of the scale (Field, 2009). Typically, when considering the skewness and kurtosis of data a value within the range of -1 to +1 indicates that the distribution is normal (Dancy and Reidy, 2007). If skewness and kurtosis exceed this range, inspection of the Shapiro-Wilk statistic is needed (Shapiro and Wilk, 1965).

### ***Inspection of Shapiro-Wilk Statistic***

The Shapiro-Wilk statistic assumes that the distribution of data is normal when a statistically non-significant ( $p > 0.05$ ) result is calculated (Shapiro and Wilk, 1965) since this statistic assumes that there are no differences between groups. In the current study, the Shapiro-Wilk test was used to provide a more accurate analysis of the distribution of data. Razali and Yap (2011) considered the Shapiro-Wilk test to hold superior power to other tests of normal distribution such as skewness and kurtosis.

### ***4.2.3 Homogeneity of Variance***

Homogeneity of variance is another assumption that needs to be met when deciding to use parametric tests (Robson, 2002). Homogeneity of variance is

the assumption that the variance in scores is equal across groups and means that the variance across variables should remain 'stable' at all levels of the variable (Field, 2009). When using Levene's statistical test for homogeneity of variance, a non-significant result ( $p > 0.05$ ) indicates that variances across groups is equal. This is because Levene's test aims to accept the null hypothesis which assumes that there are no differences in variance across groups (Levene, 1960). Levene's test was therefore used in the current study to establish homogeneity of variance within each dependent variable's data set.

### **Choosing a Statistical Test**

Once the researcher knows whether they will be using parametric or non-parametric tests to carry out their statistical analysis of data, they must then decide specifically which individual test to use. This is informed by the research questions that are being investigated as well as the research design and experimental variables. Where parametric tests cannot be used, a non-parametric equivalent is often available (see Table 4-1). The current study mainly used non-parametric tests, which informed the individual tests that were going to be used; the Mann Whitney U Test and the Wilcoxon-Signed Rank Test. Where parametric tests were appropriate to use in the current study independent and paired samples t-tests were used.

Parametric Test		Purpose	Data Requirements	Non-Parametric Equivalent
<b>T-Test</b>	Independent t-test	Compares 2 independent groups	1 categorical independent variable and 2 groups of participants 1 continuous dependent variable	Mann-Whitney U Test (between groups, independent, unrelated)
	Paired-samples t-test	Compares 1 group on 2 different occasions	1 categorical independent variable and 1 group 1 continuous dependent variable and 2 measurement points	Wilcoxon Signed Rank Test (within groups, paired, repeated, dependent, related)
<b>ANOVA</b>	One-way between groups	Compares 2 or more groups or 2 or more independent variables	1 categorical independent variable and 2 or more groups 1 continuous dependent variable	Kruskal-Wallis Test (at least 3 groups)
	Two-way between groups		2 categorical independent variables 2 continuous dependent variables	None
	Mixed between-within		1 between-groups independent variable, 1 within groups independent variable and 1 continuous dependent variable	Wilcoxon Signed Rank Test Mann Whitney U Test
<b>ANCOVA</b>		Compares 2 or more groups while controlling for the influence of a covariate IV that varies between the groups prior to treatment	1 categorical independent variable 1 continuous dependent variable 1/more continuous covariates	None
<b>MANOVA</b>		Compares more than 1 dependent variable across 2 or more groups	1 categorical independent variable, 2/more continuous dependent variables	None

**Table 4-1: A table to show the common parametric and non-parametric tests for statistical evaluation of group differences (Mertens, 1998 and Pallant, 2006).**

## Statistical Significance

Researchers have argued against the weight that is placed on hypothesis significance testing as a sole method of identifying statistical significance in psychological research (Keselman, Huberty, Lix, Olejnik, Cribbie, Donahue, Kowalchuk, Lowman, Petoskey, Keselman, and Levin, 1998; Huberty, 2002). Cohen (1994) argued that statistical significance is not enough on its own to identify the observed effects of the significance, asserting that it does not explore the size of the effect (Robson, 2002). Harrison, Thompson, & Vannest, (2009) promote the importance of statistical power within the research, which refers to the likelihood of finding an effect when an effect exists (Cohen, 1988, Field, 2009). In every study there is a chance for error. There are two major types of error in quantitative research:

**Type I error** – occurs when the researcher mistakenly rejects the null hypothesis when it is true.

**Type II error** – occurs when the researcher mistakenly accepts the null hypothesis when it is false.

It is not always possible to know when an error occurs but researchers can control the likelihood of making an error in statistical decision making through statistical power tests and calculating effect sizes. The effect size is important to consider because it provides us with an objective measure of the importance of an effect in that even when a non significant result is found, there may still be an effect (Coe, 2002; Field, 2009). The main ways to measure effect size are Cohen's  $d$  and Pearson's Correlation Coefficient  $r$  (Cohen, 1988; Field, 2009). Pearson's correlation coefficient  $r$  will be used in the current study because it is often the preferred measure used for non-parametric tests (McGrath and Meyer, 2006). Cohen (1988) highlighted the differences between a small, medium and a large effect size (see Table 4-2):

Effect Size – Descriptor	Correlation Coefficient <i>r</i>
Small	.10
Medium	.30
Large	.50

**Table 4-2: A table to show the effect size descriptors for Pearson's correlation coefficient *r* (Cohen, 1988; taken from Field, 2009)**

### **Calculating Statistical Power in the Current Study**

Within the existing literature exploring mindfulness based interventions, a small to medium effect (0.18-0.44) has been consistently identified in relation to well-being outcomes (Zenner, Herrnleben-Kurz and Walach, 2014). Zenner, Herrnleben-Kurz and Walach (2014) highlighted that studies with small sample sizes (N=34, 30, 20) (Beauchemin et al, 2008; Thomas and Atkinson, 2016; Edwards et al, 2014) identified an effect size of .31 which is a medium effect, as measured by Pearson Correlation Coefficient's *r* (Cohen, 1988).

The statistical power of the current study was calculated using Cohen's power tables (Cohen, 1988, p 55) based on the effect sizes similar to those reported in previous research ( $r = 0.31$ ) (Zenner, Herrnleben-Kurz, and Walach's, 2014) and the recommended power of 0.8 (Cohen, 1988). This calculation suggested that the current study demonstrates low statistical power, requiring a sample size of 85 to maintain a medium effect size. This suggests that the statistical power within the current study is below Cohen's (1988) recommended power level of 0.8 and as a result, the risk of Type II errors is high in the current study. This therefore limits the validity of the statistical conclusions drawn in the current study. This should therefore be taken into consideration drawing statistical conclusions.

#### **4.2.4 Preparation of Raw Data in the Current Study**

The pupil, teacher and parent responses from the quantitative measures of each dependent variable were entered into IBM® SPSS® Statistics Version 20 for statistical analysis. Responses from the optimism subscale of the RSCA and the CAMM produced a total raw score for each participant. Responses from the

Strengths and Difficulties Questionnaire were divided between 5 scales (see Table 4-3):

<b>Strengths and Difficulties Subscales</b>	<b>Raw Scoring</b>
1. Emotional symptoms	1 to 4 add together to generate a 'total difficulties' score
2. Conduct problems	
3. Hyperactivity/inattention	
4. Peer relationship problems	
5. Pro-social behaviour	'pro-social behaviour' score

**Table 4-3: A table to show the subscales within Strengths and Difficulties Questionnaire in relation to scoring for analysis**

A 'total difficulties score' was therefore generated separately from the pro-social behaviour score. The results for 'social and emotional skills' will therefore be based on the 'total difficulties' score and the 'pro-social behaviour' score as measured by the SDQ.

The effectiveness of the intervention was indicated through changes in raw scores from pre- to post-test in all measures within the current study. The results of the statistical analysis will now be presented for each research question. This will include details around assumption testing, descriptive and inferential statistic results. A summary of the quantitative findings will then be presented and followed by the presentation of the qualitative findings.

#### **4.2.5 Mindful Awareness Investigation**

**Research Question 1:** Does participation in a mindfulness based intervention have an impact on self-perceptions of mindful awareness of primary school children in year 5?

**Null Hypothesis:** The mindfulness based intervention will **not have a** statistically significantly impact on self-perceptions of mindful awareness in primary school children in year 5.

## ***Mindful awareness: Assumptions Testing***

### **1. Group Equivalence**

An independent samples t-test was used to test for any significant differences ( $p < 0.05$ ) in mindful awareness scores between the experimental and control group at pre-intervention (Time 1). The t-test detected there to be slight differences between pre-intervention scores for mindful awareness for the experimental and control groups [ $t(33) = -0.692$ ,  $p = 0.494$ ]. This established that the experimental and control group were not equivalent groups at pre-test.

### **2. Normal Distribution**

The histogram and box plot data (see Appendix 11) for pre-intervention mindful awareness scores were inspected visually and suggested the data were normally distributed within the group. The box plot for the control group presented some outliers. In the experimental group, the Shapiro-Wilk statistic was not statistically significant ( $p < 0.05$ ) and skewness and kurtosis did not exceed  $\pm 1$ . However, in the control group, the Shapiro-Wilk statistic showed to be statistically significant at  $p = 0.01$  and both skewness and kurtosis exceeded  $\pm 1$  (see Table 4-4). This suggests that both groups within mindful awareness scores were not normally distributed at pre-test. The decision regarding normality within this measure suggested that using a parametric test within the analysis of this measure would violate the skewness and kurtosis (Pallant, 2006). These results therefore suggested that the overall assumption of normal distribution was violated since the skewness and kurtosis statistics exceeded  $\pm 1$  in the control group and there were a number of outliers in the control group's box plot.

<b>Group</b>	<b>Shapiro-Wilk</b>			<b>Skewness</b>	<b>Kurtosis</b>
	<b>Statistic</b>	<b>DoF</b>	<b>Sig</b>		
Experimental	.950	20	.371	-0.3125	-.3921
Control	.832	15	.010	1.891	3.697

**Table 4-4: A table to show the results from statistical tests establishing normal distribution for pre-intervention mindful awareness scores**

### 3. Homogeneity of Variance

A statistically non-significant result was produced for Levene's test for equality of variance at the  $p < 0.05$  level,  $[F(33) = 2.910, p = 0.097]$ . This suggests that the homogeneity of variance was not violated within the current data set for mindful awareness scores at pre-test. These findings would ordinarily support the use of parametric tests during statistical analysis; however, because there was more than one violation within the distribution of the data, this data set assumes that not all of the assumptions have been met when deciding to use a parametric test (Pallant, 2013). Non parametric tests will therefore be used to statistically analyse the mindful awareness data set.

#### ***Mindful Awareness: Descriptive Analysis***

In line with the non-parametric inferential tests (ie. median, range), descriptive statistics were calculated for the total mindful awareness scores (see Table 4-5). The descriptive statistics suggested there was a decrease in median total mindful awareness scores in the experimental group from Time 1 (pre-intervention) to Time 2 (post-intervention). There was also a decrease observed in the range of scores in both groups at Time 1 and Time 2.

<b>Group</b>	<b>Time 1 (Pre-Intervention)</b>	<b>Time 2 (Post-Intervention)</b>
Experimental	26.5 (27)	24.5 (23)
Control	23 (22)	23 (19)

**Table 4-5: A table to show the median and range scores for total mindful awareness scores in the experimental and control groups across Time 1 and Time 2.**

#### ***Mindful Awareness: Inferential Analysis – Non-Parametric Tests***

The Wilcoxon Signed-Rank Test was used to test within-group differences for significance and found that there were no statistically significant within-group differences in total mindful awareness scores ( $z = -1.128, p = 0.259$ ). Effect size was calculated at 0.2, indicating a small effect. The Mann-Whitney U Test was then used to explore between-group differences and reported there to be no statistically significant between-group differences in mindful awareness scores at post-test compared to pre-test ( $z = -0.217, p = 0.828$ ). Effect size was calculated at 0.03 indicating a very small effect.



### ***Summary of Mindful Awareness Investigation***

Within the mindful awareness investigation, the descriptive statistics suggest that there was a decrease in mindful awareness median scores in the experimental group at post test as compared to pre-test. However, inferential statistics identified there to be no statistically significant differences either within-groups or between groups.

#### ***4.2.6 Optimism Investigation***

**Research question 2:** Does participation in a mindfulness based intervention have an impact on self-perceptions of optimism of primary school children in year 5?

**Null Hypothesis:** The mindfulness based intervention will **not have a** statistically significantly impact on self-perceptions of optimism in primary school children in year 5.

#### ***Optimism: Assumptions Testing***

##### **1. Group Equivalence**

An independent samples t-test was used to identify any statistically significant ( $p < 0.05$ ) differences between the experimental and control group in total optimism scores at pre-intervention. The test identified there to be no statistically significant differences between the experimental and control group, [ $t(33) = -1.835$ ,  $p = 0.076$ ], which established that the experimental and control groups were equivalent at pre-intervention for optimism scores.

##### **2. Normal distribution**

Visual inspections of the normality of data distribution for optimism scores for the experimental and control groups at pre-intervention were carried out on histogram and box plot data and suggested that the data were normally distributed within each group (Appendix 12). The Shapiro-Wilk statistic was not statistically significant in both the experimental and the control group ( $p < 0.05$ ). Skewness and kurtosis did not exceed  $\pm 1$  in any test apart from one (see Table 4-6). Because of this, the decision regarding normality distribution was

based on the Shapiro-Wilk statistic. This is because Shapiro-Wilk is considered to hold more statistical power than skewness and kurtosis (Razali and Yap, 2011). In addition to this, the sample size (N=35) was considered adequate and robust enough for the use of parametric tests (Pallant, 2006) despite the minor violation of kurtosis in the experimental group (Sauro and Lewis, 2012). The results for normal distribution therefore indicated that the assumptions for using parametric tests were not violated considerably.

Group	Shapiro-Wilk			Skewness	Kurtosis
	Statistic	DoF	Sig		
Experimental	0.910	20	0.064	0.515	1.444
Control	0.966	15	0.788	-0.344	0.192

**Table 4-6: A table to show the results from statistical tests establishing normal distribution for pre-intervention optimism scores.**

### 3. Homogeneity of Variance

Levene’s test for equality of variance produced a statistically non significant result at the  $p < 0.05$  probability level [ $F(33) = 0.032$ ,  $p = 0.862$ ]. This suggests that the assumption for homogeneity of variance within this particular data set has not been violated. Given this, and the fact that optimism scores met the assumptions within distribution of data, parametric tests can therefore be used in statistical analysis.

#### ***Optimism: Descriptive Analysis***

Inspections of the mean total optimism scores revealed a slight decrease in scores across time within the experimental group and a slight increase in mean scores in the control group. This suggests a minor shift in optimism scores following the completion of the mindfulness based intervention in both the experimental and the control group (see Table 4-7).

Group	Pre Intervention (Time 1)	Post Intervention (Time 2)
Experimental	18.90 (3.73)	18.60 (5.22)
Control	21.27 (3.84)	21.40 (2.80)

**Table 4-7: A table to show the mean and standard deviation scores for optimism in the experimental and control groups across time.**

### ***Optimism: Inferential Analysis – Parametric Tests***

In order to identify any statistical significance, an independent samples t-test was carried out between pre and post-test optimism scores. The independent samples t-test showed that there were no statistically significant differences between optimism scores for the experimental and control group at post-intervention ( $p=0.697$ ). A paired samples t-test was also carried out in order to identify any within-group differences for optimism scores. There were no statistically significant within-group differences for optimism scores ( $p=0.844$ ). Effect size was calculated to be 0.31 which indicates a medium effect, as measured by Pearson's correlation coefficient  $r$  (Field, 2009).

### ***Summary of Optimism Investigation***

Within the optimism score investigation, the descriptive statistics suggest only a slight change in optimism mean scores within the experimental and control group following the mindfulness based intervention. There is a decrease within the experimental group and an increase in the control group. Inferential statistics identified there to be no statistically significant differences in optimism scores either within or between groups.

### ***4.2.7 Social and Emotional skills Investigation***

**Research Question 3:** Does participation in a mindfulness based intervention have a statistically significant impact on self, teacher and/or parent reported social and emotional skills in Year 5 children at a mainstream Primary School?

**Null Hypothesis:** There will be no statistically significant group differences in changes in self, teacher and/or parent reported social and emotional skills in Year 5 children.

## ***Social and Emotional Skills: Assumption Testing***

### **Pupil (self-rated) scores**

#### **1. Group Equivalence**

Total difficulties: An independent samples t-test was used to identify any statistically significant ( $p < 0.05$ ) differences between the experimental and control group in 'total difficulties' scores between pupils at pre-intervention (Time 1). The test reported that there was a statistically significant difference between the experimental and the control group between pupils at pre-intervention [ $t(33) = 2.038, p = 0.050$ ]. The t-test for group equivalence was calculated at the exact cut-off for statistical significance ( $p < 0.05$ ). This established that the experimental and control groups were not equivalent in 'total difficulties' scores at pre-test for statistical data analysis (Field, 2009).

Pro-social behaviour: An independent samples t-test was used to identify any statistically significant ( $p < 0.05$ ) differences between the experimental and control group in pro-social scores between pupils at pre-intervention. The test reported that there were no statistically significant differences between the experimental and the control group at pre-intervention [ $t(33) = -0.664, p = 0.511$ ]. This shows that the experimental and control groups for pro-social behaviour were equivalent at pre-intervention for pupils for statistical data analysis.

#### **2. Normal Distribution**

Visual inspections of the box plot and histograms for pupil rated 'total difficulties' and 'pro-social' behaviour scores at Time 1 suggested that the data were not normally distributed within the groups. The Shapiro-Wilk statistic calculated that the differences in groups at pre-intervention were not statistically significant ( $p > 0.05$ ) for total difficulties but were statistically significant for pro-social behaviour scores ( $p < 0.05$ ). Skewness and kurtosis exceeded  $\pm 1$  in four of the eight groups (see Table 4-8). Normal distribution tests therefore show that there are violations within skewness and kurtosis as well as through Shapiro-Wilk calculations. Although Shapiro-Wilk is considered to hold more statistical power than skewness and kurtosis (Razali and Yap, 2011), group equivalence showed

that the total difficulties group was statistically significant at pre-intervention and visual inspections showed skewed distributions for both total difficulties and pro-social behaviour scores (see Appendix 13). The results for normal distribution therefore showed that a number of assumptions were violated.

Pupil Group		Shapiro-Wilk			Skewness	Kurtosis
		Statistic	DoF	Sig		
Total Difficulties	Experimental	0.130	20	0.122	1.029	-0.806
	Control	0.153	15	0.203	-0.668	-1.293
Pro-Social Behaviour	Experimental	0.195	20	0.011	-1.841	0.732
	Control	0.196	15	0.018	-0.668	-1.293

**Table 4-8: A table to show the results from statistical tests establishing normal distribution for pre-intervention total difficulties and pro-social behaviour scores for pupils.**

### 3. Homogeneity of Variance

Levene's test for equality of variance calculated a statistically non significant result at the  $p < 0.05$  probability level [ $F(33) = 0.365$ ,  $p = 0.550$ ] for total difficulties scores in pupils and a statistically non significant result for pro-social behaviour scores in pupils [ $F(33) = 0.003$ ,  $p = 0.956$ ]. This suggests that the assumptions for homogeneity of variance within pre-intervention total difficulties and pro-social behaviour have not been violated. Ordinarily, this would support the use of parametric tests for statistical analysis. However, there was more than one violation within group equivalence and distribution of data for total difficulties and pro-social behaviour scores at Time 1. This therefore suggests that not all of the parametric assumptions have been met when deciding to use parametric tests (Pallant, 2013). Non-parametric tests will be used for statistical analysis for both pupil rated total difficulties and pro-social behaviour scores.

#### ***Pupil-rated Social and Emotional Skills: Descriptive Statistics***

The descriptive statistics associated with non-parametric inferential tests (i.e. median, range) were calculated for the total difficulties and pro-social behaviour scores (see Table 4-9). The descriptive statistics suggest that there was a decrease in pupil rated total difficulties median scores in the experimental group from Time 1 (pre-intervention) to Time 2 (post-intervention). There was a slight decrease in the median total difficulties scores in the control group but there

were no changes observed between Time 1 and Time 2 within pro-social behaviour median or range scores.

Pupil Group		Time 1 Pre-Intervention Median (Range)	Time 2 Post-Intervention Median (Range)
Total Difficulties	Experimental	12 (19)	9 (21)
	Control	8 (21)	7 (21)
Pro-Social Behaviour	Experimental	8 (6)	8 (6)
	Control	9 (4)	9 (4)

**Table 4-9: A table to show the median and range scores for pupil rated total difficulties and pro-social behaviour scores in the experimental and control groups across time.**

### ***Social and Emotional Skills: Inferential Analysis – Non-Parametric Tests***

Total difficulties: The Mann-Whitney U Test was used to explore between group differences in pupil rated total difficulties scores and found there were no statistically significant between-group differences in total difficulties scores detected at post-test compared to pre-test ( $p = 0.322$ ). However, the Wilcoxon Signed-Rank Test, which was used to test within-group differences, revealed a statistically significant difference following participation in the mindfulness based programme,  $z = -2.105$ ,  $p = 0.035$ . This suggests that participation in the mindfulness based programme reduced pupil rated total difficulties scores.

Pro-social behaviour: The Mann-Whitney U Test was used to explore between group differences in pupil pro-social behaviour scores and found there were no statistically significant between-group differences in pro-social behaviour scores ( $p = 0.149$ ). The Wilcoxon Signed-Rank Test also revealed no statistically significant difference following participation in the mindfulness based intervention,  $z = -0.777$ ,  $p = 0.437$ . This indicates that participation in the mindfulness based programme did not significantly impact of pupils' perceived pro-social behaviour.

<b>Measure (Pupil)</b>	<b>Non Parametric Test</b>	<b>Effect size (<i>r</i>)</b>	<b>Descriptive</b>
Total Difficulties	Mann-Whitney U	0.16	Small effect
	Wilcoxon Signed Rank	0.35	Medium effect
Pro-Social Behaviour	Mann-Whitney U	0.24	Small effect
	Wilcoxon Signed Rank	0.13	Small effect

**Table 4-10: A table to show the results for non-parametric effect sizes for pupil rated total difficulties and pro-social behaviour scores.**

### ***Summary of pupil-rated social and emotional skills investigation***

Within the pupil-rated social and emotional skills investigation, the descriptive statistics suggested a decrease in pupil rated total difficulties median scores following participation in the mindfulness based intervention. There was a slight decrease in the control group for total difficulties scores but there were no changes observed within the pupil rated scores in either the experimental or the control group for pro-social behaviour. Inferential statistics indicated there to be a statistically significant within group difference for pupil-rated total difficulties scores, suggesting participation in the mindfulness based intervention produced an improvement in pupil-rated total difficulties scores. There were no statistically significant results identified for any other pupil rated total difficulties or pro-social behaviour scores.

### ***Teacher rated scores***

#### **1. Group Equivalence**

Two separate independent samples t-tests were carried out on pre-intervention teacher rated scores of total difficulties and pro-social behaviour scores. There were no statistically significant differences between teacher groups at pre-intervention [ $t(33) = -0.163, p=0.872$ ] for total difficulties but there were statistically significant differences between teacher groups for pro-social behaviour scores [ $t(33) = -3.003, p=0.005$ ]. Teacher experimental and control groups were equivalent for overall stress scores but not for pro-social behaviour scores.

## 2. Normal Distribution

Visual inspection of histogram and box plot data identified a normal distribution in pre-intervention teacher rated total difficulties scores in the control group, but a violation of normal distribution of data within the experimental group (Appendix 14). There also appeared to be a violation of normal data distribution for pro-social behaviour in both the experimental and control group at pre-intervention for teacher scores based on the histogram and box plot visual inspections. The Shapiro-Wilk statistic calculated that the differences in groups at pre-intervention were statistically significant for pro-social behaviour at pre-intervention ( $p < 0.05$ ) but not statistically significant for the control group only in total difficulties scores for teachers ( $p > 0.05$ ). Skewness and kurtosis exceeded  $\pm 1$  in five of the groups (see Table 4-11). The tests of normal distribution suggest that a number of assumptions have been violated.

Group		Shapiro-Wilk			Skewness	Kurtosis
		Statistic	DoF	Sig		
Total Difficulties	Experimental	0.903	20	0.047	1.123	-0.851
	Control	0.921	15	0.200	1.231	0.065
Pro-Social Behaviour	Experimental	0.886	20	0.023	0.746	-1.339
	Control	0.740	15	0.001	-1.160	-1.330

**Table 4-11: A table to show the results from statistical tests establishing normal distribution for pre-intervention total difficulties and pro-social behaviour scores for teachers.**

## 3. Homogeneity of Variance

Levene's test for equality of variance reported there to be a statistically non-significant result for teacher-reported total difficulties scores at the  $p < 0.05$  probability level [ $F(33) = 1.292$ ,  $p = 0.264$ ] and teacher reported pro-social behaviour scores [ $F(33) = 2.524$ ,  $p = 0.122$ ]. This means that the assumptions for homogeneity of variance within pre-intervention teacher-rated total difficulties and pro-social behaviour scores have not been violated which would support the use of parametric tests at statistical data analysis. However, there have been a number of assumptions within group equivalence and normal distribution that have been violated. Non-parametric tests will therefore be used



to statistically analyse the data for teacher-rated total difficulties and pro-social behaviour scores.

### ***Teacher-rated Social and Emotional Skills: Descriptive Statistics***

The descriptive statistics associated with non-parametric inferential tests (i.e. median, range) were calculated for the teacher-rated total difficulties and pro-social behaviour scores (see Table 4-12). The descriptive statistics suggest that there was an increase observed in the median and range scores in teacher-rated total difficulties in the experimental group from Time 1 (pre-intervention) to Time 2 (post-intervention). There was a slight increase in median scores of teacher-rated pro-social behaviour between Time 1 and Time 2. There was also an increase observed within median and range scores for the control group over Time 1 and Time 2 for teacher-rated pro-social behaviour and total difficulties.

<b>Teacher Group</b>		<b>Time 1 Pre-Intervention Median (Range)</b>	<b>Time 2 Post-Intervention Median (Range)</b>
Total Difficulties	Experimental	6.5(21)	9 (25)
	Control	6 (19)	10 (22)
Pro-Social Behaviour	Experimental	5 (8)	6 (9)
	Control	6 (19)	10 (22)

**Table 4-12: A table to show the median and range scores for teacher rated total difficulties and pro-social behaviour scores in the experimental and control groups across time.**

### ***Teacher Rated Social and Emotional Skills: Inferential Analysis – Non-Parametric Tests***

Total difficulties: The Mann-Whitney U Test was used to explore between group differences in teacher-rated total difficulties scores and found there were no statistically significant between-group differences detected at post-test compared to pre-test ( $p = 0.356$ ). However, the Wilcoxon Signed-Rank Test identified a statistically significant within-group difference following participation in the mindfulness based intervention,  $z = -2.985$ ,  $p = 0.003$ . This suggests that participation in the mindfulness based programme produced an increase in teacher rated total difficulties scores.

Pro-social behaviour: The Mann-Whitney U Test was used to explore between group differences in teacher rated pro-social behaviour scores and found there was a statistically significant between-group difference ( $p = 0.040$ ). The Wilcoxon Signed-Rank Test revealed no statistically significant within group difference following participation in the mindfulness based intervention ( $z = -0.158, p = 0.876$ ).

<b>Measure (Teacher)</b>	<b>Non Parametric Test</b>	<b>Effect size (<i>r</i>)</b>	<b>Descriptive</b>
Total Difficulties	Mann-Whitney U	0.15	Small effect
	Wilcoxon Signed Rank	0.50	Large effect
Pro-Social Behaviour	Mann-Whitney U	0.34	Medium effect
	Wilcoxon Signed Rank	0.02	Small effect

**Table 4-13: A table to show the results for non-parametric effect sizes for teacher rated total difficulties and pro-social behaviour scores.**

### ***Summary of Teacher-Rated Social and Emotional Skills Investigation***

Within the teacher rated social and emotional skills investigation, the descriptive statistics indicated an increase in total difficulties scores in the experimental group and the control group between Time 1 and Time 2. There was also an increase in teacher-rated pro-social behaviour median scores in both the experimental and the control group between Time 1 and Time 2 (table 4-12). The inferential statistics indicated there were statistically significant differences within groups for teacher rated total difficulties and between groups for pro-social behaviour scores. Between group total difficulties and within group pro-social behaviour scores were not reported to be statistically significant. The results suggest that participation in the mindfulness based programme had a negative impact on teacher-rated total difficulties scores (i.e. the teachers reported pupils' social and emotional skills were worse at post-intervention).

### ***Parent rated scores***

#### **1. Group Equivalence**

Two separate independent samples t-tests were carried out on pre-intervention parent rated total difficulties and pro-social behaviour scores. The tests calculated that there were no statistically significant differences between

experimental and control groups at pre-intervention total difficulties scores [ $t(31) = 0.676, p = 0.504$ ] and no statistically significant differences between experimental and control groups at pre-intervention parent-rated pro-social behaviour scores [ $t(31) = 0.273, p = 0.786$ ]. These results suggest that the groups were equivalent at Time 1.

## 2. Normal Distribution

A visual inspection of histogram and box plot data identified a normal distribution in parent-rated pre-intervention total difficulties data in the experimental but not the control group (see Appendix 15). The distribution of data within both the experimental and the control group of teacher-rated pro-social behaviour pre-intervention scores suggested a violation of the normal distribution assumption (see Appendix 15). The Shapiro-Wilk statistic calculated that there were no statistically significant differences for total difficulties in the experimental group ( $p > 0.05$ ) but there were statistically significant differences within the control group ( $p < 0.05$ ) (see Table 4-12). The Shapiro-Wilk also identified that there were statistically significant differences between groups at pre-intervention pro-social scores for both the experimental and the control group ( $p < 0.05$ ). Skewness and kurtosis exceeded  $\pm 1$  in all but two groups which suggests that a number of the normal distribution assumptions have been violated.

Group		Shapiro-Wilk			Skewness	Kurtosis
		Statistic	DoF	Sig		
Total Difficulties	Experimental	0.946	18	0.371	1.067	0.235
	Control	0.831	15	0.010	1.820	-0.100
Pro-Social Behaviour	Experimental	0.820	18	0.003	-1.031	-1.040
	Control	0.766	15	0.001	-1.405	-1.006

**Table 4-14: A table to show the results from statistical tests establishing normal distribution for pre-intervention total difficulties and pro-social behaviour scores for parents.**

## 3. Homogeneity of variance

Levene's test for equality of variance did not produce statistically significant results ( $p < 0.05$ ) for either parent-rated total difficulties [ $F(31) = 0.001, p = 0.971$ ]

or pro-social behaviour [ $F(31) = 0.978, p = 0.330$ ] scores. This suggests that the assumption of homogeneity of variance was not violated, suggesting that parametric tests would be appropriate at statistical data analysis. However, there have been a number of assumptions within group equivalence and normal distribution that have been violated. Statistical data analysis for parent rated total difficulties and pro-social behaviour scores will therefore be carried out using non-parametric tests.

### ***Parent-Rated Social and Emotional Skills: Descriptive Statistics***

The descriptive statistics associated with non-parametric inferential tests (i.e. median, range) were calculated for the parent-rated total difficulties and pro-social behaviour scores (see Table 4-15). The descriptive statistics suggest that there was a decrease in parent-rated total difficulties median scores in the experimental group from Time 1 (13) to Time 2 (9). There was a slight increase in parent-rated total difficulties scores in the control group at Time 2 (10) compared with Time 1 (8). There was a slight decrease in median scores for parent rated pro-social behaviour at Time 2 (8.5) compared with Time 1 (9) in the experimental group and a slight decrease in median scores for parent-rated pro-social behaviour scores in the control group. These descriptive statistics indicate that there was a decrease in parent rated total difficulties scores following the mindfulness based intervention and a very slight decrease in parent-rated pro-social behaviour scores following the mindfulness based intervention.

<b>Parent Group</b>		<b>Time 1 Pre-Intervention Median (Range)</b>	<b>Time 2 Post-Intervention Median (Range)</b>
Total Difficulties	Experimental	13 (27)	9 (5)
	Control	8 (21)	10 (20)
Pro-Social Behaviour	Experimental	9(5)	8.5 (7)
	Control	9 (5)	8 (6)

**Table 4-15: A table to show the median and range scores for parent rated total difficulties and pro-social behaviour scores in the experimental and control groups across time.**

### ***Parent Rated Social and Emotional Skills – Non Parametric Tests***

Total difficulties: The Mann-Whitney U Test explored between group differences in parent-rated total difficulties scores and found there was a statistically significant between-group difference in parent rated total difficulties scores ( $z = -3.783$ ,  $p = 0.000$ ). The Wilcoxon Signed Ranks Test also identified there to be a statistically significant within group difference for parent-rated total difficulties scores following participation in the mindfulness intervention ( $z = -2.666$ ,  $p = 0.008$ ). This suggests that participation in the mindfulness based programme produced a decrease in parent rated total difficulties scores.

Pro-social behaviour: The Mann-Whitney U Test calculated that there were no statistically significant between group differences in parent-rated pro-social behaviour scores ( $z = -0.940$ ,  $p = 0.347$ ) and the Wilcoxon Signed-Rank Test revealed that there were no statistically significant within group differences in parent rated pro-social behaviour scores ( $z = -1.122$ ,  $p = 0.262$ ). This indicates that there were no statistically significant differences in parent-rated pro-social behaviour scores at post-intervention compared with pre-intervention.

<b>Measure (Parent)</b>	<b>Non Parametric Test</b>	<b>Effect size (<i>r</i>)</b>	<b>Descriptive</b>
Total Difficulties	Mann-Whitney U	0.65	Large effect
	Wilcoxon Signed Rank	0.46	Medium effect
Pro-Social Behaviour	Mann-Whitney U	0.16	Small effect
	Wilcoxon Signed Rank	0.19	Small effect

**Table 4-16: A table to show the results for non-parametric effect sizes for parent rated total difficulties and pro-social behaviour scores.**

### ***Summary of Parent-Rated Social and Emotional Skill Investigation***

The descriptive statistics for the parent-rated social and emotional skill investigation indicated changes in the median scores following the mindfulness based programme, showing a decrease in parent rated total difficulties scores in the experimental group but an increase in total difficulties scores in the control group. The descriptive statistics showed slight decreases in median scores for parent-rated pro-social behaviour scores in the experimental and the control group. The non-parametric statistical analysis found that there was a statistically significant difference in parent-rated total difficulties both between and within

groups. There were no statistically significant differences either between or within groups for parent-rated pro-social behaviour scores post-intervention.

#### **4.2.8 Summary of Quantitative Findings**

The findings suggested there were no statistically significant changes in participants' optimism or mindful awareness following participation in the mindfulness based intervention. Descriptive statistics for optimism and mindful awareness showed a very slight decrease in mean and median scores following the mindfulness based programme. The low statistical power of the current study limited the validity of the findings. Within the social and emotional skills investigation, there were statistically significant results found for pupil and parent rated total difficulties scores, suggesting that the mindfulness based intervention had a positive impact of pupil and parent reported total difficulties. However, the teacher rated total difficulties school highlighted a negative impact on total difficulties within the experimental group following participation in the mindfulness based intervention, suggesting that the mindfulness based intervention had a negative effect on teacher rated total difficulties scores. Overall, the quantitative findings suggest that participants' self-reported and parent reported social and emotional skills improved following the mindfulness based intervention. The teacher's reports of social and emotional skills highlighted a decrease in social and emotional skills within the experimental group following the intervention. See Chapter 5, Section 5.3.6 for possible explanations for this difference.

### **4.3 Qualitative Analysis**

#### **4.3.1 Approach to Data Analysis**

According to Braun and Clark (2006), a commonly used qualitative approach to data analysis within real-world research is thematic analysis. Thematic analysis involves identifying, analysing and reporting themes and patterns within qualitative data (Braun and Clarke, 2006). Thematic analysis is considered to be accessible and flexible and particularly useful within mixed methodology. Thematic analysis was used in the current study, with the aim of producing analysis of themes and codes in order to progress from data description to data

analysis (Braun and Clarke, 2006). Unfortunately, within the thematic analysis in the current study, inter-rater reliability checks were *not* carried out on the themes extracted from the qualitative data. Caution should therefore be taken in relation to the validity of the conclusions drawn. Thematic analysis was used in the current study in order to explore the research question:

*What are participants' perceptions of the mindfulness based  
intervention?*

Given that the thematic analysis was conducted as part of a mixed methodology within the current research, an essentialist epistemology was adopted for data analysis. An essentialist epistemology allows the researcher to theorise motivations, experiences and meanings at a surface-level, in a straight forward way (Braun and Clarke, 2006). This type of analysis does not involve in-depth interpretation because it relies on a simple relationship to be assumed between meaning, experience and language (Potter and Wetherell, 1987; Widdicombe and Wooffitt, 1995). Because of its simplicity, this type of basic thematic data analysis could limit the validity of the qualitative findings somewhat.

The thematic analysis within the current study identified themes based on their commonness within the data. The thematic analysis was conducted using the participant data from three focus group interviews. The data from each three groups was combined for analysis. The researcher scribed the pupil's responses during the focus groups and this provided the raw data for the qualitative, thematic analysis (Appendix 16). As mentioned previously, the thematic analysis was part of a mixed-methods research design and as such, the interpretation of the qualitative data intended to support the findings from the quantitative research strand and facilitate data triangulation. In order to support the researcher in conducting the thematic analysis, Braun and Clarke's (2006) six-step process was followed.

1. Familiarise yourself with the raw data (Appendix 16)
2. Generate the initial codes (Appendix 17)
3. Search for themes
4. Review themes
5. Define and name themes

## 6. Write a report

### **4.3.2 Reporting Thematic Analysis**

Three focus groups were undertaken, each group containing 8 participants. Participants' perceptions of the mindfulness based intervention were explored using three questions:

1. What did you like about the mindfulness based intervention
2. What did you not like about the mindfulness based intervention
3. Do you think anything has changed for you since the mindfulness based intervention and if so, tell me about that...

A thematic analysis was carried out on each question. The participants' responses from all three groups were combined, with one analysis linked to each question. The thematic analyses carried out on each question are presented below. For each question, a thematic table is presented which shows initial themes, subthemes and initial codes. A discussion is then presented around the themes and subthemes and the examples of data that fall within these. A summary of the qualitative analysis is then presented.



Question 1	Themes	Subthemes	Initial Codes
What did you like about the mindfulness based intervention?	The sensory experience	Taste Smell Hearing Movement	Food Tasting Smell Hearing Movement
	Social awareness	Perspective taking Decision making Thinking differently Self-awareness	Different perspectives Saying opinions Making right choices Thinking more Thinking differently Learning about brain
	Participation	Active Interactive Variety Having fun	Active Interactive Not just learning one thing Fun

Figure 4-1: Thematic Map for Question 1: What did you like about the mindfulness based intervention?

**Question 1: What did you like about the mindfulness based intervention?  
(See Figure 4-1)**

**Theme 1: The sensory experience**

The most common theme that arose from this question involved the ‘sensory experiences’ that participants reported of the mindfulness based intervention (Appendix 17).

**i. Taste**

*‘Food tasting because got to try foods that really like and some that thought didn’t like’ (Pupil D)*

*‘The foodies because we hadn’t tasted them for so long and then when we tasted them after waiting for so long the flavours exploded in our mouths!’ (Pupil S)*

*‘Mine was when we were eating chocolate because it was tasty’ (Pupil A)*

*‘I enjoyed it when we did mindful tasting’ (Pupil W)*

*‘I liked the tasting’ (Pupil C)*

**ii. Smell**

*‘I liked the food and the smelling. We got to smell all kinds of stuff and it helped me to think more when I smell’ (Pupil M)*

*‘I liked it when we were smelling different pots because I could sense different information of what we were smelling’ (Pupil G)*

**iii. Hearing**

*‘I liked the part when we did all the hearing’ (Pupil T)*

**iv. Movement**

*‘I liked the movement activities’ (Pupil U)*

**Theme 2: Social Awareness**

Participants spoke about how they liked that the intervention helped them to think about things differently, from a different perspective and make different choices. Participants also mentioned how the mindfulness based intervention helped them to be more aware of what happens in their brain.

**i. Perspective taking**

*'I liked the bit when we read the books because we learnt about different perspectives and learnt how to know what to do in different situations'* (Pupil N)

**ii. Decision making**

*'I enjoyed that we all got to say our opinions, linked to everyday and it helped us to make the right choices'* (Pupil K)

**iii. Thinking differently**

*'It was fun and relaxing and made me think more'* (Pupil A)

*'I liked how it was different and it was interactive and made you think more differently about things'* (Pupil F)

**iv. Self-awareness**

*'Mine was the first session when we learnt about the brain because I learnt about the parts of the brain and what happens when I fight freeze and flight'* (Pupil O)

*'I liked learning about the brain and learning about what the different parts do'* (Pupil H)

### **Theme 3: Participation**

Some of the participants within the focus groups spoke about their participation and involvement in the sessions. They spoke about particular elements of their participation in the mindfulness based intervention that they liked.

**i. Active**

*'I enjoyed the activeness in the lessons instead of just sitting at a table and working'* (Pupil C)

**ii. Interactive**

*'I liked how the sessions were hands on and very interactive'* (Pupil R)

*'I liked that it was interactive instead of everyone just sitting in a circle and listening'* (Pupil B)

**iii. Variety**

*'You made it fun and it wasn't just one thing we were learning about'*  
(Pupil G)

**iv. Having fun!**

*'I actually liked everything. It was really fun!'* (Pupil V)

*'It was fun!'* (Pupil B)

## **Summary**

The dominant themes within question 1 arguably reflected the key components of mindfulness (sensory experiences) and social and emotional skills (in relation to social and self awareness). Further themes highlighted that participants appeared to enjoy the sensory experiences of the mindfulness based intervention as well as the interactivity of the intervention and the fact that it helped them to think more about different situations. This suggests that participants' overall perception of the mindfulness based intervention was one of enjoyment and engagement with the activities. Additionally, themes around social awareness appeared to be quite a prominent response from participants, suggesting that participants experienced more social and self awareness as a result of the intervention. These themes highlight, on a superficial level, that participants enjoyed the practical element of the intervention and learning about their senses.

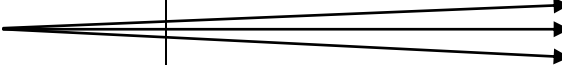

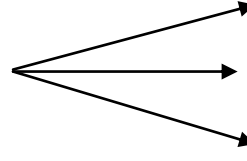

Question 2	Themes	Subthemes	Initial Codes
What did you <i>not</i> like about the mindfulness based intervention?	Brain awareness		Knowing about brain Controlling emotions Mindfulness
	Feelings triggered	 Emotional —————> Physical —————>	Personal Feeling sick
	Participation	 Moving around —————> Writing —————> Curriculum —————>	Mindful movement Didn't do games Sitting still for ages Writing Part of our lessons
	Nothing		Nothing

Figure 4-2: Thematic Map for Question 2: What did you not like about the mindfulness based intervention?

**Question 2: What did you not like about the mindfulness based intervention? (See figure 4-2)**

### **Theme 1: Brain-awareness**

Some participants discussed either wanting to know more about their brain or not enjoying learning about their brain.

*'First day, all knowing about the brain. It would have been good to have expanded on that and know more about controlling our emotions'* (Pupil N)

*'I would have liked there to have been more ways for us to think about mindfulness because some things are hard'* (Pupil F)

*'The first one – I didn't like learning about the brain.'* (Pupil A)

### **Theme 2: Feelings Triggered**

Some participants said that they didn't like the intervention because of the feelings that it triggered.

#### **i. Emotional**

*'I didn't like it as much because it was very personal and I didn't like that. Sometimes it was too personal'* (Pupil B)

#### **ii. Physical**

*'The first one because it made me feel sick when we saw the brain poster'* (Pupil C)

### **Theme 3: Participation**

Participation in the sessions within the intervention was quite a common theme within this question. Two participants mentioned not liking the movement sessions in particular and another participant would have liked to do more games outside.

#### **i. Moving around**

*'I didn't like the mindful movement.'* (Pupil W)

*'I didn't really like the movement one. It wasn't that fun.'* (Pupil V)

*'I didn't like that we didn't do a lot of games and couldn't go out more'. (Pupil K)*

*'I didn't like sitting still for ages' (Pupil L)*

**ii. Writing**

*'I didn't like it when we were reading the books because it was boring and there was more writing' (Pupil M)*

**iii. Curriculum**

*'I didn't like that it didn't continue! I would have liked it to be part of our lessons'. (Pupil C)*

**Theme 4: Nothing**

Several participants reported that there wasn't anything that they disliked about the mindfulness based intervention.

*'I can't think of anything' (Pupil G)*

*'I really don't know' (Pupil R)*

*'Nope' (Pupil T)*

*'I don't know it was too good' (Pupil S)*

*'I can't think of anything' (Pupil G)*

*'I don't know' (Pupil L)*

*'Nothing' (Pupil H)*

*'I liked everything!' (Pupil U)*

**Summary**

A large number of participants did not identify anything that they didn't like about the mindfulness based intervention suggesting that participants generally perceived it to be a positive experience. There were some participants who discussed the intervention in relation to the brain, and that they would have liked to have learnt more about mindfulness and how they could use it to control their emotions. One participant discussed how the mindfulness based

intervention was very personal at times and this suggests that the intervention was experienced on a more emotional level. There was also a common theme around participation in the mindfulness based intervention. One participant expressed a desire for there to be more games in the sessions and another spoke about not enjoying 'reading the books' because of the amount of writing that was involved. One participant expressed that they wanted the sessions to be part of their lessons, and they didn't like that the sessions were going to stop.



Question 3	Themes	Subthemes	Initial Codes
Do you think anything has changed for you since the mindfulness based intervention? If so, tell me about that...	Improved awareness	Social awareness → Sensory awareness → Self-awareness →	Points of view/perspective Eating Movement Balance Brain smarter
	Relationship Skills	→	Friendships
	Managing emotions	→	Calming down Controlling anger Breathing
	Altered thinking	→	Brainstorming Thinking More mindful Optimistic
	Nothing	→	Nothing

Figure 4-3: Thematic Map for Question 3: Do you think anything has changed for you since the mindfulness based intervention and if so, tell me about that...

**Question 3: Do you think anything has changed for you since the mindfulness based intervention? If so, tell me about that... (See figure 4-3)**

### **Theme 1: Improved awareness**

The most common theme involved participants talking about areas of awareness that had improved over the course of the intervention.

#### **i. Social awareness**

*'I think more about other people more and their points of view'* (Pupil F)

*'A bit has changed. I think about other people's perspective more but I didn't before'* (Pupil W)

#### **ii. Sensory awareness**

*'I try to do more mindful eating. Before I'd eat food without caring but now I eat more slowly so I can taste it all'* (Pupil V)

*'I don't think anything has changed for me except the movement session was good because it helped me to be more aware of my body. When you talked about pressure on our feet when we were balancing I noticed it more and so now I notice more when my body is hurting.'* (Pupil M)

*'I am better at balancing. Before I couldn't balance at all but now I have come in first in a balancing competition!'* (Pupil S)

#### **iii. Self-awareness**

*'For me, I'm smarter with my brain'* (Pupil O)

*'Whenever I have a certain emotion I think about which part of my brain is working'* (Pupil G)

*'My mind gets changed – first I didn't know about my brain but now I do!'* (Pupil U)

### **Theme 2: Relationship Skills**

Participants talked about improvements in their friendships following the intervention

*'I'm better with my friends.'* (Pupil A)

*'I made more friends!'* (Pupil H)

### **Theme 3: Managing emotions**

Participants also talked about the intervention helping them to control their emotions better and calm down.

*'You helped me to stop laughing and taught me to calm down'* (Pupil N)

*'I find it easier to make the right decisions and calm down'* (Pupil K)

*'I know how to calm down a little better'* (Pupil L)

*'Before I would be more angry but now I think more about what I'm doing and feel like I can control that'* (Pupil C)

*'I think nothing has changed for me except the laughing when doing the breathing. You helped me to stop laughing and taught me to calm down.'*  
(Pupil N)

### **Theme 4: Altered Thinking**

Some participants talked about how the intervention had helped them to think differently.

*'I think yeah. Usually at home I've stopped doing certain things I did before. I've started helping out more when before I would forget to do things like the dishwasher.'* (Pupil D)

*'Everything has changed for me and the way I think.'* (Pupil G)

*'Kind of my brainstorming has changed.'* (Pupil C)

*'I'm more mindful about what I do.'* (Pupil A)

*'What has changed for me is I'm starting to think more optimistically. Before I worried more about things at the start but now I think better and more optimistically'* (Pupil G)

### **Theme 5: Nothing**

Some participants did not report any changes since the mindfulness based intervention.

*'I don't know'.* (Pupil R)

*'None of the sessions changed me'.* (Pupil T)

*'No'.* (Pupil Y)

## **Summary**

Participant responses to the final question about change appeared to be more varied than for the other questions. This perhaps suggests that the mindfulness based intervention produces many different outcomes in relation to differing individual needs. Dominant themes indicated perceived improvements in social and self awareness, as well as improvements in relationship skills and managing emotions. These reflect some of the competencies outlined within social and emotional learning (CASEL, 2016), suggesting that the mindfulness based intervention helped participants to be better at recognising their emotions and understanding different perspectives. Further themes of thinking differently and managing emotions reflected participants' positive experiences of managing their emotions and having improved relationships following the intervention. The theme of altered thinking was an interesting one; suggesting that some participants experienced changes in how they think about things; which indirectly and arguably could suggest that participants are thinking more mindfully about things, without being fully aware of or fully understanding it.

### **4.3.3 Summary of Qualitative Findings**

The findings from the thematic analysis suggest that pupils generally perceived the mindfulness based intervention to be a positive experience. The mindfulness based intervention led to positive sensory experiences, where many participants enjoyed the sensory sessions where they were able to taste, smell, hear and touch things in a different and more positive way. Participation in the mindfulness based intervention also appeared to lead to participants' improved experiences with friendships as well as an increased awareness of different perspectives, and a deeper understanding of their brain. Importantly, several participants also reflected on feeling 'more mindful' and aware of their bodies. This suggests that participants appeared to perceive the mindfulness based intervention at a more personal level in relation to the personal changes

(increased self and social-awareness) that they reportedly experienced. These conclusions, whilst aimed to enhance the quantitative findings, should be used tentatively given the methodological limitations of the approach to qualitative data analysis discussed earlier in this chapter. The implications of these findings will be discussed in more detail in Chapter 5.

## **4.4 Summary of Results**

### **4.4.1 Quantitative Results**

**Research Question 1:** Does participation in a mindfulness based intervention have an impact on the mindful awareness of primary school children in year 5?

**Findings:** The quantitative analysis found there were no statistically significant within or between group differences in participant's mindful awareness scores over Time 1 and Time 2. Descriptive analyses suggested a slight decrease in mindful awareness scores over time in both the experimental and the control group.

**Research Question 2:** Does participation in a mindfulness based intervention have an impact on the optimism of primary school children in year 5?

**Findings:** The quantitative analysis found that there were no statistically within or between group differences in participants' optimism scores across Time 1 and Time 2. The effect size was calculated at 0.31 indicating a medium effect. Descriptive statistics identified a slight change in optimism scores from Time 1 (pre-intervention) to Time 2 (post-intervention) in both the experimental and the control group.

**Research Question 3:** Does participation in a mindfulness based intervention increase pupil rated social and emotional skills in Year 5 children at a mainstream Primary School?

**Findings:** The quantitative findings found there to be no statistically significant differences between groups. There were, however, statistically significant differences within groups in pupil rated 'total difficulties' scores across Time 1

and Time 2. Descriptive statistics also showed a decrease in total difficulties scores in the experimental group and a small decrease in the control group.

There were no statistically significant differences found either between or within groups in pupil rated pro-social behaviours scores across Time 1 (pre-intervention) and Time 2 (post-intervention). Descriptive statistics also showed there to be no changes in mean scores for both the experimental and control group between Time 1 and Time 2.

**Research Question 4:** Does participation in a mindfulness based intervention increase teacher rated social and emotional skills in Year 5 children at a mainstream Primary School?

**Findings:** No statistically significant differences were found between groups for teacher rated total difficulties scores. Significant differences were found within groups for teacher rated total difficulties scores between Time 1 and Time 2. Descriptive statistics indicated an increase in total difficulties scores in both the experimental and the control group suggesting that teacher rated total difficulties scores increased in both groups following participation in the mindfulness based programme. Cohen's  $r$  calculated the effect size as being small.

A statistically significant between group differences was found for teacher rated pro-social behaviour scores but a statistically significant difference was not found for within group differences for teacher rated pro-social behaviour scores. Descriptive statistics showed an increase in median scores for teacher rated pro-social behaviour in both the experimental and the control group; although the change for the control group was larger than for the experimental group. The effect size was calculated as medium.

**Research Question 5:** Does participation in a mindfulness based intervention increase parent rated social and emotional skills in Year 5 children at a mainstream Primary School?

**Findings:** There were statistically significant differences found between and within group differences for parent rated total difficulties scores from Time 1 to Time 2. Cohen's  $r$  calculated a medium effect. Descriptive statistics showed a

decrease in parent rated total difficulties scores in the experimental group and an increase in the control group.

There were no statistically significant within or between group differences found for parent rated pro-social behaviour scores. Descriptive statistics indicated small decreases in pro-social behaviour in both the experimental and the control group.

#### **4.4.2 Qualitative Results**

**Research Question 6:** What are pupils' perceptions of the mindfulness based intervention?

**Findings:** The dominant themes in response to the focus group questions tentatively suggested that:

- Participants appeared to enjoy the intervention as a sensory experience.
- Participants appeared not to like some of the participation opportunities in the mindfulness based interventions or that the intervention was not part of their lessons.
- Participants expressed increased feelings of social and self awareness following the intervention including thinking more about other people's points of views and knowing more about their brain in relation to different emotions.

Participants appeared to perceive the mindfulness based intervention as a positive experience with increased social awareness, improved relationships and altered thinking being dominant themes. Chapter 5 discusses the interpretation of the current results in more detail.

## 5 Discussion

### **5.1 Introduction**

The purpose of the current study was to evaluate the impact of a mindfulness based intervention on primary school children's optimism, social and emotional skills and mindful awareness. The discussion will now present an interpretation of the findings in relation to the existing literature, as outlined in Chapter 2. The strengths and limitations of the current mixed-method methodology are then discussed, with research design, measurement tools and sampling procedures all falling within this section. The reliability and validity will then be discussed in relation to the application and generalisation of the findings. Finally, implications for the findings of the current study are discussed in relation to Educational Psychologists (EPs), schools and Local Authorities (LAs) practice. Future research is considered in relation to this as well as professional practice for local authorities, schools and educational psychologists (EPs).

### **5.2 Summary of Findings**

Within the current study, the Child and Adolescent Measure (CAMP) and Resiliency Scales for Children and Adolescents (RSCA) measures failed to identify a statistically significant impact of the mindfulness based intervention on mindful awareness or optimism. The Strengths and Difficulties Questionnaire (SDQ) provide tentative findings to suggest that pupils and parents perceived a decrease in total difficulties scores following the mindfulness based intervention, whereas the teachers perceived there to be an increase in total difficulties scores following the intervention. The SDQ also identified an increase in teacher rated pro-social behaviour scores between groups but failed to identify any other statistically significant impact on pro-social behaviour scores of either pupils or parents. Overall, the low statistical power of the current study could account for some of the non-significant findings within mindful awareness and optimism (Field, 2009). However, despite the low statistical power, there were still some statistically significant results which suggest that the mindfulness based intervention did have an effect on pupil and parent rated social and emotional skills. It is important to note that the quantitative findings may be



limited by the low statistical power of the study as well as a small sample size, resulting in sampling error (Field, 2009; Pallant 2013).

The qualitative findings tentatively suggest that participants perceived the mindfulness based intervention to be a sensory experience, arguably shedding light on the fundamental concepts underpinning mindfulness; in that observing their senses can help them to improve attention, memory and relationships (Kabat-Zinn et al, 1985). Participants also reported improvements in their friendships, despite the quantitative findings not highlighting any significant impact on pupil rated pro-social behaviour, as well as a better understanding of their emotions and the perspectives of others. These might reflect core aspects of what mindfulness aims to promote in relation to social and emotional skills (CASEL, 2016). Possible explanations for these findings will now be considered and interpreted below, in relation to the existing theory and research.

### ***5.3 Linking Quantitative Findings to Existing Research***

#### ***5.3.1 Mindful Awareness Findings***

The current findings suggest that participation in a mindfulness based intervention did not have a statistically significant impact on the mindful awareness of children in a Year 5 class, as measured by the Child and Adolescent Mindfulness Measure (Greco and Baer, 2006). One possible explanation for this finding is that participation in the mindfulness based intervention did not have any impact on participants' mindful awareness. However, previous research into the area suggests that there might be other explanations. For example, the current study's non-significant findings provide support for Lau and Hue's (2011) study (refer to Table 2-1). They reported non-significant findings in relation to mindful awareness scores following a mindfulness based intervention. They also highlighted the significant impact that their study's small sample size and low statistical power may have had on the findings. It is therefore possible that the lack of significant findings in relation to mindful awareness in the current study could be a reflection of the small sample size and the low statistical power (Lau and Hue, 2011). The findings of the current study also contradict much of the research into mindfulness, where

changes to mindful awareness were observed following a mindfulness based intervention (Schonert-Reichl et al, 2015; Edwards et al, 2014; refer to Table 2-2). This suggests that there may have been some alternative explanations for why there were no statistically significant changes observed in mindful awareness scores. These will now be discussed.

### **5.3.2 Mindful Awareness - Other Possible Theoretical Explanations**

The lack of statistically significant findings in relation to mindful awareness could be explained in other ways. These include the intervention period, integrity of intervention, and the differential selection of participants.

#### **Intervention Period**

The mindfulness based intervention ran for 12 weeks. It is possible that no statistically significant results were found for mindful awareness because the intervention period was not long enough to observe any changes in this area. This could be further highlighted by Kabat-Zinn et al (1985) who emphasised that mindfulness should not be a standalone intervention but a lifelong practice. Flook et al (2010) also suggested that increased mindful awareness was cultivated through repetition and continuous practice. It is therefore possible that the 12-week intervention period in the current study was not a long enough period of time for statistically significant changes to be observed in either mindful awareness scores.

#### **Integrity of the Intervention**

The mindfulness based intervention was run by the researcher on a weekly basis for 12 weeks. In addition to the main session each week, the Year 5 class teacher in the mindfulness group was encouraged to integrate the core aspects of each of the sessions into the wider main classroom in order to 'connect to the curriculum' and link each lesson to content-area learning to reinforce and reflect on the learning of each lesson (The Hawn Foundation, 2011). The researcher did not ask the class teacher to complete an integrity checklist in between sessions which could limit the validity of the findings. This could also account for the lack of significant findings for mindful awareness in the current study because the possible lack of integrity to treatment could create threats to the

internal validity of the current study. This is because the intervention was not implemented as fully intended (Mertens, 2010; The Hawn Foundation, 2011).

### **Differential Selection**

It is possible that the non-significant results for mindful awareness scores could relate to the initial differences between the experimental and the control group at Time 1 (pre-intervention), known as differentiation of selection (Campbell and Stanley, 1963; Mertens, 2015). The results indicated that at pre-test, the mindful awareness scores were higher in the experimental group compared with the control group. This suggests that participants in the experimental group were already more 'mindfully aware' than those in the control group. Therefore the lack of significant differences in mindful awareness could relate to the initial differences between groups at pre-test rather than the effectiveness of the intervention itself in that there would have had to have been even more of an impact on mindful awareness in the experimental group in order for statistically significant differences to have been observed (Greco and Baer, 2006).

### **5.3.3 Optimism Findings**

The current study suggested that participation in a mindfulness based intervention did not have a statistically significant impact on pupils' optimism, as measured by the optimism subscale in the Resiliency Scales for Children and Adolescents measure (Prince-Embury, 2006). It is possible that the reason for these findings is because participation in a mindfulness based intervention does not have a statistically significant impact on levels of optimism. However, this would appear to contradict some of the previous research findings (Schonert-Reichl et al, 2010; Schonert-Reichel et al, 2015, refer to Table 2-2) where mindfulness based interventions have led to an increase in levels of optimism. It may therefore be likely that there are other explanations as to why changes to optimism were not observed in the current study.

Importantly, whilst some studies explored the impact that mindfulness has specifically on 'optimism' as an outcome (Schonert-Reichl et al, 2010; 2015), other studies looked more generally at 'well-being' (Huppert and Johnson, 2010, Lau and Hue, 2011) and 'social and emotional skills' (Beauchemin,

Hutchins and Patterson (2008) which, as demonstrated in much of the previous literature, often form the umbrella term for competencies which include 'optimism' (Weare, 2004; Dweck, 2006; CASEL, 2016). This variation of concepts can make it difficult to compare the different studies in relation to optimism as a specific, individual outcome rather than within a cluster. This raises important implications for future research, which might strive to enhance the research that looks specifically at the role of optimism following mindfulness based interventions (Schonert et al, 2015).

#### ***5.3.4 Optimism Findings - Other Possible Theoretical Explanations***

The lack of statistically significant findings in relation to optimism scores could be explained in relation to the above explanations; intervention period, integrity of intervention, and the differential selection of participants. However, another possible and important explanation for the non-significant finding may relate to the effect size calculated for optimism. The effect size for the optimism findings was calculated at being 0.31 which indicates a 'medium' effect. This suggests that an effect may have been present within the optimism findings despite the fact that it was not identified at significance (Field, 2009). This could suggest that other factors may have affected the significance of the optimism finding, such as small sample size, low statistical power or questionnaire measure and it may therefore be possible that participation in the mindfulness based intervention increased the likelihood of type 2 error it is also possible that the intervention did have an effect on participants' optimism but the small sample size meant that it couldn't be detected. This raises important implications in relation to the 'non-significant' finding for optimism since the null hypothesis could be wrongly accepted due to Type II errors. It should therefore be acknowledged that the mindfulness based intervention is likely to have impacted on levels of optimism had the sample size been larger. This highlights tentative findings in relation to the benefits of mindfulness based interventions on levels of optimism.

#### ***5.3.5 Social and Emotional Skills Findings***

The current findings provide some evidence to suggest that participation in a mindfulness based intervention led to decreases in pupil and parent rated 'total

difficulties' but increases in teacher rated 'total difficulties', as measured by the SDQ (Goodman, 1997). The findings also suggest that participation in a mindfulness based intervention did not have a statistically significant impact on pupil or parent rated pro-social behaviour scores but that there was a statistically significant difference in teacher-rated between group differences, as measured by the SDQ (Goodman, 1997). The current findings therefore provide some support for previous studies, which have demonstrated positive effects on social and emotional skills (Beauchemin et al, 2008; Schonert-Reichl, 2010, 2015; Flook et al, 2015) following participation in a mindfulness based intervention. However, the findings also contradicted some existing research whereby participation in a mindfulness based intervention found no significant differences to social and emotional wellbeing (Hennelly, 2011). The findings suggest that, despite there being low statistical power in the current study, the mindfulness based intervention still highlighted some statistically significant changes to pupil, teacher and parent rated social and emotional skills, as measured using the SDQ (Goodman, 1997).

The current findings relate to Huppert and Johnson's (2010) findings that improvements to wellbeing were dependent on the amount of additional practice that participants participated in. Huppert and Johnson's (2010) intervention was only 4 weeks but improvements to wellbeing were more observable in participants who practiced more often than those who did not. This suggests that the amount of practice that participants are involved in has an impact on the effectiveness of the intervention. It is possible the length of the intervention in the current study was sufficient enough to provide some tentative evidence to suggest the mindfulness based intervention had an impact on certain areas within social and emotional skills. The findings also highlight Kabat-Zinn et al (1985) and Flook et al's (2010) findings, suggesting that practicing mindfulness based approaches on a more long-term basis may provide more obvious positive outcomes. This suggests that factors such as the length of the intervention as well as the amount of participant practice impacts on the results. Within the current study, participants were encouraged to complete the 'core practice' three times a day in addition to weekly sessions, which could reflect

some of the statistically significant findings in relation to social and emotional skills in the current study (Huppert and Johnson, 2010).

### **5.3.6 Other Possible Theoretical Explanations**

There may be some other explanations for the social and emotional skills findings in the current study including differential selection, extraneous variables, regression to the mean and the aims of the intervention.

#### **Differential selection**

It is possible that differential selection had an impact on the statistically significant findings within pupil and parent rated overall difficulties scores (Campbell and Stanley, 1963). This is because, for both pupil and parent rated total difficulties scores, participants in the experimental group were significantly higher than participants in the control group at Time 1 (pre-intervention). This shows that participants in the experimental and control groups did not have the same level of social and emotional skills at pre-test which could suggest that they weren't equal in their social and emotional skills to start with. If participants in the control group were lower than the participants in the experimental groups at pre-test, this might suggest that any changes to social and emotional skills and post-test were more noticeable in the experimental than in the control group, highlighting the importance of ensuring that groups are equivalent at pre-test. Future research might aim to control for this by matching groups in the experimental and the control groups. Teacher rated total difficulties scores presented similar median scores at pre-test, which were quite low in comparison to pupil and parent rated scores. This could further highlight the importance of differential selection (Campbell and Stanley, 1963) at pre-test in the current study because the ratings in the experimental and control groups across pupil, teacher and parent rated scores varied.

#### **Extraneous variables**

Teacher rated total difficulties scores found a statistically significant difference at Time 2. The median teacher-rated scores suggest that there was an increase in total difficulties at Time 2 in both the experimental and the control group suggesting that teachers perceived pupils' social and emotional skills to

decrease following the intervention. One possible explanation for this finding may relate to variables outside of the researchers control (Stanley and Campbell, 1963; Mertens, 2015). For example, the intervention finished in December and teacher rated scores were gathered before participants broke up for the Christmas holidays. It is possible that teacher rated scores showed an increase because participants were more excitable than usual given the time of year or the teachers' tolerance was lower due to stress and tiredness. The findings might also refer to Durlak et al's (2011) findings in relation to the demands and pressures that teachers are under in schools at the moment (DfE, 2016). It is possible, that at post-test, the class teachers in the experimental and control group were experiencing pressures and demands from within the school curriculum and this impeded on their stress resilience and behaviour tolerance which resulted in an increase in teacher rated total difficulties at Time 2. This would suggest that the increase in teacher rated total difficulties scores could be related to external variables rather than the effectiveness of the intervention itself. Future research might explore teacher-rated scores at a follow up time to identify any further changes in scores.

### **Regression to the Mean**

In the pupil and parent rated total difficulties scores, the median scores reflected a decrease at Time 2. These changes in the total difficulties scores may have reflected a natural regression to the median or the maturation of participants (Campbell and Stanley, 1963) and a general improvement in social and emotional skills as pupils became more settled in their class rather than because of the intervention itself. If this was true, observations of the descriptive statistics would be reflected in both the experimental and control group for parent and pupil rated 'total difficulties'. There was a decrease observed for median scores in both the experimental and control group for pupil rated scores and in parent rated scores in the experimental group. For pupil rated scores, the fact that there was also a slight decrease in total difficulties in the control group, suggests that whilst there might have been a slight improvement in social and emotional skills within both groups over time, the mindfulness intervention may have further impacted on the pupil-reported social and emotional skills at Time 2 within the experimental group. Parent rated total difficulties scores observed a

decrease in difficulties at Time 2 in the experimental group and an increase in difficulties at Time 2 in the control group. This might suggest a positive influence of the mindfulness intervention on both pupil and parent rated social and emotional skills in the experimental group.

### **Aims of MindUP**

A possible explanation for the observed significant positive changes in social and emotional skills in the current study might relate to the aims of the mindfulness intervention in the current study. The MindUP Curriculum (The Hawn Foundation, 2011) aims to promote the development of children's social and emotional skills based on a theoretical evidence base. The significant results in relation to pupil rated and parent rated social and emotional skills may therefore reflect the underlying aims of the intervention thereby providing evidence to suggest that the intervention can provide some tentative positive outcomes on a UK population. The fact that pro-social behaviour scores did not observe any statistical significance may reflect the length of the mindfulness intervention rather than how effective it was.

### **Maturation of participants**

There were no statistically significant changes to pro-social behaviour scores for pupil or parent rated scores but there was a statistically significant difference reported between groups for Teacher rated pro-social scores. A possible explanation for the lack of significant findings for within group pro-social behaviour scores for teacher rated scores might reflect potential maturation of participants over the course of the 12 week intervention period. It is possible that the non-significant findings for teacher rated within group pro-social behaviour scores could relate to the maturational changes within both the experimental and the control group (Campbell and Stanley, 1963). This might explain why an increase was observed in median scores in both the experimental and control group. This suggests that the increases in scores may reflect the fact that participants in both groups generally improved their pro-social behaviour, possibly as a result of improved relationships over time, regardless of the mindfulness based intervention. It may also highlight the influence of experimental treatment diffusion (Campbell and Stanley, 1963;



Mertens, 2015) for participants in the control group where changes in pro-social behaviour within the experimental group influenced and impacted on the behaviour of participants in the control group. This could be highlighted by the control teacher's pro-social behaviour scores, which were significantly higher at Time 2 than Time 1. This could suggest that factors outside of the mindfulness based intervention may have contributed to the increase in teacher rated pro-social behaviour scores, such as regression to the mean or experimental treatment diffusion (Mertens, 2015).

## ***5.4 Linking Qualitative Findings to Existing Research***

### ***5.4.1 Interpretation of Qualitative Findings in Relation to Existing Research***

The current qualitative findings suggest that participants reported positive perceptions of the mindfulness based intervention and also perceived it as a sensory experience specifically in light of the tasting, hearing, smelling and seeing sessions within the intervention. The validity of the qualitative findings is limited somewhat by the nature of the surface level thematic analysis that was used during the data analysis phase. Interpretation of the findings should therefore be considered tentatively in light of this limitation.

Arguably, several prevalent themes that emerged from participants' comments during the focus groups will relate to findings within previous research surrounding mindfulness based interventions. For example, Webster-Stratton, Reid and Hammond (2004) found that the participants reported feeling more aware of their emotions and better able to calm themselves down following a mindfulness based intervention. Participants also reported improvements with friendships. This could suggest that the mindfulness based intervention in the current study strengthened participants' capacity to regulate their emotions and make meaningful relationships. This links to previous quantitative findings highlight the benefits of integrating both quantitative and qualitative findings when exploring and evaluating intervention efficacy. Moreover, it highlights how qualitative findings may be used to support quantitative findings to inform further investigations, particularly where quantitative findings do not find any

statistically significant differences. In the current study, the quantitative findings did not show any statistically significant improvements to within group pro-social behaviour scores but the qualitative findings suggested that participants perceived that they had experienced improvements in their friendships following the mindfulness based intervention.

The qualitative findings suggest that participants in the experimental group viewed the mindfulness based intervention as a positive experience in which they experienced changes in self-awareness and social awareness. This could arguably highlight the underpinning principles within mindfulness. Comparison with the qualitative findings in the existing literature should be made tentatively because of the vast variation in sample size. There was also a variation in the qualitative methods used within the existing literature (Hennelley, 2011; Bernay et al, 2016; Costello and Lawler, 2014) which may limit the transferability of findings to different contexts. Nevertheless, the qualitative findings of the current study relate to the findings of Costello and Lawlor (2014) who reported participants' felt there had been improvements in self-regulation in relation to 'feeling calmer'. In the current study's qualitative findings participants also reporting feeling calmer and more able to 'calm down'. This provides tentative evidence to suggest that participants felt calmer and better able to manage their emotions and behaviour as a consequence of participation in the mindfulness based intervention.

### ***5.5 Summary of Mixed Methods Findings***

The quantitative findings have presented mixed results which could be interpreted in different ways. Overall, the findings suggest that the mindfulness based intervention did not have a statistically significant impact upon participants' mindful awareness but may have led to a statistically significant impact on pupil and parent rated social and emotional skills. There may also have been an impact on optimism scores, but the current study was unable to identify any at significance level, perhaps because of small sample size. The existing research surrounding the impact of mindfulness based interventions on a variety of different outcomes also highlight some ambiguous findings which

suggests that the current findings both support and challenge existing evaluation research. It is important to make cautious and tentative inferences from the current findings because the study has low statistical power and a small sample size identified. In addition, the experimental and control group were not always 'equal' in the outcome measures at pre-intervention.

The qualitative findings suggest that participants perceived the mindfulness based intervention to be a positive experience and identified feelings of improved self and social awareness following the intervention. However, these findings should be viewed tentatively in view of the surface-level thematic analysis. Nevertheless, these findings reflect themes presented in previous quantitative (Webster-Stratton and Reid's, 2004) and qualitative (Costello and Lawlor, 2014) research which highlight some of the themes that emerged from mindfulness based interventions. The current findings will now be explored in relation to the strengths and limitations of the current research design.

### ***5.5.1 Strengths and Limitations of the Current Methodology***

The methodology used in the current study affects the validity of the current findings. A review of the strengths and limitations of the current methodology will now be presented in order to explore the reliability and validity of the findings. An evaluation of the research design, sampling procedures, measurements tools and the intervention itself will now be considered in relation to the reliability and validity of the findings of the current study.

### **Mixed Methods Research Design**

The current study employed a mixed methods research design in order to evaluate the impact of a mindfulness based intervention of pupil's social and emotional skills, optimism and mindful awareness. Quantitative and qualitative measures were used in order to facilitate this evaluation. The mixed methodology in the current study could potentially be viewed as a strength because it allowed the researcher to evaluate a mindfulness based intervention using quantitative methods whilst also gaining the views of the participants' experiences of the intervention. The qualitative data was viewed as an

opportunity to enhance and triangulate the quantitative findings. Within the existing literature, there have been few mixed methods research studies carried out in the UK.

### **Quantitative Research Design**

The quantitative research strand in the current study adopted a quasi-experimental design which, as highlighted by Cohen et al (2009) are more applicable to real life settings. However, the external validity of the current study is limited somewhat by the fact that participants were not randomly allocated to the experimental and control groups in the quantitative research strand (Robson, 2002; Capella et al, 2009). The small-scale quasi-experimental design was implemented in a real world setting and could present a number of limitations to the current study. It is not always possible to control for the issues created when using quasi-experimental designs (Bamberger et al, 2006), despite considering the issues at the outset, and this threatens the internal and external validity of the current study's findings through potential confounding variables (Campbell and Stanley, 1963). Examples of confounding variables within the quantitative design of the current study include the limited integrity shown during the intervention, the lack of randomisation procedures to the experimental groups (Robson, 2002), and the fact that both the experimental and control group were from the same school, highlighting the potential risk of diffusion of treatment from participants in the experimental group to those in the control group (Mertens, 2015). Another important variable to consider in the current study was the sample size. The study used a small sample of participants which could potentially limit the intervention's impact on the individual measures under investigation due to the limited generalisability.

### **Qualitative Research Design**

The qualitative research strand in the current study involved focus groups in order to explore participants' experiences of the mindfulness based programme. The qualitative strand enhanced the quantitative strand in the current study and addressed some of the limitations underpinning post-positivist approaches (Lincoln and Guba, 1985). The qualitative data collection allowed the researcher

to explore the perceptions of the participants in order to shed light on experiences of the mindfulness based intervention in order to highlight potential avenues for future research. However, the qualitative research strand was only small scale and involved a surface level thematic analysis using a small sample of participant experiences. This limits the validity of the findings somewhat. In addition to this, due to the time constraints of the research period, the focus groups were based on three previously agreed questions which could have limited the interactions between participants, despite the researcher allowing all participants within the groups to 'have their say' if they wanted to (Lewis, 1992).

### ***5.6 Reliability and Validity of the Current Study***

The researcher demonstrated that reasonable steps had been taken in the current study to ensure reliability and dependability of findings in both the quantitative and the qualitative research strand. For example, measurement tools that have demonstrated previous reliability and validity were used in the current study and treatment fidelity checks were carried out in order to reduce researcher bias and increase reliability of the quantitative research strand. Within the qualitative strand structured, interview questions were adopted in order to enhance the findings within the quantitative research strand. Despite this, there were still a number of threats to the reliability and validity of the findings within the current study. For example, small sample size, threats of history, maturation, testing, differential selection and instrumentation (Campbell and Stanley, 1963) could all have threatened the internal validity of the quantitative findings in the current study. Lack of integrity checks between sessions may also have threatened the validity of the findings. Within the qualitative strand, the use of a surface-level thematic analysis is likely to have threatened the dependability of the research design. Also, due to time constraints inter-rater reliability checks were not carried out, limiting the validity of any conclusions. However, the triangulation of the quantitative and qualitative findings could arguably support the current study's internal validity. These threats will now be discussed in more detail.

## **Mindfulness Intervention**

The delivery of the mindfulness based intervention may have had an impact on the validity of the findings. In the current study, two fidelity checks were carried out over the course of the 12 weeks in order to monitor the implementation of the intervention (Smith et al, 2007) and reduce researcher bias (Mertens, 1998). The fidelity checks were intended to strengthen the validity of the findings in the current study, particularly given that the researcher led the mindfulness sessions to ensure consistency of approach (Zakrzewski, 2014).

It is possible that the findings of the current study may have been influenced by extraneous variables in relation to the process with which the intervention was carried out rather than the duration. The MindUP Curriculum (The Hawm Foundation, 2011) is intended to be implemented within the curriculum of the classroom and whilst the researcher encouraged the class teacher to continue to implement the session outcomes more widely into their main classroom, the class teacher was not asked to complete a checklist between sessions outlining what approaches they had implemented across the course of the week and how often the core practice had been carried out. This could have impacted on the findings within the current study and the validity of the findings. Future research should therefore ensure that integrity checklists are carried out in between sessions to reduce threats to reliability of the findings. Future research might also include a follow up time point in order to identify if there are any further changes to the outcome measures under investigation.

The MindUP Curriculum (The Hawm Foundation, 2011) was chosen for the current study because of its large evidence base and the accessibility of the sessions in relation to a classroom environment. However, despite this, a limitation of the use of the MindUP Curriculum (The Hawm Foundation, 2011) in the current study is that it is an American-based mindfulness intervention that is intended to be incorporated as part of the curriculum and not just a standalone intervention. This produces clear limitations to the validity of the findings, since the intervention was developed using an American population, where the educational principles and curriculum are different to that of a UK based population. Conclusions based on the results of the current study must

therefore be drawn tentatively and generalisations to the wider population made with caution.

### **School Context**

Participation in the current study was very much dependent on the head teacher's informed consent and the willingness of the head teacher for the sessions to be run on a weekly basis, under protected time during school time. The participating school in the current study expressed an interest in mindfulness based practices and so allowed the researcher some protected time each week to run the sessions, in place of PSHE lessons. Other schools expressed their interest in the intervention, but teaching demands meant that they weren't able to set aside time each week for the intervention to be run. This suggests that whilst mindfulness is becoming a highly regarded approach that could be of benefit in the school setting (Zenner et al, 2014) the current curriculum demands means that it is not always feasible as a new approach in schools (Durlak et al, 2011).

It is possible that the current study may have been influenced by extraneous contextual variables. The participating school was a relatively small school, rated as 'good' by Ofsted in its previous two inspections (June 2012, January 2017). The number of participants did not exceed 26 in either class and the area in which the school was located was regarded as being a high socio-economic area. It is therefore possible that the current study may have presented different results if the school were from a low socio-economic, deprived area within the local authority, or the school was larger.

### **Sample**

The sample size in the current study was relatively small. Two classes within one school were used in the research. This limits the validity of the findings somewhat, although teacher and parent views were also gained in order to triangulate and strengthen the findings. Future studies might consider the evaluation of a mindfulness intervention on more than one school at a time to increase the sample size and generalisability of findings.

The current study used participants in Year 5 classes only. Year 5 was selected from the Key Stage 2 year groups in order to avoid disruption to preparations for the Year 6 Standard Assessment Tests during the summer term. It may have been appropriate to evaluate other year groups within the earlier junior phase of school and a limitation of focusing on a specific year group within the current study is that the results are not generalisable to other year groups. It is also important to consider that by Year 5, children are likely to already have developed some social and emotional skills. It is possible that any changes are more subtle when explored over a short time frame. However, it is also important to consider that due to the time constraints of the study, as well as the capacity of a lone researcher, an evaluation of a single year group was feasible. It is also important to consider that whilst the current study used a sample of primary school children from a single school in the researcher's local authority, the time frame for sampling was restrained by the response rate of the head teachers interested in the research project. This should be considered as a possible limitation to the sample when evaluating the findings of the intervention.

### **Sampling Strategy**

The findings of the current study may be limited somewhat by the sampling strategy that was used. The participants in the current study were selected from one school within the local authority that the researcher worked in. The school was one of the researcher's link schools making the sample a 'convenience sample' because of the availability of participants (Patton, 2002). This presents a limitation to the validity of the findings because it is only representative of that group of children within that school within that area of the local authority. It is possible that the study may produce different findings if the study were carried out on a wider population of children in the wider local authority. This means that the findings may only be specific to the group of participants that were involved in the study. Future studies might consider the sampling strategy used in order to ensure that all schools within the local authority have an equal chance of being selected for the research.



### **Informed Consent**

A further limitation of the findings within the current study was informed consent, which was an important factor when identifying the sample. Although all participants in the class took part in the intervention, not all participants had informed consent to take part in the evaluation of the intervention. There was therefore a difference in the number of participants in the control and the experimental group. It is possible that participants in the control group were less inclined to gain parental consent because they were not receiving the intervention straight away. It is also possible that the class teacher in the control group was less inclined to 'follow up' consent and the return of parental questionnaires because that class would not be receiving the intervention straight away. This could highlight previous research by Cohen, Manion and Morrison (2007) who found that data gathering can be limited by the researcher's access to the participants.

### **Measurement Tools**

The researcher's choice of quantitative measures in the current study could have had an impact on the reliability and validity of the current study. The measurement tools used in the current study will now be discussed in relation to the reliability and internal validity of them.

When using any form of questionnaire in quantitative research in order to collect data, there is arguably always a subjective element based on how the informant 'assesses' the child concerned and this can create bias. In the current study, it is possible that the informants (whether the teachers, parents or pupils themselves) were more likely to complete the questionnaires based on their 'ideal view' of that child. This means that the child is likely to be presented in a more favourable light which makes them more likely to think in that way at post-test (Mertens, 2015). This 'subjective view' of the child (Mertens 2015) raises wider implications about the validity of this subjectivity in that if a parent or teacher views a child as having good social and emotional skills at pre-test, any further positive changes following the intervention may not be noticed. This may also apply to parents or teachers who view a child as having poor social and emotional skills in that any changes to this may go unnoticed because they

have already developed a particular view of that child, which could affect post-test scores (Mertens, 2015). It is also a risk when using self-report measures that the participants could potentially view themselves as having more social and emotional skills than they actually do. This provides an important consideration for future research in relation to teacher, parent and self-report measures that are reliant on subjective perceptions about competencies. Future research might therefore consider the use of direct measures to gather information about competencies. The fact that the current study found some statistically significant differences in social and emotional skills suggests that teachers and parents were able to notice changes in the children.

It is possible that the measures that were used to assess optimism and mindful awareness (The Resiliency Scales for Children and Adolescents and the Child and Adolescent Mindfulness Measure) were not sensitive enough to detect any changes between Time 1 and Time 2 scores. The measure used to assess participants' levels of optimism was a set of questions around optimism taken from the 'sense of mastery' subscale from the Resiliency Scales for Children and Adolescents (Prince-Embury, 2006). This could produce risks to the validity of the findings in relation to the sensitivity of the questions at identifying changes between Time 1 and Time 2. Although the questions could be used to explore optimism, they were not necessarily intended for use as an isolated measure of optimism (Prince-Embury, 2006). Secondly, previous research (Edwards et al, 2014) has found improvements to mindful awareness scores with a sample size of 20 when the Mindful Attention Awareness Scale (Brown and Ryan, 2003) was used. This suggests that the sample size of the current study (n=35) was theoretically sufficient enough to observe changes in mindful awareness scores at Time 2. It is possible therefore that the measure (CAMM) may not have been sensitive enough on the given population. Finally, the qualitative data in the current study suggested that participants reported feeling more optimistic and appeared more mindful at post test compared with pre-test. These findings were not detected within the RSCA and CAMM measures used within the quantitative strand of the current study which arguably highlights the sensitivity and appropriateness of the measures used within the current study.

Another potential limitation of the current measures could relate to the intended population that they were intended for. Previous research using the SDQ (Muris et al, 2004) and the CAMM (Greco, Baer and Smith, 2011) has validated that they could be used with younger children provided that the children had a good understanding of the questions. Therefore, the researcher checked that the pupils understood each of the items on the questionnaire before they were asked to complete them. However, the researcher acknowledged that the age of the participants in the current study could have limited the validity of the findings because of participant access to the measures. Also, whilst pupil questionnaires in the experimental and control groups were completed at the same time; one week before and one week after the intervention, there was a variation in the times at which the parents and teachers completed the measures. Although this reflects one of the realities of 'real world research', this limits the validity of the findings.

## ***5.7 Implications of Current Findings***

The findings of the current study have highlighted a number of implications in relation to future research, educational psychologists, schools and local authorities. These implications will now be discussed.

### ***5.7.1 Implications for Future Research***

Future research might explore the potential sustained effects of the intervention to see whether there are any further changes 12 weeks after the intervention has finished. Previous research by Thomas and Atkinson (2016) found that the follow-up effects in the experimental group were stronger than the immediate effects of the intervention.

Future research might also look more exclusively at the qualitative impact that mindfulness based approaches have on children in order to gain more information about their experiences and perceptions following the introduction of mindfulness based approaches. The qualitative element of the current study can only provide tentative findings in relation to participant experiences despite the fact that some interesting perceptions emerged from the focus groups.

Arguably, the movement towards implementing whole-class mindfulness approaches could highlight the need to gather more information about the individual experiences following participation in mindfulness practices. Furthermore, given the fact that children are likely to respond in different ways to mindfulness practices, it is important to gain more of an understanding around individual responsiveness to mindful awareness practices so that mindful approaches may be tailored to suit the needs of individual variability.

The current study has highlighted that mindfulness approaches can be implemented in the main classroom environment. Whilst the class teacher was not the main person delivering the intervention, the findings highlight the important opportunities that mindfulness based approaches can bring to the classroom environment. Given that mindfulness approaches are being recognised more widely for the positive benefits that they can have on wellbeing outcomes, the current findings have highlighted the potential benefits of bringing mindfulness based approaches into a whole class as an approach to promote social and emotional skills. This study highlights how mindfulness approaches could be implemented into the classroom environment by the class teacher, with the support of an educational psychologist, without the need for previous extensive training.

### ***5.7.2 Implications for Local Authorities and Schools***

The current findings tentatively suggest that participation in a mindfulness based intervention may have an impact on children's social and emotional skills. These findings may highlight a number of implications for schools, who strive to promote children's wellbeing (DfE, 2016) and local authorities who work with families and vulnerable children who may support this. The current research could therefore build upon the current evidence base in relation to mindfulness interventions with children and could highlight the positive benefits that mindfulness approaches can have in schools, thereby providing important opportunities for schools and local authorities that are planning and implementing interventions in schools to target children's social and emotional well-being (DfE, 2016; Durlak et al, 2011).

The current study can also shed light on important opportunities for how local authorities and schools can engage in real world research in order to support and extend the evidence base in relation to promoting children's social and emotional wellbeing in schools. This can help schools and local authorities to increase their awareness of evidence based approaches around interventions that promote social and emotional wellbeing and could potentially enlighten service evaluation and monitoring for educational psychologists. The qualitative findings in the current study may be of particular interest in relation to providing schools and local authorities with insights into how children perceive mindfulness approaches, which is an important factor in the promotion of social and emotional skills. This insight may be used to inform future planning and implementation of mindfulness based approaches in schools.

It seems apparent that the current study has identified a number of implications for schools and local authorities. However, the tentative nature of the findings highlight a number of important factors in relation to implementing mindfulness based interventions within UK schools. Firstly, the findings could highlight the need for mindfulness interventions to be encompassed as part of a whole school initiative to promote children's social and emotional skills from an early age. Secondly, when incorporating mindfulness based interventions in schools, they need to be time effective and easily implementable in the classroom with little preparation needed. Despite the control class being offered the same 12 week mindfulness based intervention after the experimental group had completed the intervention, the school felt that they were unable to commit to another 12 weeks because of school demands. This suggests that even when the class teacher is not delivering the intervention, there are still pressures on time that schools are faced with, thereby highlighting the need for mindfulness approaches to be efficient on time, money and resources. Thirdly, the findings of the current study highlight that mindfulness approaches should be part of 'classroom life' and not just considered as a standalone intervention so that participants have the opportunity to implement mindfulness approaches on a more long-term basis. Finally, the findings could highlight the need for mindfulness approaches to be introduced at an early age to promote social and emotional skills rather than prevent the negative associated behaviours related

to under-developed social and emotional skills. The current study only focused on children from Year 5 classes which limits the validity of the findings when generalising them to a wider population of children.

### ***5.7.3 Implications for Educational Psychologists***

The findings of the current study can be useful for educational psychologists because of the growing body of interest into the benefits of mindfulness with children. The current findings can provide educational psychologists, schools and local authorities with tentative evidence to suggest ways in which mindfulness approaches may be of benefit in UK schools. The findings suggest that, at an individual level, mindfulness based approaches can lead to changes in perception of children's social and emotional skills over a relatively short period of time. At the whole-class level, the findings might suggest that the Mind UP Curriculum offers an opportunity for the classroom environment to be enriched through mindful practices that help to foster a more inclusive and mindful classroom to promote social and emotional competence (The Hawn Foundation, 2011).

This study highlights that an educational psychologist is well placed to support schools in the implementation of mindfulness based approaches as a more long-term practice rather than a separate mindfulness intervention which is delivered over a specific period of time. Educational psychologists might facilitate the implementation of the Mind UP Curriculum over the course of the academic year rather than as a one off intervention. The current findings may therefore tentatively help to inform future educational psychology practice in relation to promoting social and emotional skills through mindfulness based approaches.

The findings of the current study also highlight implications around the implementation of the intervention more widely across schools. Evidence from the qualitative findings suggests that participants perceived the intervention to be an enjoyable and positive experience. Having said this, it still seems apparent that schools are under an increasing amount of pressure to meet the curriculum demands that are being placed on them (Kolbe et al, 1997;

Weissberg et al, 2003; Durlak et al, 2011; DfE, 2016). The findings of the current study have highlighted that whilst mindfulness approaches appear to have a positive impact on pupil and parent rated social and emotional skills, the way in which mindfulness based interventions are implemented in schools is still an area that needs to be developed. This emphasises a promising opportunity for mindfulness based practices to be integrated into the school environment but raises important issues in relation to the commitment from the school at the 'whole-school level' as well as the actual mindfulness 'package' that is provided in order for this to take place effectively. It is possible that the implementation of the intervention within one class in a school may not have provided enough of an impact for it to have been implemented at the whole-school level when curriculum demands are so pressured. This means that despite the increasing amount of progress that has been made within the positive contribution that mindfulness based practices have on a number of wellbeing outcomes, schools are still faced with difficult decisions about priorities and want short-term, evidence-based curricular approaches that are cost and time effective (Durlak et al, 2011). One strategy EPs may use to support in the implementation of mindfulness based approaches more widely across schools could be to consider whole school training in relation to the benefits of mindfulness. If schools are more aware of the benefits of mindfulness approaches, and are actively involved in some too, the desire for them to be implemented on a school-wide basis may be increased. This could be the starting point for the implementation of mindfulness based practices to promote social and emotional skills at the whole school level.

### ***5.8 Summary of current study***

The current study investigated the impact of a mindfulness based intervention on children's social and emotional skills as a whole class intervention. Whilst there are a number of studies within the existing literature that explore the impact of mindfulness based interventions on children's wellbeing, few studies are carried out within the UK and even fewer on a whole class of children where previous training has been carried out in order to deliver the intervention.

The present study found that there were no statistically significant differences to mindful awareness following the mindfulness based intervention but there were statistically significant changes to pupil and parent rated social and emotional skills, and a medium effect size was detected for optimism scores despite no significant result. There were no statistically significant changes to pro-social behaviour scores. The discussion has reviewed and interpreted the findings in relation to the existing literature as well as other possible explanations. A critique of the methodology used in the current study has highlighted a number of limitations to the findings, such as sample size, school context and measurement tools, suggesting that conclusions should be made with these limitations in mind. The discussion has also raised a number of important implications in relation to future research and professional practice for local authorities, schools and educational psychologists which highlight the need for mindfulness based approaches to be implemented on a more long term basis in the classroom environment at the whole-school level. In summary, the study can contribute tentative findings to the evidence base exploring the impact of mindfulness based interventions with a UK based population and tentatively highlights how mindfulness approaches can be beneficial as a universal whole-class approach to promoting social and emotional skills. Chapter 6 will now provide a conclusion to the study.



## 6 Conclusion

The social and emotional wellbeing of children is viewed as increasingly important and is being explored with interest by researchers and practitioners (Elias et al, 1997; Blum and Libbey, 2004; Zins et al, 2004; Durlak et al, 2011); so much so, that its importance has been highlighted within government guidelines for schools (DfE, 2016). Within the academic literature, Weare (2004) and the work of the Collaborative for Academic, Social and Emotional Learning (CASEL, 2016) help us to understand more about the key competencies related to social and emotional wellbeing. A systematic literature review highlighted much of the research into the effects of mindfulness in school settings is carried out outside of the UK.

The current mixed-methods study aimed to evaluate the impact of an American mindfulness based intervention (The Hawn Foundation, 2011) on primary school children's social and emotional skills, optimism and mindful awareness. The current study was carried out within a single school within an East Midlands city local authority. The quantitative findings suggested that the mindfulness based intervention did not have a statistically significant impact on pupil rated mindful awareness or optimism scores. There were also no statistically significant differences for pupil, teacher or parent rated pro-social behaviour scores. However, there was a statistically significant impact on pupil and parent rated social and emotional skills, as rated by the Strengths and Difficulties Questionnaire (Goodman, 1997). The qualitative findings tentatively suggest that participants viewed the intervention as a positive experience, reporting the intervention as a sensory experience and supporting improvements in their self and social awareness.

The mixed methods research design was viewed as a relative strength of the current study which enhanced the validity of the findings within both the quantitative and qualitative data. However, threats to the internal validity of the study (including sample size and low statistical power) could limit the interpretations that can be made based on the findings. The internal and external validity of the current study is limited by the use of a quasi-

experimental design but enhanced by measurement tools which had shown previous reliability and validity.

Future research may wish to consider using follow up measures following the completion of the intervention to identify whether any sustained effects are an aspect. It might also place a stronger emphasis on the qualitative research strand in order to gain more information about individual experiences of the intervention. This study highlights a number of implications for educational psychologists' practice in relation to designing, implementing and evaluating mindfulness based interventions in schools as well as the need for whole-school training into the benefits of mindfulness based approaches. These implications suggest that EPs could play an important role in implementing and facilitating mindfulness based approaches in order to promote children's social and emotional skill development.

In conclusion, the unique contribution of the current study to applied educational psychology knowledge, research and practice highlights that it is one of the first studies to explore the benefits of a universal mindfulness based intervention. It presents tentative findings to show how a mindfulness based intervention can have a positive impact on pupil and parent rated social and emotional skills but a negative impact on teacher rated social and emotional skills. Whilst the current study has highlighted a number of methodological, ethical and procedural considerations, it also raises a number of important implications for educational psychologists' practice in relation to designing, implementing and evaluating mindfulness based interventions in schools. The current study has highlighted some of the challenges faced when implementing a class-based intervention in schools, and the impact of other curriculum and time pressures. However, educational psychologists are well placed in helping schools to understand more about mindfulness. They can provide whole-school training into the benefits of mindfulness based approaches and can be key facilitators in implementing mindfulness based approaches within the classroom, so that class teachers are able to implement the core principles within their classrooms as part of a whole-school initiative.

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## 8 Appendices

Appendix 1: Initial Letter to Head Teacher

Appendix 2: Head Teacher Consent Form

Appendix 3: Parent Information Sheet

Appendix 4: Parent Consent Form

Appendix 5: MindUP Typical Session Structure and Example Session

Appendix 6: Treatment Fidelity Checklist

Appendix 7: Child and Adolescent Mindfulness Measure (CAMM)

Appendix 8: Resiliency Scales for Children and Adolescents (RSCA)

Appendix 9: Strengths and Difficulties Questionnaire (SDQ) (Pupil, Teacher, Parent rated)

Appendix 10: Debrief Statement to Parents (Experimental and Control Group Letter)

Appendix 11: Mindful Awareness Investigation - Box plot and Histogram at Time 1

Appendix 12: Optimism Investigation - Box plot and Histogram at Time 1

Appendix 13: Social and Emotional Skills Investigation– Box plot and Histogram at Time 1 (Pupil)

Appendix 14: Social and Emotional Skills Investigation– Box plot and Histogram at Time 1 (Teacher)

Appendix 15: Social and Emotional Skills Investigation– Box plot and Histogram at Time 1 (Parent)

Appendix 16: Qualitative Raw data – Focus Groups

Appendix 17: Qualitative Data – Initial Codes and Themes

## Appendix 1: Initial Information letter to Head teacher



Lucy Whittaker  
Trainee Educational Psychologist  
School of Psychology  
University of Nottingham

Head teacher  
School address

July 2015

Dear Head Teacher,

### Re: Permission to Undertake Research

My name is Lucy Whittaker and I am a Trainee Educational Psychologist at the University of Nottingham and currently working with [REDACTED] Psychology Service. As part of my training and thesis research project, I am interested in carrying out research into the effectiveness of a mindfulness based intervention, known as the MindUP Curriculum (The Hawn Foundation, 2011) in primary schools. Mindfulness is the practice of bringing one's attention to the present moment with curiosity and acceptance, enabling us to respond to negative stressors rather than react to them. The purpose of this research will be to evaluate the impact of the MindUP curriculum in Year 5 classrooms on children's social and emotional skills (such as emotions, relationships and behaviours) and their optimism. This is because research suggests that implementing mindfulness based activities into the classroom with children can lead to improvements in social and emotional skills and optimism. Research suggests that children who are more optimistic are more likely to work harder and persevere for longer.

I am contacting you to invite your school to take part in this research. I am looking for a Primary school with two class teachers in Year 5 who would like to

learn more about mindfulness based approaches and would be willing to incorporate a mindfulness based intervention into their classroom, in the Autumn term (2016). This intervention would need to be implemented once a week for 50-60 minutes each, primarily by the researcher. The different approaches within the mindfulness intervention could also be incorporated into the wider curriculum as the intervention progresses. I have attached a question and answer information sheet giving more details about the intervention.

**Your school will benefit from:**

- Free training and professional development for the class teachers involved in the study
- Ongoing support and monitoring during the research period, including visits to school.
- A chance for your school to be involved in research.

**To be involved in this opportunity, your school needs to have teachers:**

- who are teaching in Year 5
- who are available for a one day training session in the second part of the Summer term
- who are willing to commit to 1 hour each week to support the researcher in the delivery of the MindUP intervention, in the Autumn term for 12 weeks
- who are happy to complete a short questionnaire about each child in their class before and after the intervention. This should only take a couple of minutes per child.
- who are happy for me to complete a short questionnaire with their pupils before and after the intervention.

Briefly, to enable me to carry out the research, I would ask that information sheets and consent forms be sent to parents of the children. At this stage, it is important that you are aware that participation in this study is completely voluntary and withdrawal from the study can take place at any stage without reason, before or during the study, without there being consequences to this. All data collected will be kept confidential and used for research purposes only. Any research dissemination will ensure participant anonymity at all times.

For research purposes, it is important that there is a parallel year group class. This class will not take part in the initial training or intervention activities, but needs to be willing for their class to complete a brief questionnaire at the start, end and at a 12 week period. School teachers will be offered full training before they start the MindUP intervention and the researcher will be delivering the intervention, allowing the teacher to support, observe and participate with them.

The class teacher and the children in his/her class will be fully supported throughout the duration of the intervention by the researcher and her supervisors as well as designated members of staff in school. Should the class teacher or any of the children in his/her class feel stressed or anxious as a result of any of the sessions during, or after the intervention, they will be given the opportunity to seek additional support either in school or from the researcher. Remember that you, the class teacher or any children participating can withdraw from the research at any stage, without reason.

Any identifying factors such as the names of participants and your school will be removed from the research report so that your involvement is anonymous. Confidentiality will be respected at all times.

Following the research, I would hope to discuss the findings with you; offering you a presentation of the final findings and an opportunity for further discussion. I hope that this would be a step towards building staff capacity and knowledge regarding mindfulness based activities in your school.

I would be grateful for the opportunity to meet with you, or relevant person(s) in school to discuss the research study and answer any questions you may have. This will give you all the information that you need in order to make an informed decision about whether you wish for your school to participate in this research. I will contact you in the next few weeks to discuss this opportunity further; however if you have any queries in the meantime, please do not hesitate to contact me.

Yours faithfully,

Lucy Whittaker

Trainee Educational Psychologist at [REDACTED] and University of Nottingham

[lucy.whittaker@\[REDACTED\].gov.uk](mailto:lucy.whittaker@[REDACTED].gov.uk)

[lpxlw@nottingham.ac.uk](mailto:lpxlw@nottingham.ac.uk)

0116 4545470

Dr Sarah Atkinson

Academic and Professional Tutor

School of Psychology

University of Nottingham

Tel: 0115 8467238

And

Specialist Senior Educational Psychologist

[REDACTED] Educational Psychology Service

Tel: [REDACTED]

## Appendix 2: Consent form for head teachers



### Mindfulness based intervention

**Researcher: Lucy Whittaker ([lpxlvw@nottingham.ac.uk](mailto:lpxlvw@nottingham.ac.uk))**

**Supervisor: Sarah Atkinson ([lpasa3@nottingham.ac.uk](mailto:lpasa3@nottingham.ac.uk))**

**Chair of Ethics Committee: Prof. Stephen Jackson  
([Stephen.jackson@nottingham.ac.uk](mailto:Stephen.jackson@nottingham.ac.uk))**

1. Have you read and understood the information sheet?  
YES/NO
  
2. Have you had the opportunity to ask questions about the study?  
YES/NO
  
3. Have all your questions been answered satisfactorily?  
YES/NO
  
4. Do you understand that your school is free to withdraw from the study?  
YES/NO  
  
(At any time and without giving a reason)
  
5. I give permission for the school's data from this study to be shared with other researchers provided that its anonymity is completely protected.  
YES/NO
  
6. Do you agree for your school to take part in the study?  
YES/NO

This study has been explained to me to my satisfaction and I agree/do not agree for my school to take part. I understand that I am free to withdraw the school from the research at any time, without reason.

Print:

Signed:

Date:

I have explained the study to the above head teacher and he/she has agreed for their school to take part (*for the researcher to complete*)

Print:

Signed:

Date:

**Researcher contact details**

Lucy Whittaker (Trainee Educational Psychologist)

Email: [lucy.whittaker@\[REDACTED\].gov.uk](mailto:lucy.whittaker@[REDACTED].gov.uk),

[REDACTED]



### Appendix 3: Information Sheet for Parents



Lucy Whittaker  
Trainee Educational Psychologist



June 2016

Dear parent / carer,

I am a second year trainee educational psychologist at the University of Nottingham and currently on placement in [REDACTED] Psychology Service. As part of my doctoral research training, I am planning to carry out a research project to evaluate the effectiveness of a mindfulness based intervention known as the MindUP Curriculum in primary schools. Mindfulness is the practice of bringing one's attention to the present moment with curiosity and acceptance, enabling us to respond to negative stressors rather than react to them.

Your child's school has agreed to be involved in the evaluation of the mindfulness based intervention. I am therefore writing to invite your child to be involved in the evaluation of this study. The intervention will take place each week, on a Thursday afternoon from September 2016 until December 2016. The mindfulness based intervention will be completed each week by a trainee educational psychologist, who will be under the supervision of [REDACTED] Psychology Service and receives regular supervision from the University of Nottingham. Your child's class teacher will also be involved in supporting to deliver and participate in the intervention.

Your child's class *may* be selected to participate in the mindfulness based intervention in the Autumn term. If your child's class is not chosen to participate, they will still be asked to complete a number of short questionnaires. If you and your child are happy to participate in this research, you *will both be* required to complete a short questionnaire but this should take no longer than 5 minutes to complete. You will be asked to complete the same questionnaire on your child before the intervention starts and again after the intervention has finished (12 weeks). Your child will be asked to do the same with their questionnaire. Your answers will help me gain more information about the impact of the mindfulness based intervention on your child at home.

If you do not wish to participate in this research this is fine. Just indicate on the consent for attached that you do not consent to yours or your child's participation.

### ***What will this mean for my child?***

- If they are in the mindfulness intervention class, your child will take part in whole-class, structured group activities taught by a trainee educational psychologist once a week. Each of these sessions will last between 50 and 60 minutes and will include lots of practical activities.
- Your child will be asked to complete 3 brief questionnaires before and after the research period (12 weeks) so that the effectiveness of the mindfulness based intervention approaches can be evaluated.
- Your child will also be asked 3 questions about the mindfulness based intervention after it has finished. This will take place in small groups and will enable them to share their experiences of the intervention with me to help with the evaluation of the intervention.

### ***What happens with the information?***

- Information will be confidential and stored securely via a password-protected folder electronically. Responses will not be shared with school staff.
- All identifiers such as the name of your child and school will be removed, making data anonymous.
- Data from your child's school will be analysed in order to evaluate the effectiveness of the mindfulness based intervention. This will form part of the write up of my research project.

### ***What do I need to do?***

- If both you and your child are happy to potentially participate in the MindUP intervention and for their data to be collected and analysed for the thesis write up, please sign the consent form below and return to your child's class teacher **as soon as possible**. Your child will receive a sticker for returning the consent form, regardless of whether they participate in the study or not.
- You will need to complete a short, 5 minute questionnaire about your child's behaviour, emotions and relationships at home before the programme starts, and again after it has finished. There is a copy of this questionnaire enclosed.

### ***What happens if I don't want/my child doesn't want to participate?***

- If your child does not wish to participate in the data collection for this research they don't have to and you can indicate this on the consent form.

- If your child's class is chosen to participate in the intervention and you *do not* wish for your child to be involved, please contact your child's class teacher or me on the details below to let me know and indicate this on the consent form attached.

Your child will be fully supported throughout the duration of the intervention by the class teacher, designated members of staff in school and the researcher and her supervisor. Should your child feel stressed or anxious as a result of any of the sessions during, or after the intervention, they will be given the opportunity to seek additional support either in school or from the researcher.

If you or your child changes your mind at a later date, both you and your child still have the right to withdraw without having to give a reason. If you have any questions about the research or would like more information, please don't hesitate to contact me.

Yours faithfully



Lucy Whittaker

Trainee Educational Psychologist at [REDACTED] Psychology Service

[Lucy.whittaker@\[REDACTED\].gov.uk](mailto:Lucy.whittaker@[REDACTED].gov.uk)

[REDACTED]

Dr Sarah Atkinson (University supervisor)  
Academic and Professional Tutor  
School of Psychology  
University of Nottingham  
Tel: 0115 8467238

## Appendix 4: Parental Consent Form

### Parental Consent form

**Researcher: Lucy Whittaker ([lpxlw@nottingham.ac.uk](mailto:lpxlw@nottingham.ac.uk))**

**Supervisor: Sarah Atkinson ([lpasa3@nottingham.ac.uk](mailto:lpasa3@nottingham.ac.uk))**

**Chair of Ethics Committee: Prof. Stephen Jackson**

**([Stephen.jackson@nottingham.as.uk](mailto:Stephen.jackson@nottingham.as.uk))**

1.	I have read and understood the information about the research, as provided in the Information Sheet dated June 2016	Y/N
2.	I have been given the opportunity to ask questions about the research and my child's participation, and understand that I can ask questions at any stage.	Y/N
3.	I give permission for my child, _____ (child's name) to take part in the intervention, which takes place each week in school.	Y/N
4.	I give permission for my child's, _____ (child's name) questionnaire data to be analysed in the research into the effectiveness of a mindfulness based intervention.	Y/N
5.	I understand that either I or my child can withdraw their data at any time without giving reasons and that we will not be penalised for withdrawing nor will we be questioned on why we have withdrawn.	Y/N
6.	The procedures regarding confidentiality have been clearly explained (e.g. use of names, pseudonyms, anonymisation of data, etc.) to me.	Y/N
7.	I understand that this intervention will take place during school hours.	Y/N
8.	I understand that the use of data in this research is for the analysis and thesis write up by the researcher and her supervisor.	Y/N
9.	I give permission for my data from this study to be shared with other researchers provided that its anonymity is completely protected.	Y/N
10.	I understand that I will need to answer a short questionnaire about my child's behaviour, emotions and relationships at home. I will be required to answer the same questionnaire before the intervention and after the 12 week intervention period.	Y/N

11.	If my child's class is chosen to participate in the intervention, I <b>do not</b> wish for my child to be involved in it.	
-----	---	--

This study has been explained to me to my satisfaction and I agree/do not agree for me and my child to take part. I understand we are free to withdraw from the research at any time, without reason.

Print (name of child):

Print (name of parent):

Signed:

Date:

## **Appendix 5: MindUP Intervention**

**\*Contents removed to protect Copyright\***

## **MindUP Example Session**

**\*Contents removed to protect Copyright\***

## Appendix 6: Treatment Fidelity

### MindUP Intervention Fidelity Checklist

Date:

Session Number:

Session Title:

Number of children in class:

Number of children present in session:

Who is delivering session?:

A typical session from the MindUP Curriculum should follow the typical structure below:

Session Structure	Observed in session (Y/N)	Notes/comments
<b><i>Reflection on what covered so far</i></b> Invite pupils to refresh what already learnt over previous sessions		
<b><i>Introduction to the lesson topic:</i></b> Identifies and explains the subject of the session and frames why it's important.		
<b><i>Linking to brain research:</i></b> Explains how each session relates to the brain research/neuroscience to help pupils gain an awareness of how their brains work		
<b><i>Clarify for the class:</i></b> Makes the brain research accessible for the pupils.		
<b><i>MindUP warm-up:</i></b> Introduces subject matter in an easy going, open-ended way and relates to content of students' lives.		
<b><i>Leading the lesson:</i></b> Explore topic in more detail, encourages reflecting and discussing of pupils' insights and experiences. Session should also establish concrete links to learning process and classroom issues.		
<b><i>Connecting to the curriculum:</i></b> Offers opportunities for pupils to extend their skills into wider curriculum.		



Alongside the typical structure of the MindUP Curriculum, there are particular features that should be accounted for:

Features of Intervention	Rating		Notes/Comments
	Yes	No	
Structure/content of session clearly explained	1 2 3 4 5 6 7 8 9 10		
Adherence to structure/session plan in MindUP (as above)			
- Core practice (beginning)	1 2 3 4 5 6 7 8 9 10		
- Linking to brain research	1 2 3 4 5 6 7 8 9 10		
- MindUP warm-up	1 2 3 4 5 6 7 8 9 10		
- Main part of session	1 2 3 4 5 6 7 8 9 10		
- Connect to curriculum	1 2 3 4 5 6 7 8 9 10		
- Core practice (end)	1 2 3 4 5 6 7 8 9 10		
Adherence to content of MindUP session	1 2 3 4 5 6 7 8 9 10		
Use of relevant materials/resources (eg. chart paper, work sheets, instruments)	1 2 3 4 5 6 7 8 9 10		
Adherence to time of session (50-60 mins)	1 2 3 4 5 6 7 8 9 10		
Adherence to the order of sessions – sessions in sequential order	1 2 3 4 5 6 7 8 9 10		
Delivery			
- Hands-on/practical	1 2 3 4 5 6 7 8 9 10		
- Delivery of session	1 2 3 4 5 6 7 8 9 10		
- Children engaged	1 2 3 4 5 6 7 8 9 10		
- Children discussing/reflecting	1 2 3 4 5 6 7 8 9 10		
- Children encouraged to participate	1 2 3 4 5 6 7 8 9 10		
- Group work discussion	1 2 3 4 5 6 7 8 9 10		
- Whole class collaborative work/discussion/reflection	1 2 3 4 5 6 7 8 9 10		

MindUP Intervention Fidelity Checklist

Date: 22.9.16  
 Session Number: 3  
 Session Title: The core practice.  
 Number of children in class: 24  
 Number of children present in session: 21  
 Who is delivering session?: Lucy W (TEP/researcher)

A typical session from the MindUP Curriculum should follow the typical structure below:

Session Structure	Observed in session (Y/N)	Notes/comments
<b>Reflection on what covered so far</b> Invite pupils to refresh what already learnt over previous sessions	Y	LW asking qus to prompt <del>or</del> what does prefrontal cortex do?
<b>Introduction to the lesson topic:</b> Identifies and explains the subject of the session and frames why it's important.	Y	how to help amygdala through breathing.
<b>Linking to brain research:</b> Explains how each session relates to the brain research/neuroscience to help pupils gain an awareness of how their brains work	Y	image of neuron learning new things to strengthen it
<b>Clarify for the class:</b> Makes the brain research accessible for the pupils.	Y	using hand model/arm
<b>MindUP warm-up:</b> Introduces subject matter in an easy going, open-ended way and relates to content of students' lives.	Y	Followed content of lesson closely, including discussion time + link to brain
<b>Leading the lesson:</b> Explore topic in more detail, encourages reflecting and discussing of pupils' insights and experiences. <u>Session should also establish concrete links to learning process and classroom issues.</u>	Y N	<del>to explore as a class</del> op + small gps. partly?
<b>Connecting to the curriculum:</b> Offers opportunities for pupils to extend their skills into wider curriculum.	Y	children keen.

Alongside the typical structure of the MindUP Curriculum, there are particular features that should be accounted for:

Features of Intervention	Yes	Rating	No	Notes/Comments
	Never	Sometimes	Always	
Structure/content of session clearly explained	1 2 3 4	5 6 7 8 9 10		
Adherence to structure/session plan in MindUP (as above)				
- Core practice (beginning)	1 2 3 4	5 6 7 8 9 10		
- Linking to brain research	1 2 3 4	5 6 7 8 9 10		
- MindUP warm-up	1 2 3 4	5 6 7 8 9 10		
- Main part of session	1 2 3 4	5 6 7 8 9 10		
- Connect to curriculum	1 2 3 4	5 6 7 8 9 10		
- Core practice (end)	1 2 3 4	5 6 7 8 9 10		
Adherence to content of MindUP session	1 2 3 4	5 6 7 8 9 10		
Use of relevant materials/resources (eg. chart paper, work sheets, instruments)	1 2 3 4	5 6 7 8 9 10		
Adherence to time of session (50-60 mins)	1 2 3 4	5 6 7 8 9 10		
Adherence to the order of sessions – sessions in sequential order	Yes	1 2 3 4	5 6 7 8 9 10	
Delivery				
- Hands-on/practical	1 2 3 4	5 6 7 8 9 10		
- Delivery of session	1 2 3 4	5 6 7 8 9 10		
- Children engaged	1 2 3 4	5 6 7 8 9 10		
- Children discussing/reflecting	1 2 3 4	5 6 7 8 9 10		
- Children encouraged to participate	1 2 3 4	5 6 7 8 9 10		not all chdn participating in main disc. some 1/2 chdn.
- Group work discussion	1 2 3 4	5 6 7 8 9 10		eps of 4.
- Whole class collaborative work/discussion/reflection	1 2 3 4	5 6 7 8 9 10		

MindUP Intervention Fidelity Checklist

Date: 1.12.16  
 Session Number:  
 Session Title: choosing optimism  
 Number of children in class:  
 Number of children present in session: 22  
 Who is delivering session?: LW

A typical session from the MindUP Curriculum should follow the typical structure below:

Session Structure	Observed in session (Y/N)	Notes/comments
<b>Reflection on what covered so far</b> Invite pupils to refresh what already learnt over previous sessions	Y	
<b>Introduction to the lesson topic:</b> Identifies and explains the subject of the session and frames why it's important.	Y	
<b>Linking to brain research:</b> Explains how each session relates to the brain research/neuroscience to help pupils gain an awareness of how their brains work	Y	
<b>Clarify for the class:</b> Makes the brain research accessible for the pupils.	Y	
<b>MindUP warm-up:</b> Introduces subject matter in an easy going, open-ended way and relates to content of students' lives.	Y	
<b>Leading the lesson:</b> Explore topic in more detail, encourages reflecting and discussing of pupils' insights and experiences. Session should also establish concrete links to learning process and classroom issues.	Y	
<b>Connecting to the curriculum:</b> Offers opportunities for pupils to extend their skills into wider curriculum.	Y	

Alongside the typical structure of the MindUP Curriculum, there are particular features that should be accounted for:

Features of Intervention	Rating		Notes/Comments
	Yes	No	
Structure/content of session clearly explained	1 2 3 4 5 6 7 8 9 10		
Adherence to structure/session plan in MindUP (as above)	Yes		
- Core practice (beginning)	1 2 3 4 5 6 7 8 9 10		n/a
- Linking to brain research	1 2 3 4 5 6 7 8 9 10		
- MindUP warm-up	1 2 3 4 5 6 7 8 9 10		
- Main part of session	1 2 3 4 5 6 7 8 9 10		
- Connect to curriculum	1 2 3 4 5 6 7 8 9 10		
- Core practice (end)	1 2 3 4 5 6 7 8 9 10		
Adherence to content of MindUP session	Yes		
Use of relevant materials/resources (eg. chart paper, work sheets, instruments)	Yes		grass half full / empty.
Adherence to time of session (50-60 mins)	Yes		
Adherence to the order of sessions – sessions in sequential order	Yes		
Delivery			
- Hands-on/practical	1 2 3 4 5 6 7 8 9 10		children all very engaged gp work, card sorting children selected by name, and volunteering
- Delivery of session	1 2 3 4 5 6 7 8 9 10		
- Children engaged	1 2 3 4 5 6 7 8 9 10		
- Children discussing/reflecting	1 2 3 4 5 6 7 8 9 10		
- Children encouraged to participate	1 2 3 4 5 6 7 8 9 10		
- Group work discussion	1 2 3 4 5 6 7 8 9 10		
- Whole class collaborative work/discussion/reflection	1 2 3 4 5 6 7 8 9 10		

## Appendix 7: Child and Adolescent Mindfulness Measure

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### Child and Adolescent Mindfulness Measure (CAMM)

We want to know more about what you think, how you feel, and what you do. **Read** each sentence. Then, circle the number that tells **how often** each sentence is true for you.

	Never True	Rarely True	Sometimes True	Often True	Always True
1. I get upset with myself for having feelings that don't make sense.	0	1	2	3	4
2. At school, I walk from class to class without noticing what I'm doing.	0	1	2	3	4
3. I keep myself busy so I don't notice my thoughts or feelings.	0	1	2	3	4
4. I tell myself that I shouldn't feel the way I'm feeling.	0	1	2	3	4
5. I push away thoughts that I don't like.	0	1	2	3	4
6. It's hard for me to pay attention to only one thing at a time.	0	1	2	3	4
7. I get upset with myself for having certain thoughts.	0	1	2	3	4
8. I think about things that have happened in the past instead of thinking about things that are happening right now.	0	1	2	3	4
9. I think that some of my feelings are bad and that I shouldn't have them.	0	1	2	3	4
10. I stop myself from having feelings that I don't like.	0	1	2	3	4

**CAMM: Scoring instructions**

First reverse all scores by changing 0 to 4, 1 to 3, 3 to 1, and 4 to 0 (2 stays unchanged). Then sum all items. Higher scores correspond to higher levels of mindfulness.

For more information, see:

Greco, L., Baer, R. A., & Smith, G. T. (2011). Assessing mindfulness in children and adolescents: Development and validation of the child and adolescent mindfulness measure (CAMM). *Psychological Assessment, 23*, 606-614.

## Appendix 8: Resiliency Scales for Children and Adolescents (Optimism)

**MAS**

Here is a list of things that happen to people and that people think, feel, or do. Read each sentence carefully, and circle the *one* answer (Never, Rarely, Sometimes, Often, or Almost Always) that tells about you best. THERE ARE NO RIGHT OR WRONG ANSWERS.

	0	1	2	3	4
1. Life is fair.	Never	Rarely	Sometimes	Often	Almost Always
2. I can make good things happen.	Never	Rarely	Sometimes	Often	Almost Always
3. I can get the things I need.	Never	Rarely	Sometimes	Often	Almost Always
4. I can control what happens to me.	Never	Rarely	Sometimes	Often	Almost Always
5. I do things well.	Never	Rarely	Sometimes	Often	Almost Always
6. I am good at fixing things.	Never	Rarely	Sometimes	Often	Almost Always
7. I am good at figuring things out.	Never	Rarely	Sometimes	Often	Almost Always
8. I make good decisions.	Never	Rarely	Sometimes	Often	Almost Always
9. I can adjust when plans change.	Never	Rarely	Sometimes	Often	Almost Always
10. I can get past problems in my way.	Never	Rarely	Sometimes	Often	Almost Always
11. If I have a problem, I can solve it.	Never	Rarely	Sometimes	Often	Almost Always
12. If I try hard, it makes a difference.	Never	Rarely	Sometimes	Often	Almost Always
13. If at first I don't succeed, I will keep on trying.	Never	Rarely	Sometimes	Often	Almost Always
14. I can think of more than one way to solve a problem.	Never	Rarely	Sometimes	Often	Almost Always
15. I can learn from my mistakes.	Never	Rarely	Sometimes	Often	Almost Always
16. I can ask for help when I need to.	Never	Rarely	Sometimes	Often	Almost Always
17. I can let others help me when I need to.	Never	Rarely	Sometimes	Often	Almost Always
18. Good things will happen to me.	Never	Rarely	Sometimes	Often	Almost Always
19. My life will be happy.	Never	Rarely	Sometimes	Often	Almost Always
20. No matter what happens, things will be all right.	Never	Rarely	Sometimes	Often	Almost Always

For T scores, see Table A.1.

TS

RS



## Appendix 9: Strengths and Difficulties Questionnaire - Pupil, Teacher, Parent

### Strengths and Difficulties Questionnaire

For each item, please mark the box for Not True, Somewhat True or Certainly True. It would help us if you answered all items as best you can even if you are not absolutely certain or the item seems daft! Please give your answers on the basis of how things have been for you over the last six months.

Your Name .....

Male/Female

Date of Birth.....

	Not True	Somewhat True	Certainly True
I try to be nice to other people. I care about their feelings	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am restless, I cannot stay still for long	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I get a lot of headaches, stomach-aches or sickness	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I usually share with others (food, games, pens etc.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I get very angry and often lose my temper	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am usually on my own. I generally play alone or keep to myself	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I usually do as I am told	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I worry a lot	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am helpful if someone is hurt, upset or feeling ill	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am constantly fidgeting or squirming	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I have one good friend or more	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I fight a lot. I can make other people do what I want	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am often unhappy, down-hearted or tearful	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other people my age generally like me	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am easily distracted, I find it difficult to concentrate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am nervous in new situations. I easily lose confidence	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am kind to younger children	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am often accused of lying or cheating	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other children or young people pick on me or bully me	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I often volunteer to help others (parents, teachers, children)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I think before I do things	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I take things that are not mine from home, school or elsewhere	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I get on better with adults than with people my own age	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I have many fears, I am easily scared	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I finish the work I'm doing. My attention is good	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Your signature .....

Today's date .....

**Thank you very much for your help**

© Robert Goodman, 2005

## Strengths and Difficulties Questionnaire

**S11-17**  
FOLLOW-UP

For each item, please mark the box for Not True, Somewhat True or Certainly True. It would help us if you answered all items as best you can even if you are not absolutely certain or the item seems daft! Please give your answers on the basis of how things have been for you **over the last month**.

Your Name .....

Male/Female

Date of Birth.....

	Not True	Somewhat True	Certainly True
I try to be nice to other people. I care about their feelings	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am restless, I cannot stay still for long	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I get a lot of headaches, stomach-aches or sickness	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I usually share with others (food, games, pens etc.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I get very angry and often lose my temper	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am usually on my own. I generally play alone or keep to myself	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I usually do as I am told	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I worry a lot	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am helpful if someone is hurt, upset or feeling ill	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am constantly fidgeting or squirming	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I have one good friend or more	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I fight a lot. I can make other people do what I want	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am often unhappy, down-hearted or tearful	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other people my age generally like me	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am easily distracted, I find it difficult to concentrate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am nervous in new situations. I easily lose confidence	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am kind to younger children	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am often accused of lying or cheating	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other children or young people pick on me or bully me	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I often volunteer to help others (parents, teachers, children)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I think before I do things	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I take things that are not mine from home, school or elsewhere	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I get on better with adults than with people my own age	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I have many fears, I am easily scared	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I finish the work I'm doing. My attention is good	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Do you have any other comments or concerns?

**Please turn over - there are a few more questions on the other side**

## Strengths and Difficulties Questionnaire

T<sup>4-17</sup>

For each item, please mark the box for Not True, Somewhat True or Certainly True. It would help us if you answered all items as best you can even if you are not absolutely certain or the item seems daft! Please give your answers on the basis of the child's behaviour over the last six months or this school year.

Child's Name .....

Male/Female

Date of Birth.....

	Not True	Somewhat True	Certainly True
Considerate of other people's feelings	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Restless, overactive, cannot stay still for long	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Often complains of headaches, stomach-aches or sickness	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Shares readily with other children (treats, toys, pencils etc.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Often has temper tantrums or hot tempers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Rather solitary, tends to play alone	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Generally obedient, usually does what adults request	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Many worries, often seems worried	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Helpful if someone is hurt, upset or feeling ill	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Constantly fidgeting or squirming	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Has at least one good friend	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Often fights with other children or bullies them	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Often unhappy, down-hearted or tearful	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Generally liked by other children	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Easily distracted, concentration wanders	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Nervous or clingy in new situations, easily loses confidence	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Kind to younger children	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Often lies or cheats	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Picked on or bullied by other children	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Often volunteers to help others (parents, teachers, other children)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Thinks things out before acting	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Steals from home, school or elsewhere	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Gets on better with adults than with other children	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Many fears, easily scared	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sees tasks through to the end, good attention span	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Do you have any other comments or concerns?

**Please turn over - there are a few more questions on the other side**

## Strengths and Difficulties Questionnaire

T 4-17  
FOLLOW-UP

For each item, please mark the box for Not True, Somewhat True or Certainly True. It would help us if you answered all items as best you can even if you are not absolutely certain or the item seems daft! Please give your answers on the basis of the child's behaviour over the last month.

Child's Name .....

Male/Female

Date of Birth.....

	Not True	Somewhat True	Certainly True
Considerate of other people's feelings	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Restless, overactive, cannot stay still for long	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Often complains of headaches, stomach-aches or sickness	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Shares readily with other children (treats, toys, pencils etc.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Often has temper tantrums or hot tempers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Rather solitary, tends to play alone	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Generally obedient, usually does what adults request	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Many worries, often seems worried	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Helpful if someone is hurt, upset or feeling ill	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Constantly fidgeting or squirming	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Has at least one good friend	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Often fights with other children or bullies them	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Often unhappy, down-hearted or tearful	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Generally liked by other children	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Easily distracted, concentration wanders	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Nervous or clingy in new situations, easily loses confidence	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Kind to younger children	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Often lies or cheats	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Picked on or bullied by other children	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Often volunteers to help others (parents, teachers, other children)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Thinks things out before acting	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Steals from home, school or elsewhere	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Gets on better with adults than with other children	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Many fears, easily scared	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sees tasks through to the end, good attention span	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Do you have any other comments or concerns?

**Please turn over - there are a few more questions on the other side**

## Strengths and Difficulties Questionnaire

P 4-17

For each item, please mark the box for Not True, Somewhat True or Certainly True. It would help us if you answered all items as best you can even if you are not absolutely certain or the item seems daft! Please give your answers on the basis of the child's behaviour over the last six months.

Child's Name .....

Male/Female

Date of Birth.....

	Not True	Somewhat True	Certainly True
Considerate of other people's feelings	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Restless, overactive, cannot stay still for long	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Often complains of headaches, stomach-aches or sickness	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Shares readily with other children (treats, toys, pencils etc.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Often has temper tantrums or hot tempers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Rather solitary, tends to play alone	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Generally obedient, usually does what adults request	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Many worries, often seems worried	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Helpful if someone is hurt, upset or feeling ill	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Constantly fidgeting or squirming	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Has at least one good friend	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Often fights with other children or bullies them	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Often unhappy, down-hearted or tearful	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Generally liked by other children	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Easily distracted, concentration wanders	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Nervous or clingy in new situations, easily loses confidence	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Kind to younger children	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Often lies or cheats	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Picked on or bullied by other children	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Often volunteers to help others (parents, teachers, other children)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Thinks things out before acting	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Steals from home, school or elsewhere	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Gets on better with adults than with other children	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Many fears, easily scared	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sees tasks through to the end, good attention span	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Do you have any other comments or concerns?

**Please turn over - there are a few more questions on the other side**

## Strengths and Difficulties Questionnaire

P 4-17  
FOLLOW-UP

For each item, please mark the box for Not True, Somewhat True or Certainly True. It would help us if you answered all items as best you can even if you are not absolutely certain or the item seems daft! Please give your answers on the basis of your child's behaviour **over the last month**.

Child's Name .....

Male/Female

Date of Birth.....

	Not True	Somewhat True	Certainly True
Considerate of other people's feelings	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Restless, overactive, cannot stay still for long	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Often complains of headaches, stomach-aches or sickness	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Shares readily with other children (treats, toys, pencils etc.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Often has temper tantrums or hot tempers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Rather solitary, tends to play alone	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Generally obedient, usually does what adults request	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Many worries, often seems worried	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Helpful if someone is hurt, upset or feeling ill	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Constantly fidgeting or squirming	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Has at least one good friend	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Often fights with other children or bullies them	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Often unhappy, down-hearted or tearful	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Generally liked by other children	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Easily distracted, concentration wanders	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Nervous or clingy in new situations, easily loses confidence	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Kind to younger children	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Often lies or cheats	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Picked on or bullied by other children	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Often volunteers to help others (parents, teachers, other children)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Thinks things out before acting	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Steals from home, school or elsewhere	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Gets on better with adults than with other children	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Many fears, easily scared	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sees tasks through to the end, good attention span	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Do you have any other comments or concerns?

**Please turn over - there are a few more questions on the other side**

## Appendix 10: Debrief Statement – Experimental Group Letter

December 2016

Lucy Whittaker  
Trainee Educational Psychologist  
School of Psychology  
University of Nottingham

Dear parent/carer,

Your child's class has now completed the 12 week mindfulness based intervention. The study aimed to evaluate the impact of a mindfulness based intervention on Year 5 primary school aged children's social and emotional skills and optimism.

Prior to the start of the 12 week programme (July 2016), you were asked to complete a quick questionnaire about your child when you gave consent for me to use your child's questionnaire responses in my thesis write-up. I would like to ask you if you could now complete the same questionnaire about your child. The purpose of this is to enable me to see whether there have been any changes over the course of the intervention period. I will also ask your child to complete a series of quick questionnaires at school too.

The information that you provide me with, as well as the information that your child and their teacher has provided me with will now be written up as part of an Educational Psychology Doctoral thesis, which will be available on the University of Nottingham's website when it is complete. If, for any reason, you would not like your information to be included as part of the study, please contact me at the address below. The information you have given me will be stored in a locked filing cabinet, and will be destroyed after 7 years.

Following the analysis of data, I would like to invite you to attend a presentation and feedback session at school where I will provide you with a summary of the research findings and will be available to answer any additional questions that you may have.

You should be aware that there are designated members of staff at school ( [REDACTED] ) who will be available to offer further support, or answer any questions you may have about the intervention, should you require any. These staff members are available to parents and children who participated in the research. My supervisor and I are also available on the contact information below, if you have any further questions about the research findings or require any additional support. This support will be available to parents, school staff and children. We can direct you towards any additional support services within [REDACTED] Psychology Service should this be

required.

I hope that your child has enjoyed taking part in the mindfulness based intervention. I very much enjoyed delivering the intervention and getting to know your child. If you have any further questions about the research, please do not hesitate to contact me. In the meantime, please complete the attached questionnaire and return it to school.

Yours faithfully,



Lucy Whittaker

Trainee Educational Psychologist

<b>Name of researcher:</b>	Lucy Whittaker
<b>Email of researcher:</b>	<u>lucy.whittaker@</u> [REDACTED] <u>gov.uk</u> lpxlvw@nottingham.ac.uk
<b>Name of supervisor:</b>	Sarah Atkinson
<b>Email of supervisor:</b>	lpasa3@nottingham.ac.uk
<b>Title of study:</b>	<i>To evaluate the impact of a mindfulness based intervention on Year 5 primary school aged children's social and emotional skills and optimism</i>

Helpful contact numbers for further support:

- Childline: 0800 1111
- [REDACTED] Psychology Service (Lucy Whittaker – researcher) [REDACTED]  
[REDACTED]
- [REDACTED] For general information and support (for parent or child), visit The Family Information Service which as information, advice and guidance for families who have children and young people aged between 0-20.  
[REDACTED]
- [REDACTED] (Year 5 Class Teacher) and [REDACTED] (Special Educational Needs Coordinator).



## Debrief Statement – Control Group Letter

December 2016

Lucy Whittaker  
Trainee Educational Psychologist  
School of Psychology  
University of Nottingham

Dear parent/carer,

The 12 week mindfulness based intervention has now been completed. The study aimed to evaluate the impact of a mindfulness based intervention on Year 5 primary school aged children's social and emotional skills and optimism.

Your child's class was not chosen to participate in the intervention and the intervention is no longer being run in school, at this time. However, prior to the start of the 12 week intervention (July 2016), you were asked to complete a quick questionnaire about your child when you gave consent for me to use your child's questionnaire responses in my thesis write-up. This information is still vital to the analysis and I would like to ask you if you could now complete the same questionnaire about your child. The purpose of this is to enable me to see whether there have been any changes over the course of the 12 week period in which the intervention took place. I will also ask your child to complete a series of quick questionnaires at school too.

The information that you provide me with, as well as the information that your child and their teacher has provided me with will now be written up as part of an Educational Psychology Doctoral thesis, which will be available on the University of Nottingham's website when it is complete. If, for any reason, you would not like your information to be included as part of the study, please contact me at the address below. The information you have given me will be stored in a locked filing cabinet, and will be destroyed after 7 years.

Following the analysis of data, I would like to invite you to attend a presentation and feedback session at school where I will provide you with a summary of the research findings and will be available to answer any additional questions that you may have.

You should be aware that there are designated members of staff at school ( [REDACTED] ) who will be available to offer further support, or answer any questions you may have about the intervention, should you require any. These staff members are available to parents and children who participated in the research. My supervisor and I are also available on the contact information below, if you have any further questions about the research findings or require any additional support. This support will be available to

parents, school staff and children. We can direct you towards any additional support services within [REDACTED] Psychology Service should this be required.

I would like to take this opportunity to thank you for your cooperation and participation in my doctoral research. If you have any further questions about the research, please do not hesitate to contact me. In the meantime, please complete the attached questionnaire and return it to school.

Yours faithfully,



Lucy Whittaker

Trainee Educational Psychologist

<b>Name of researcher:</b>	Lucy Whittaker
<b>Email of researcher:</b>	<a href="mailto:lucy.whittaker@[REDACTED].gov.uk">lucy.whittaker@[REDACTED].gov.uk</a> lpxlvw@nottingham.ac.uk
<b>Name of supervisor:</b>	Sarah Atkinson
<b>Email of supervisor:</b>	lpasa3@nottingham.ac.uk
<b>Title of study:</b>	<i>To evaluate the impact of a mindfulness based intervention on Year 5 primary school aged children's social and emotional skills and optimism</i>

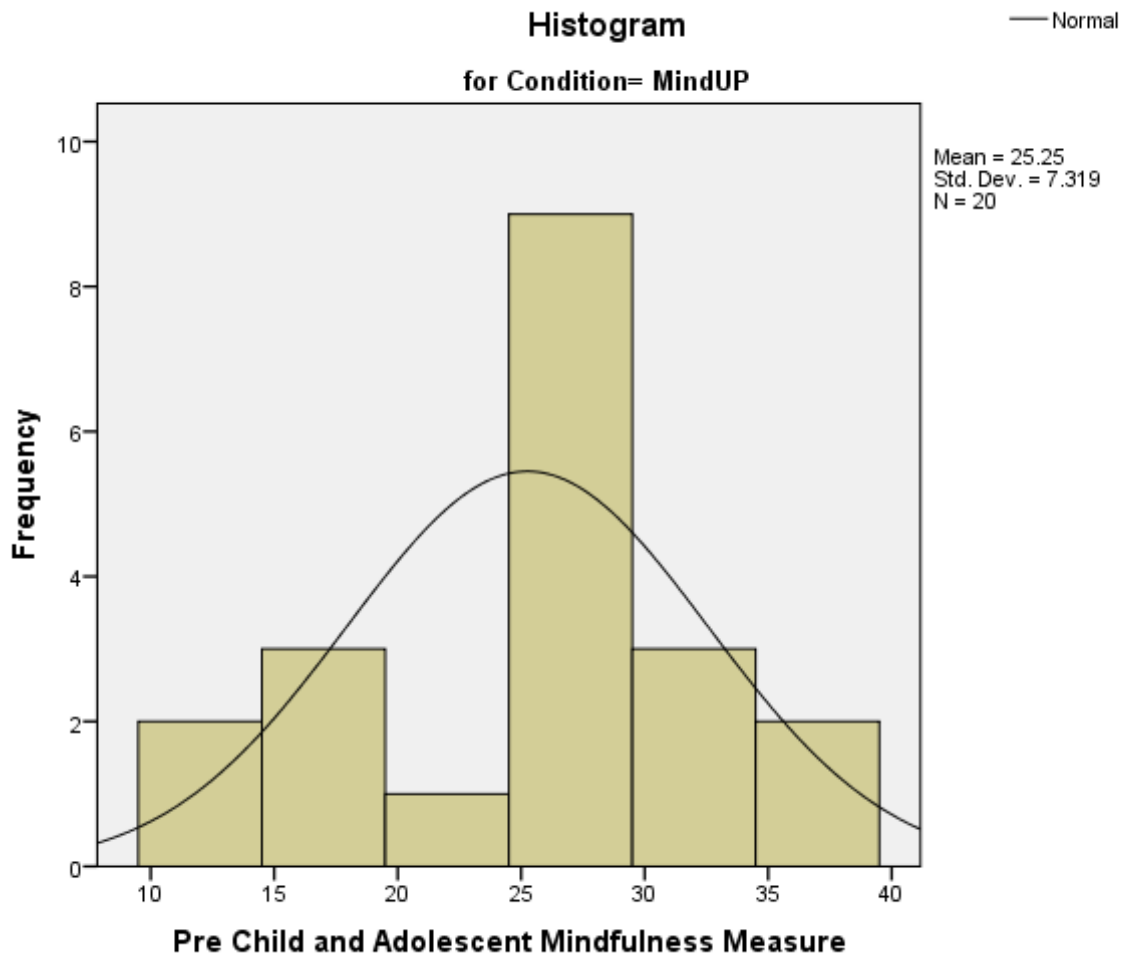
Helpful contact numbers for further support:

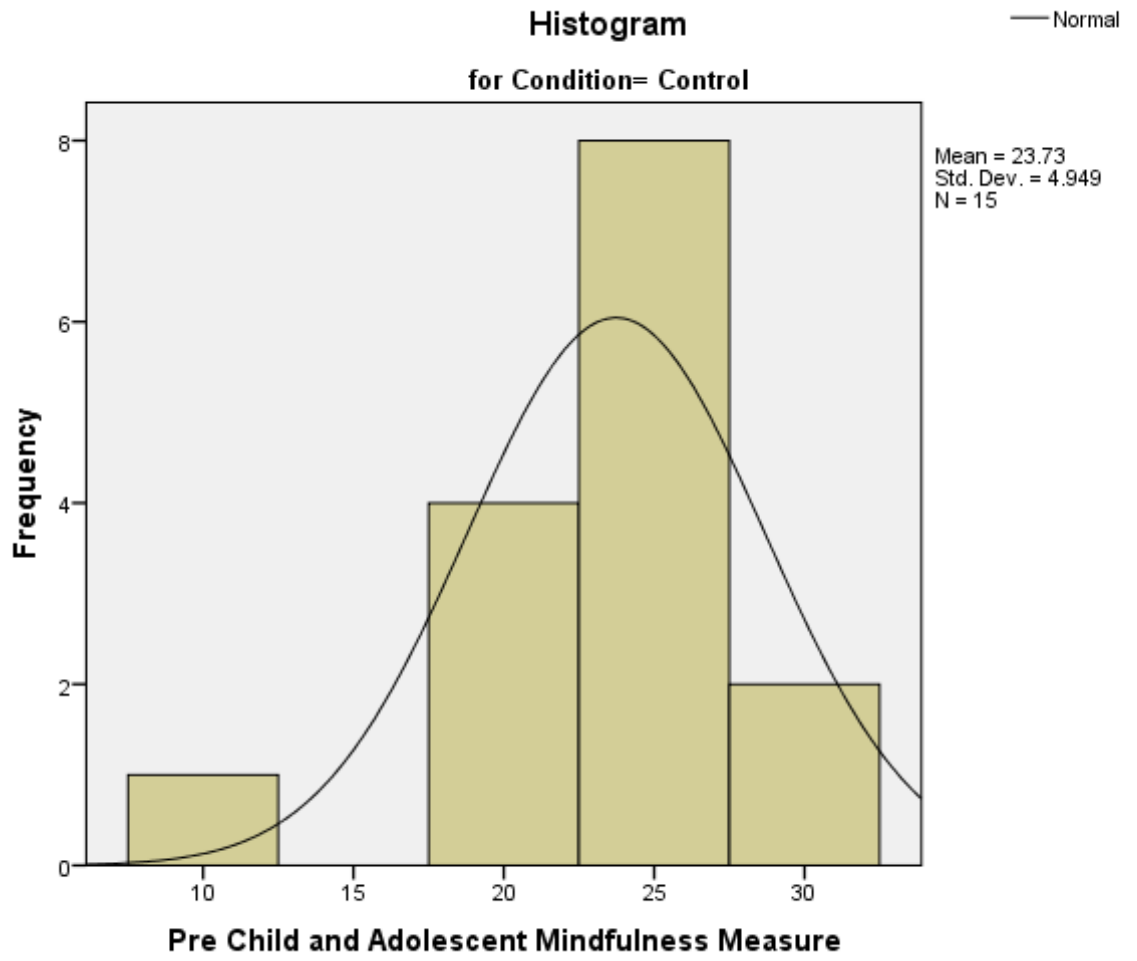
- Childline: 0800 1111
- [REDACTED] Psychology Service (Lucy Whittaker – researcher) [REDACTED]  
[REDACTED]
- [REDACTED] For general information and support (for parent or child), visit The Family Information Service which as information, advice and guidance for families who have children and young people aged between 0-20.  
[REDACTED]
- [REDACTED] (Year 5 Class Teacher) and [REDACTED] (Special Educational Needs Coordinator).

## Appendix 11: Mindful Awareness Investigation – Histogram and Box Plot

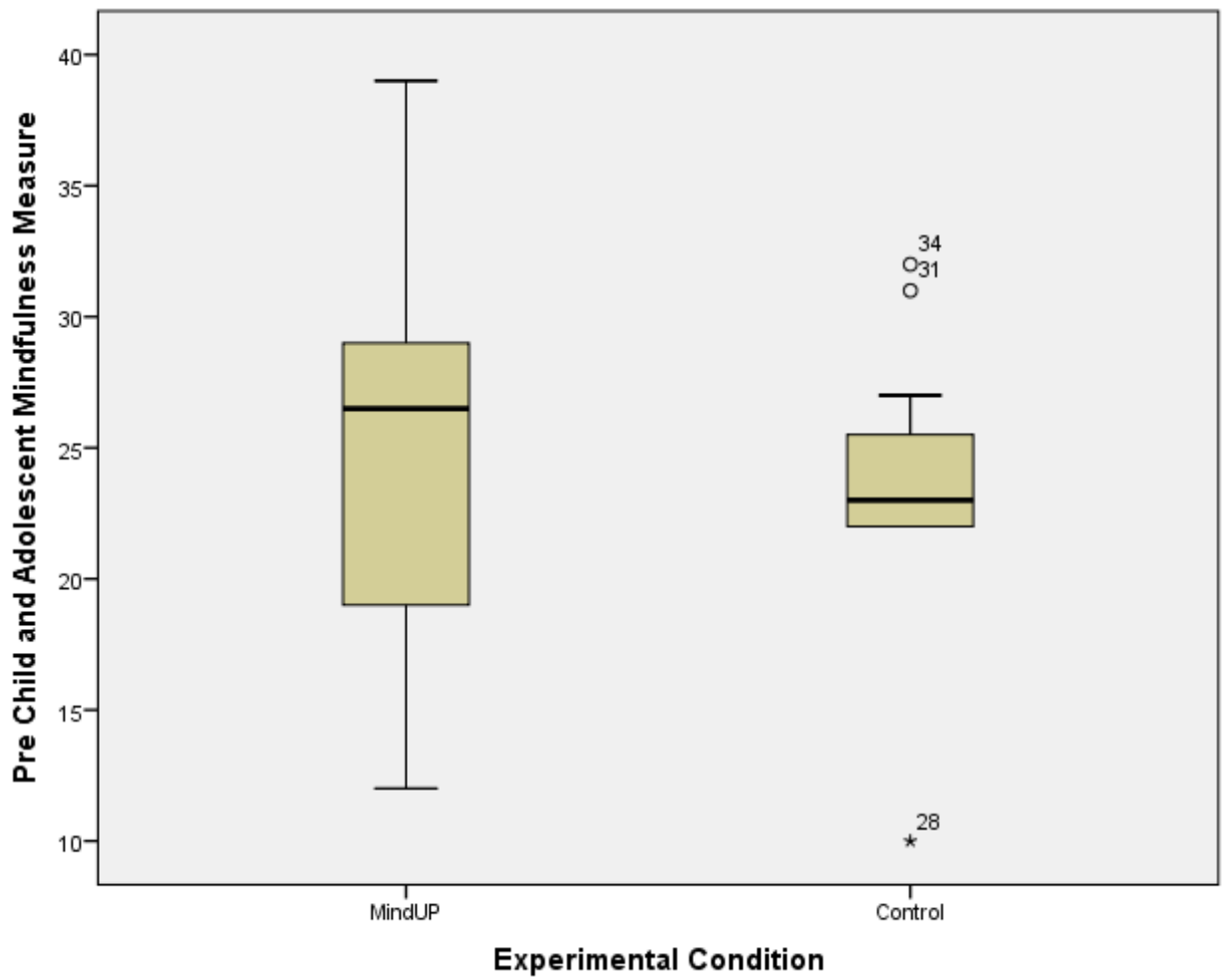
### Pre-Intervention Child and Adolescent Mindfulness Measure

### Mindful Awareness Investigation – Assumption Testing (Histogram)





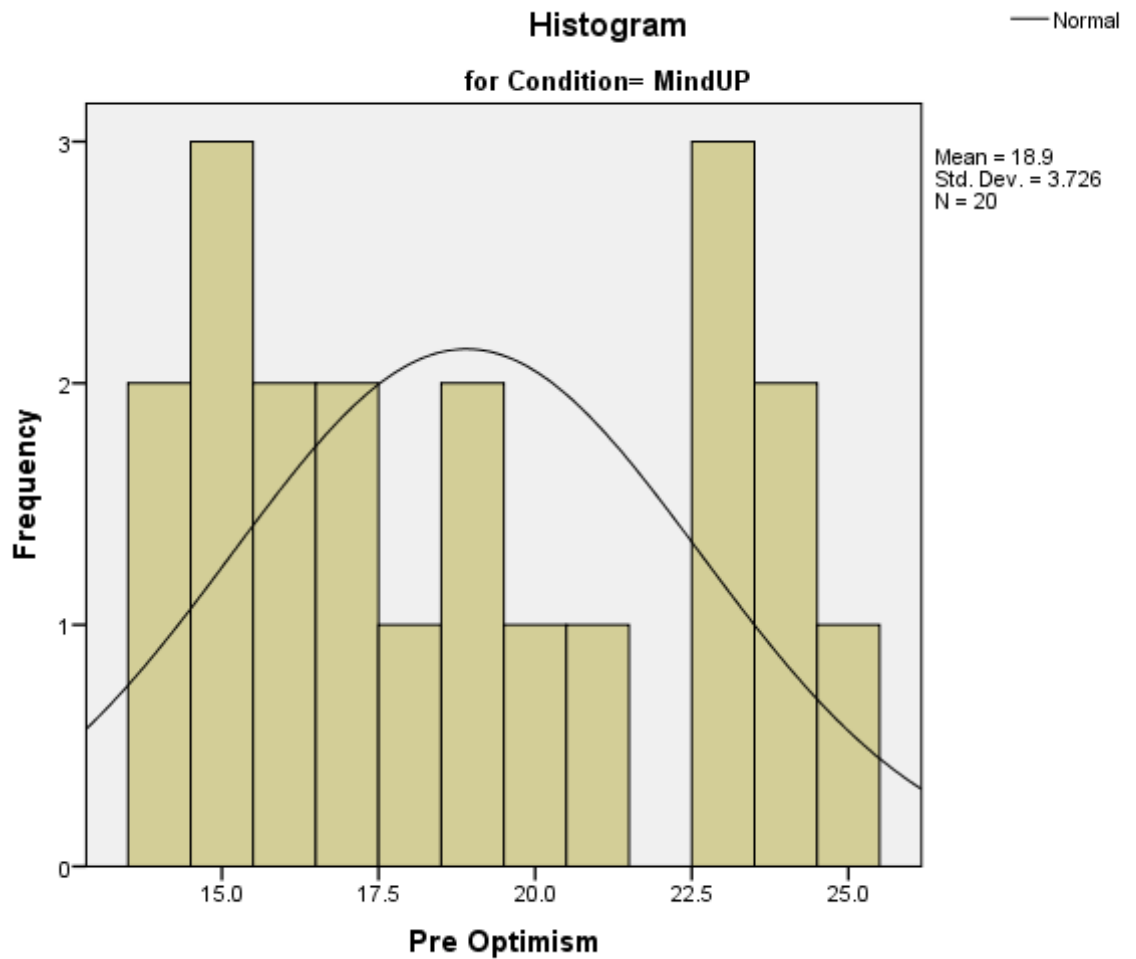
**Mindful Awareness Investigation – Assumption Testing (Box Plot)**

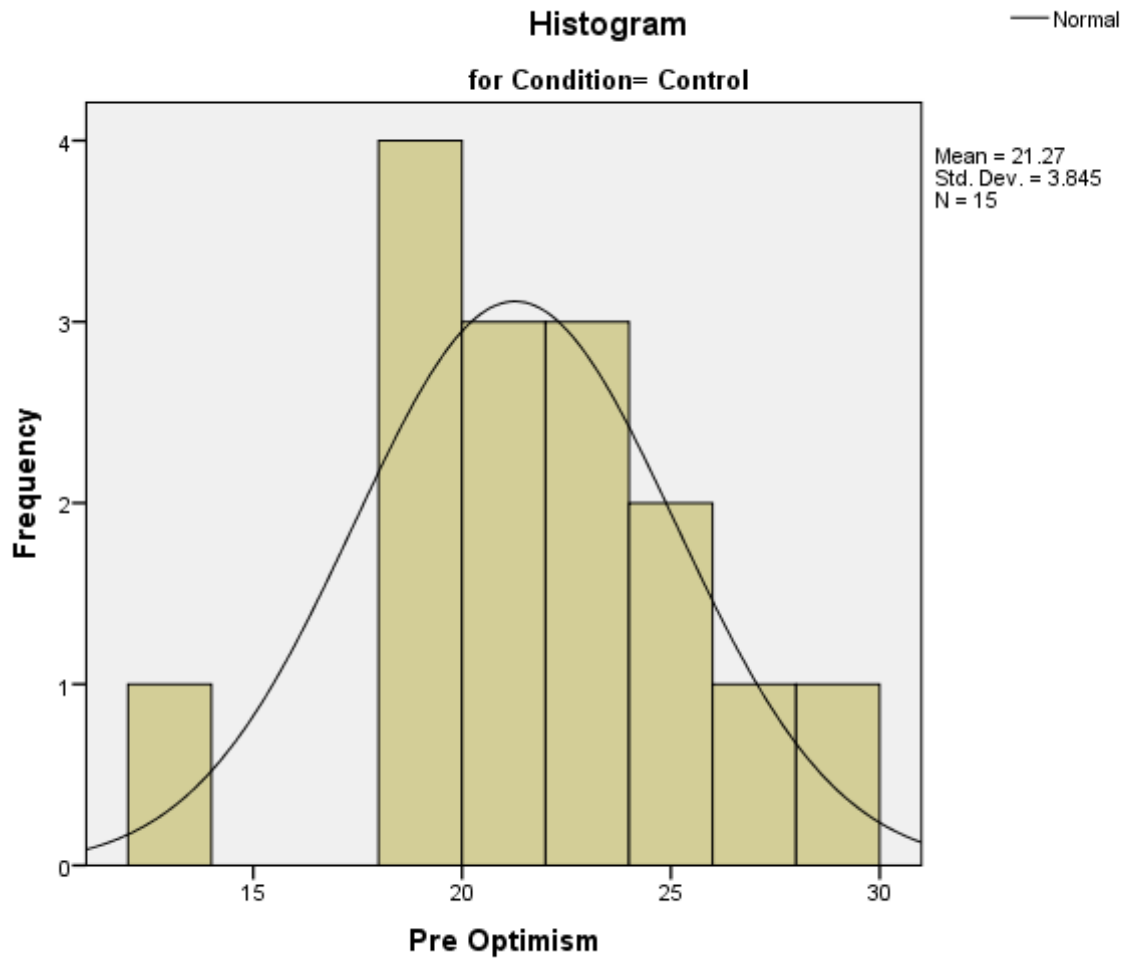


## Appendix 12: Optimism Investigation: Histogram and Box Plot

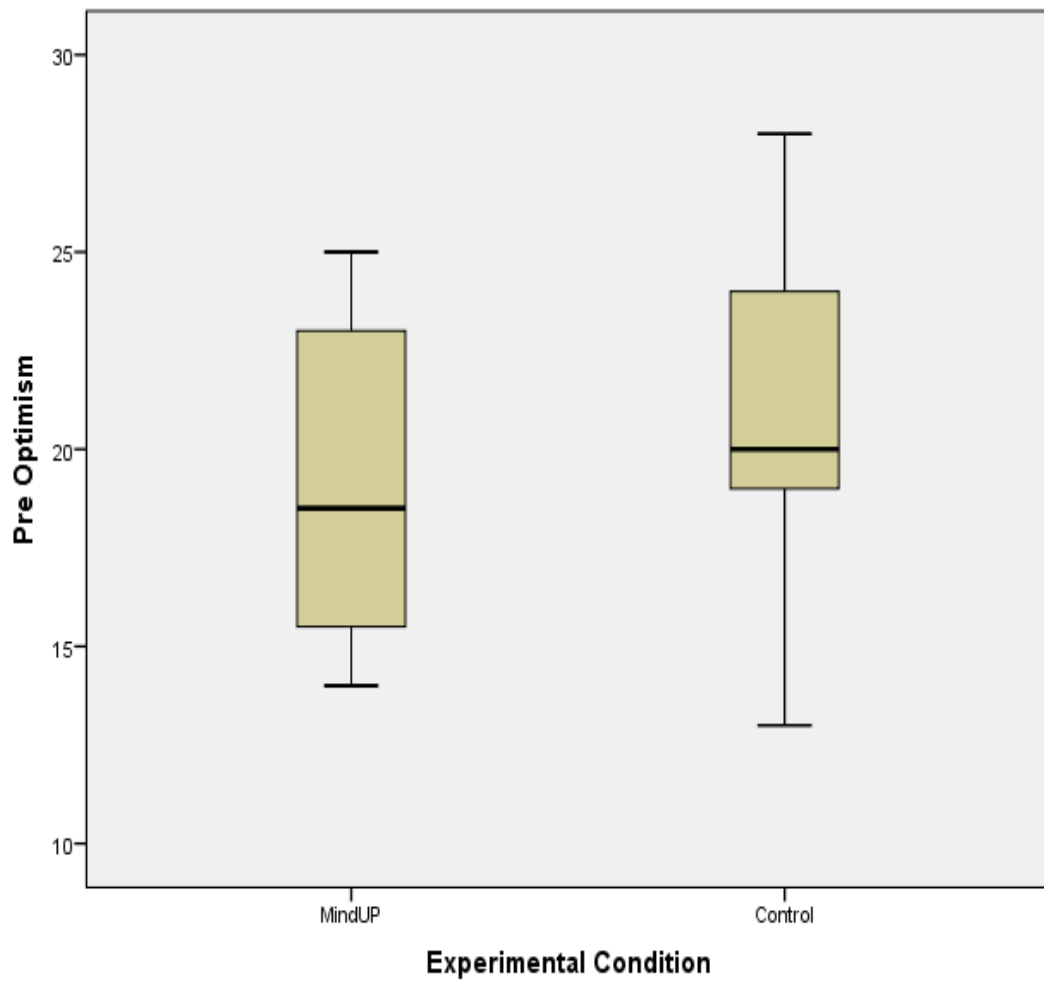
### Pre-Intervention Optimism Measure

#### Optimism Investigation – Assumption Testing (Histograms)





## Optimism Investigation – Assumption Testing (Box Plot)

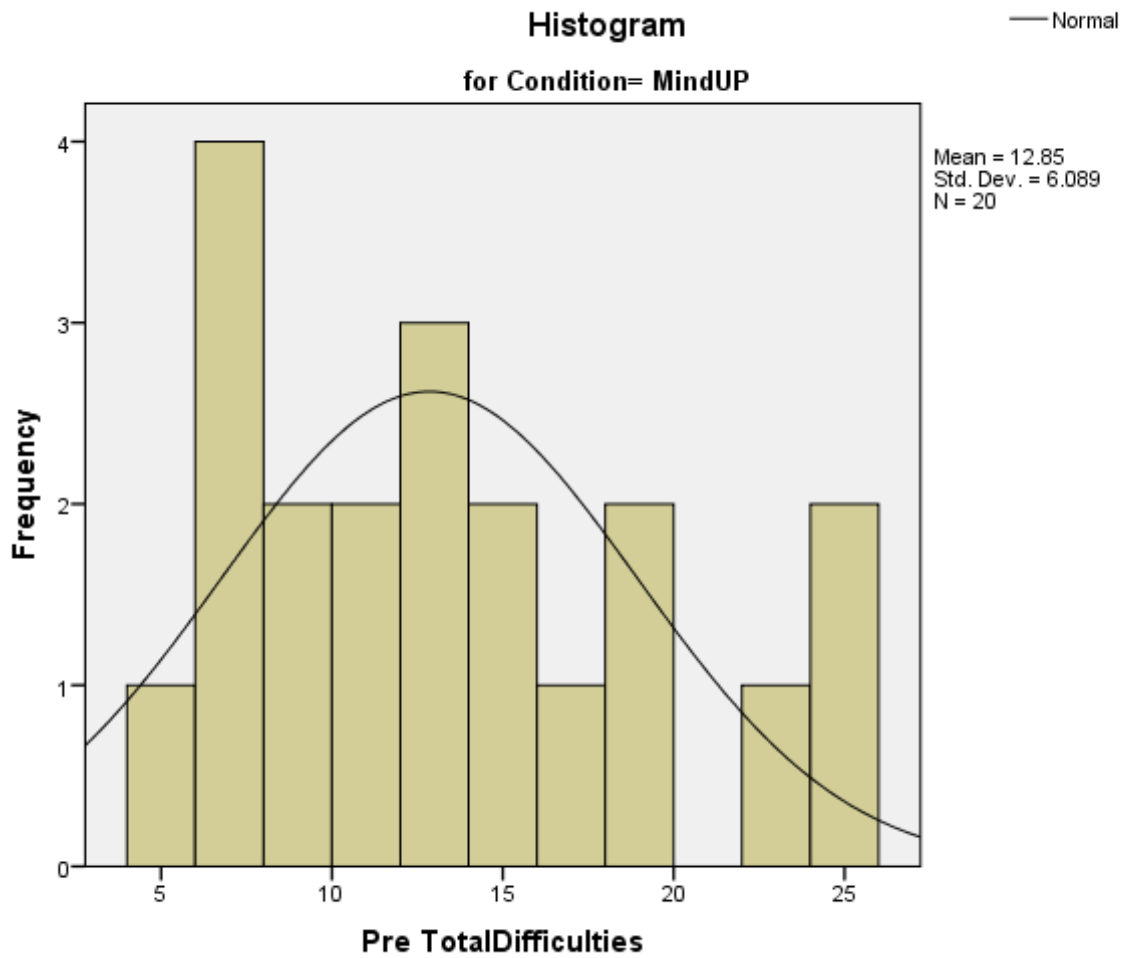


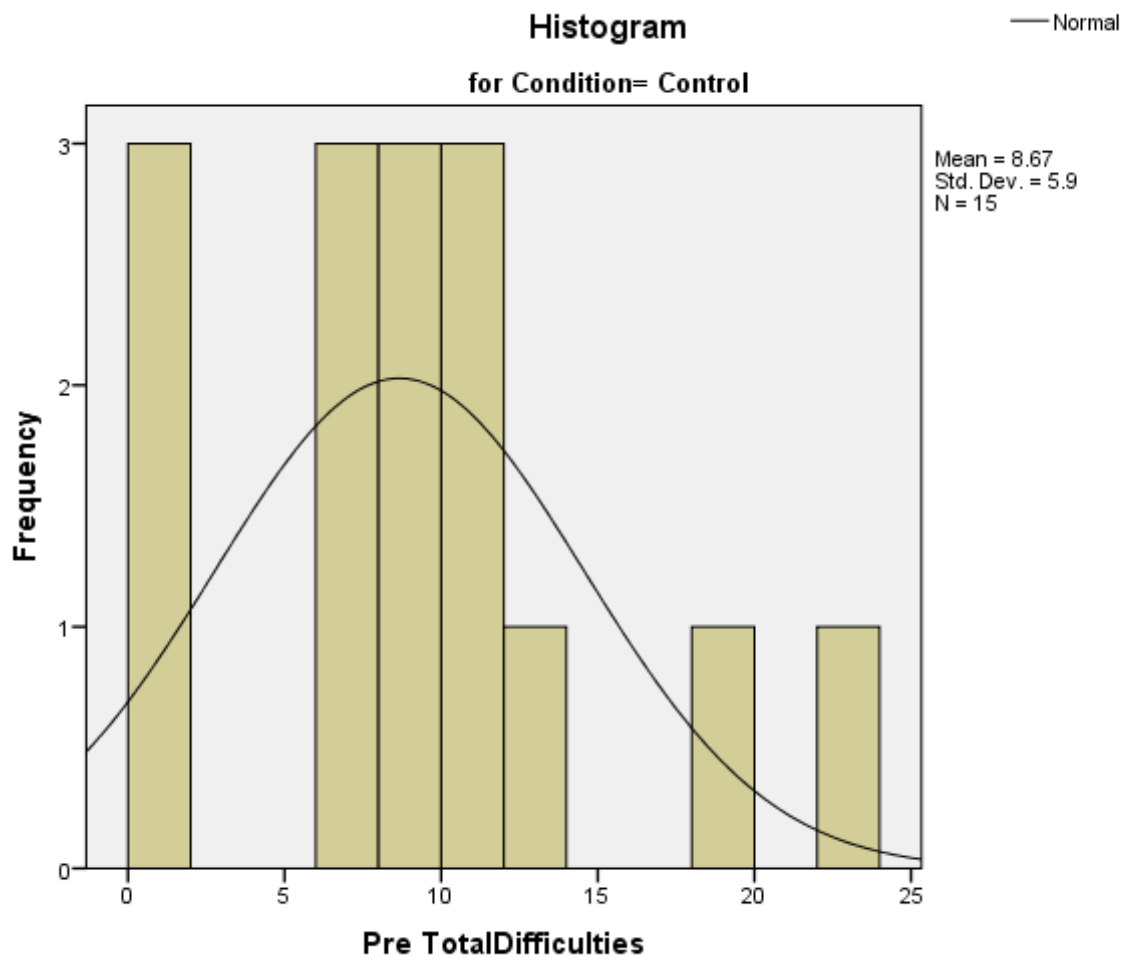


**Appendix 13: Social and Emotional Skill Investigation (Pupil) – Histogram and Box Plot**

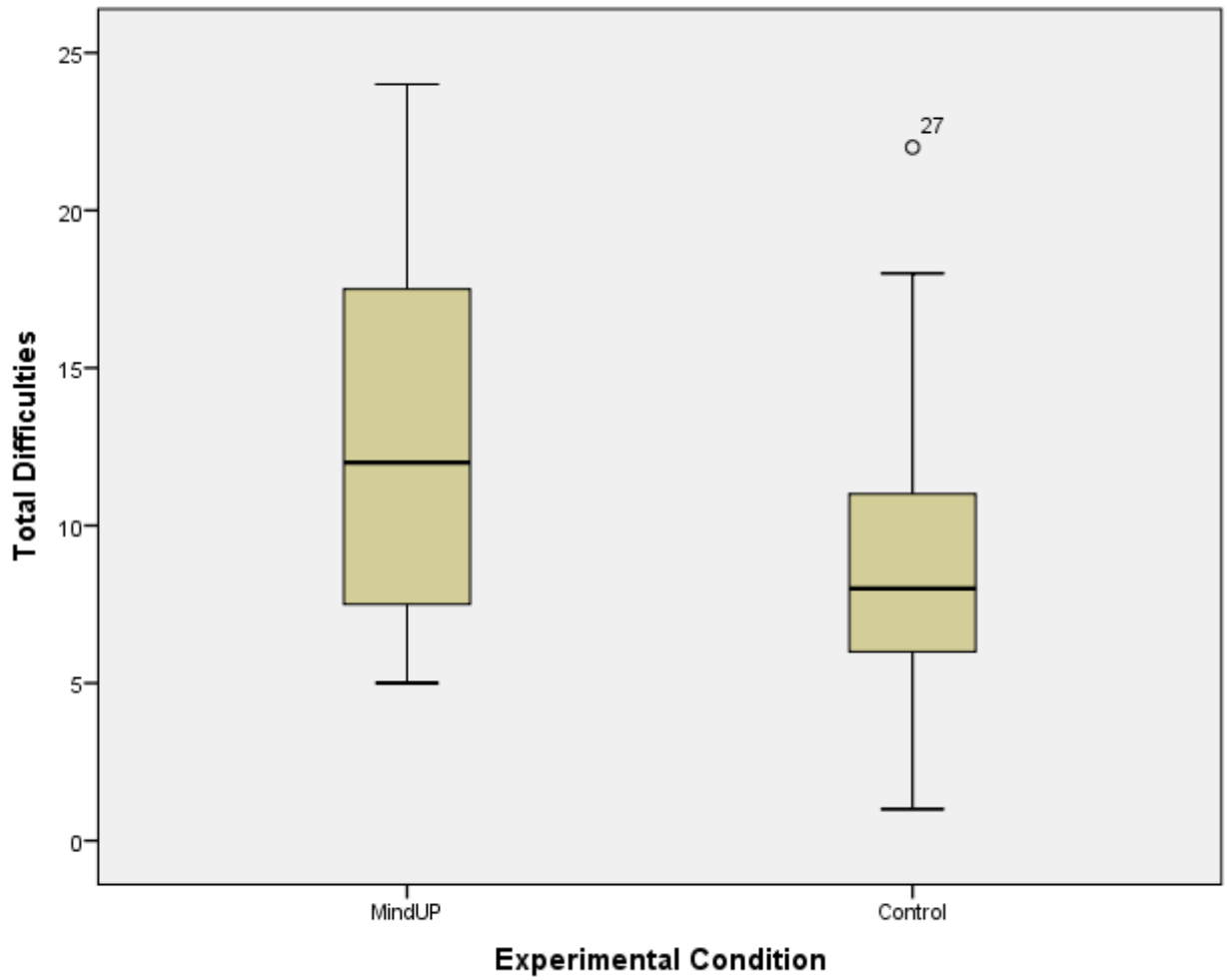
**Pre-Intervention Total Difficulties – Histogram and Box Plot**

**Total Difficulties (Pupil) – Assumption Testing (Histogram)**

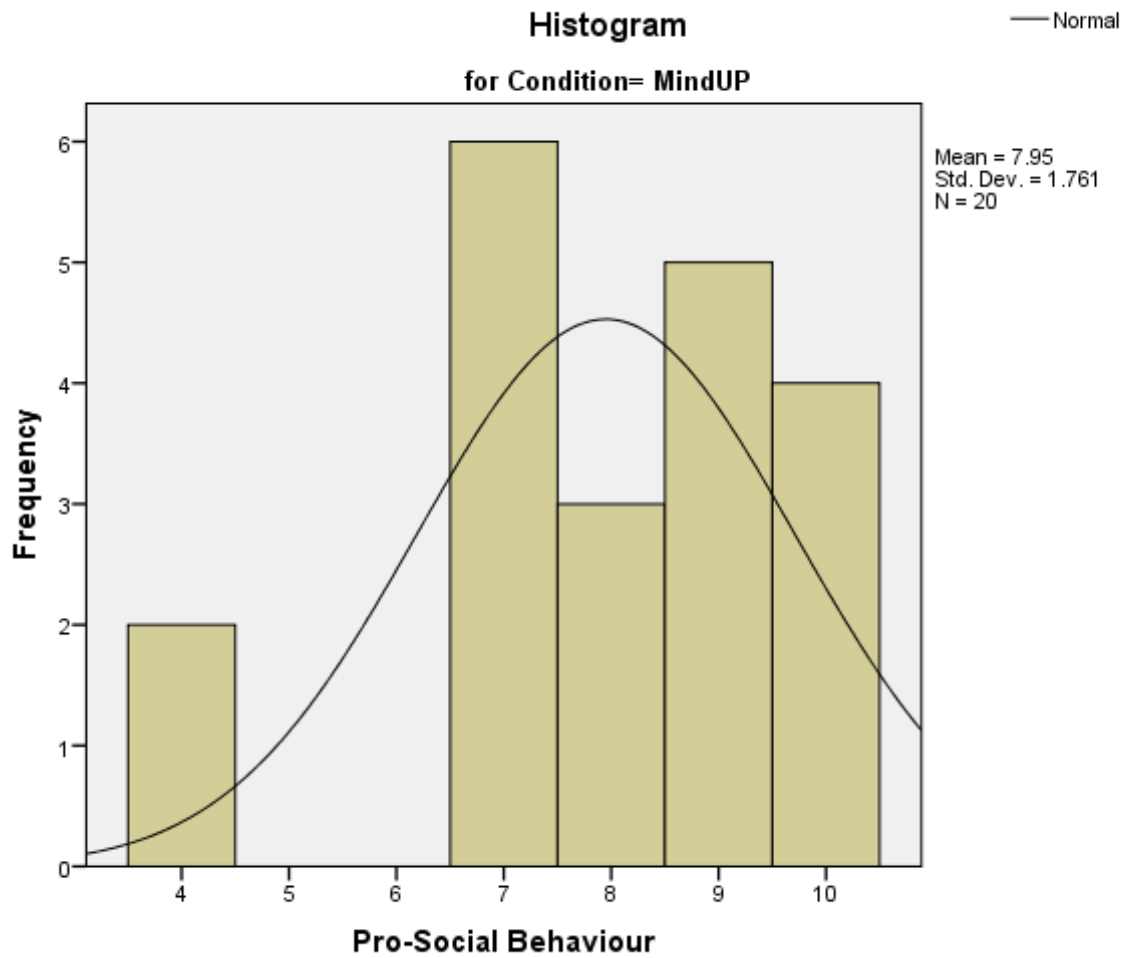


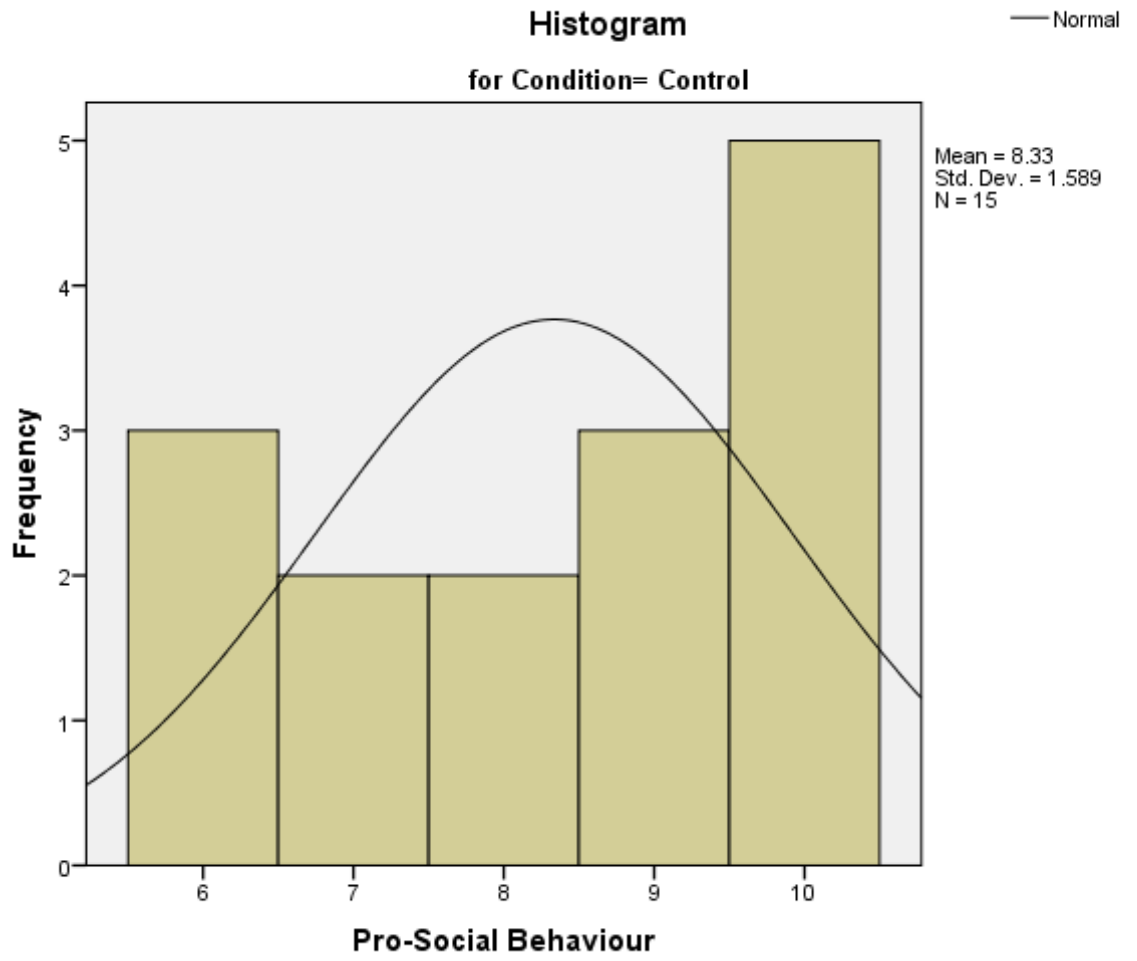


**Total Difficulties (Pupil) – Assumption Testing (Box Plot)**

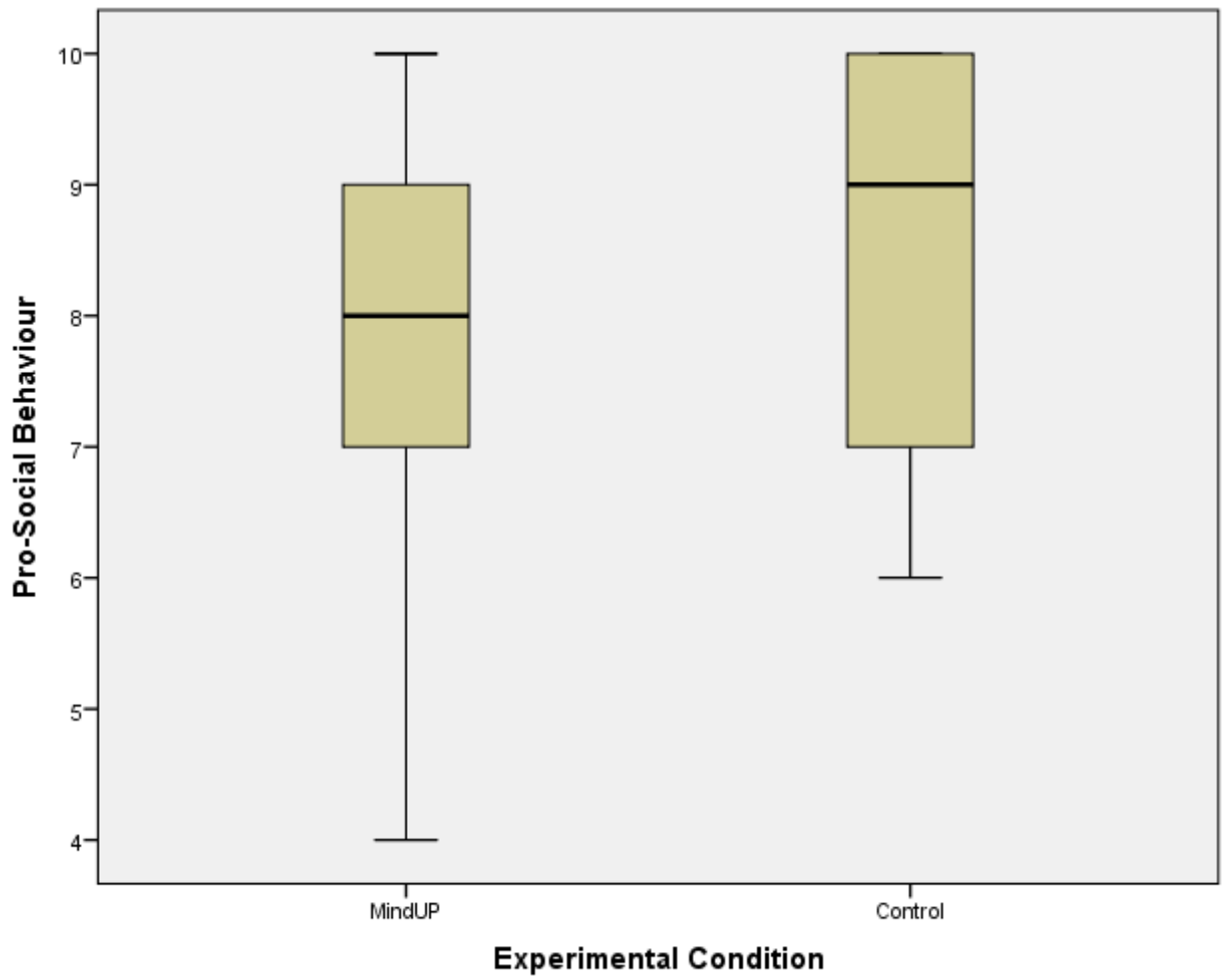


**Pro-social Behaviour (Pupil) – Assumptions Testing (Histogram)**





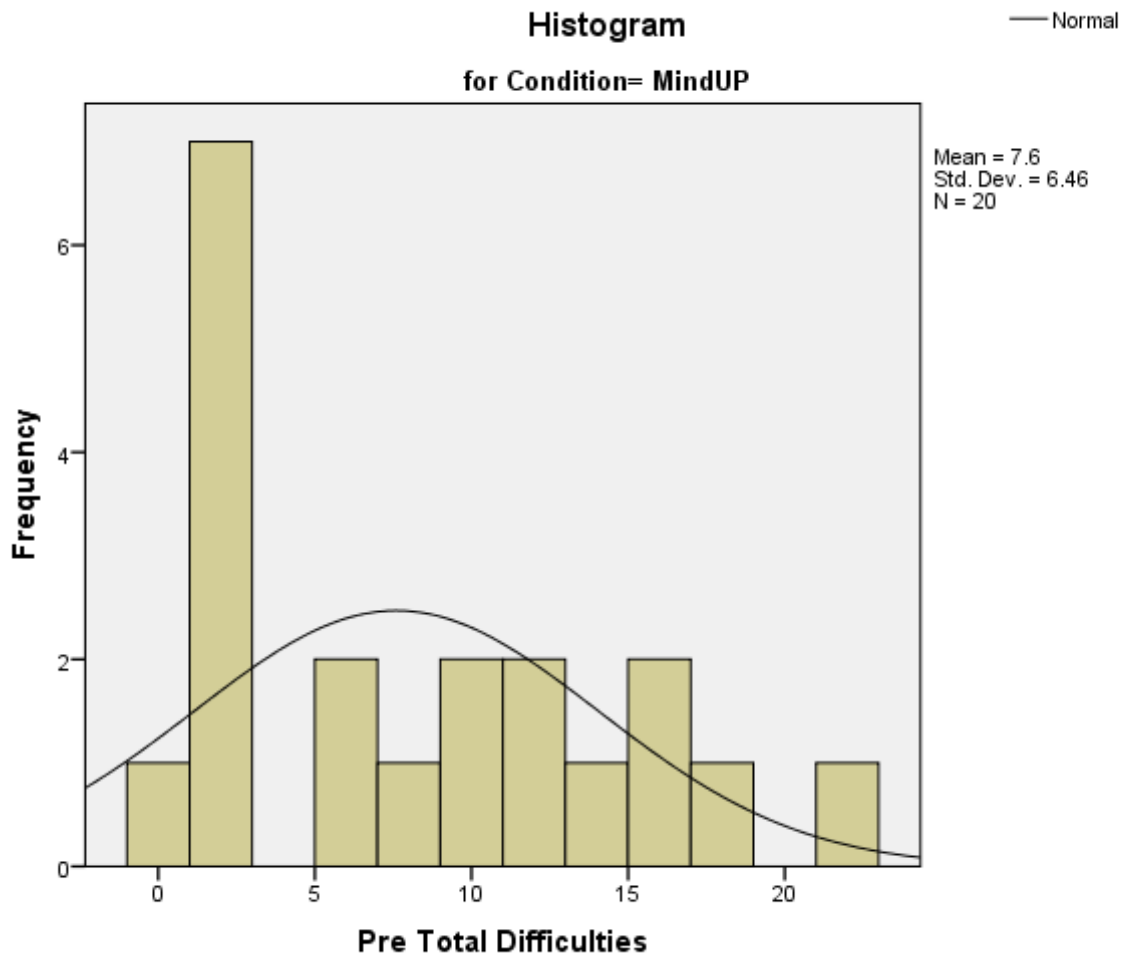
**Pro-social Behaviour (Pupil) – Assumptions Testing (Box Plot)**

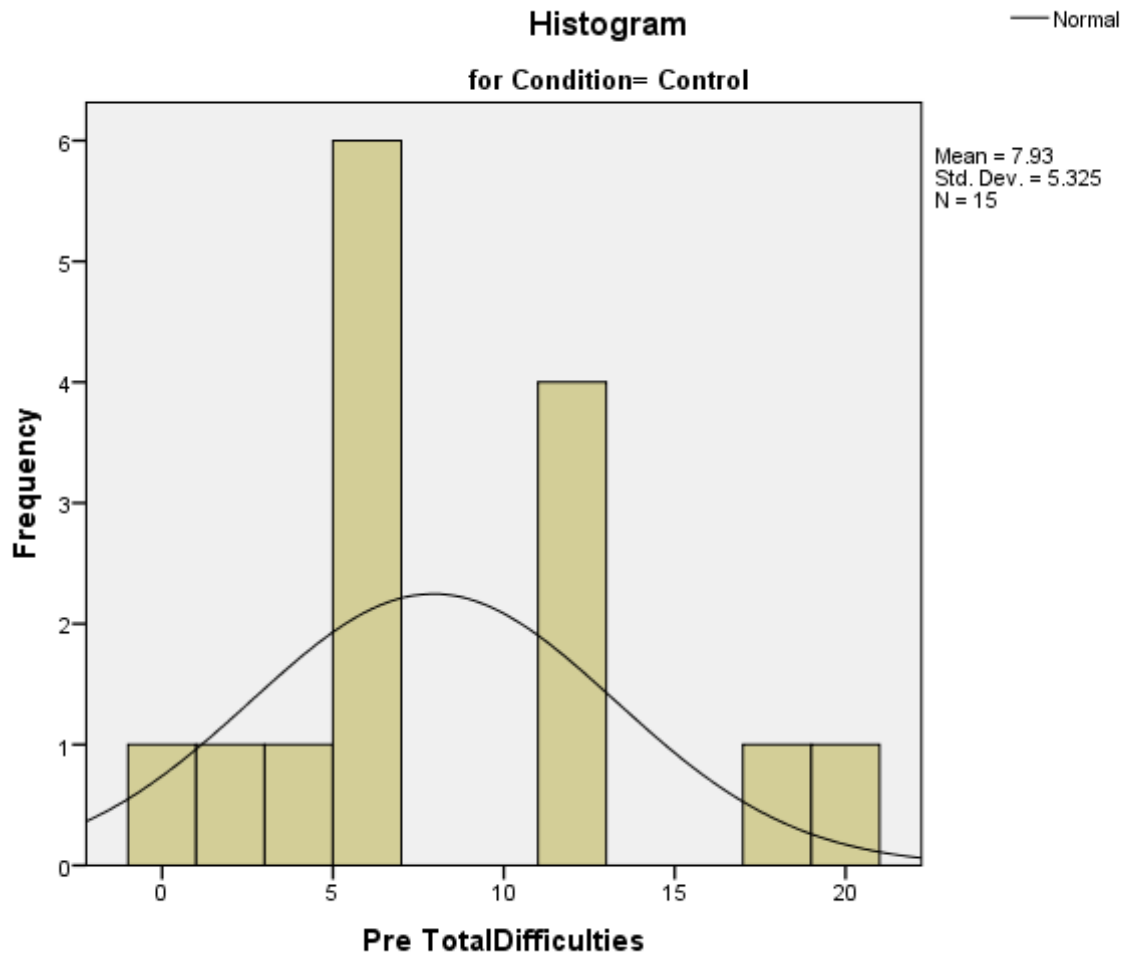


**Appendix 14: Social and Emotional Skill Investigation (Teacher) – Histogram and Box Plot**

**Pre-Intervention Total Difficulties – Histogram and Box Plot**

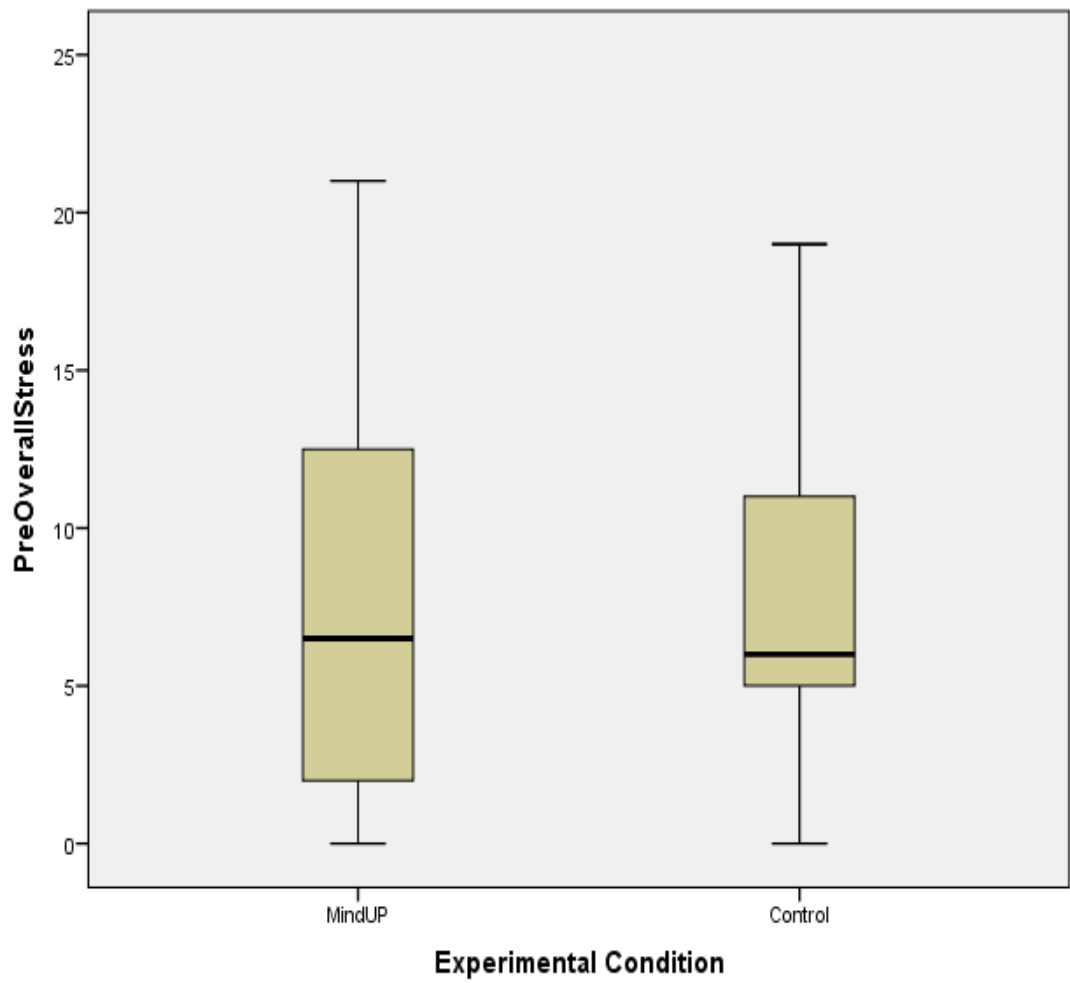
**Total Difficulties (Teacher) – Assumption Testing (Histogram)**



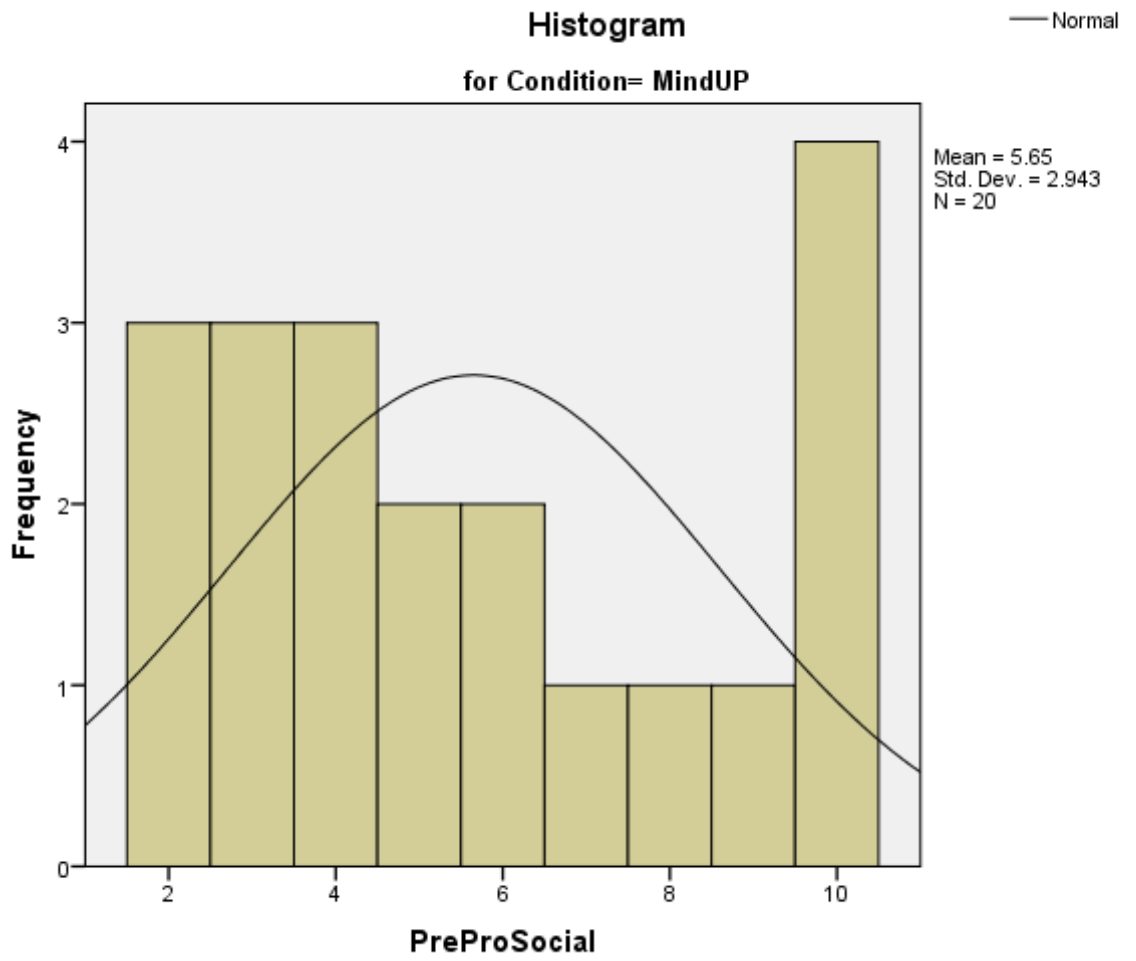


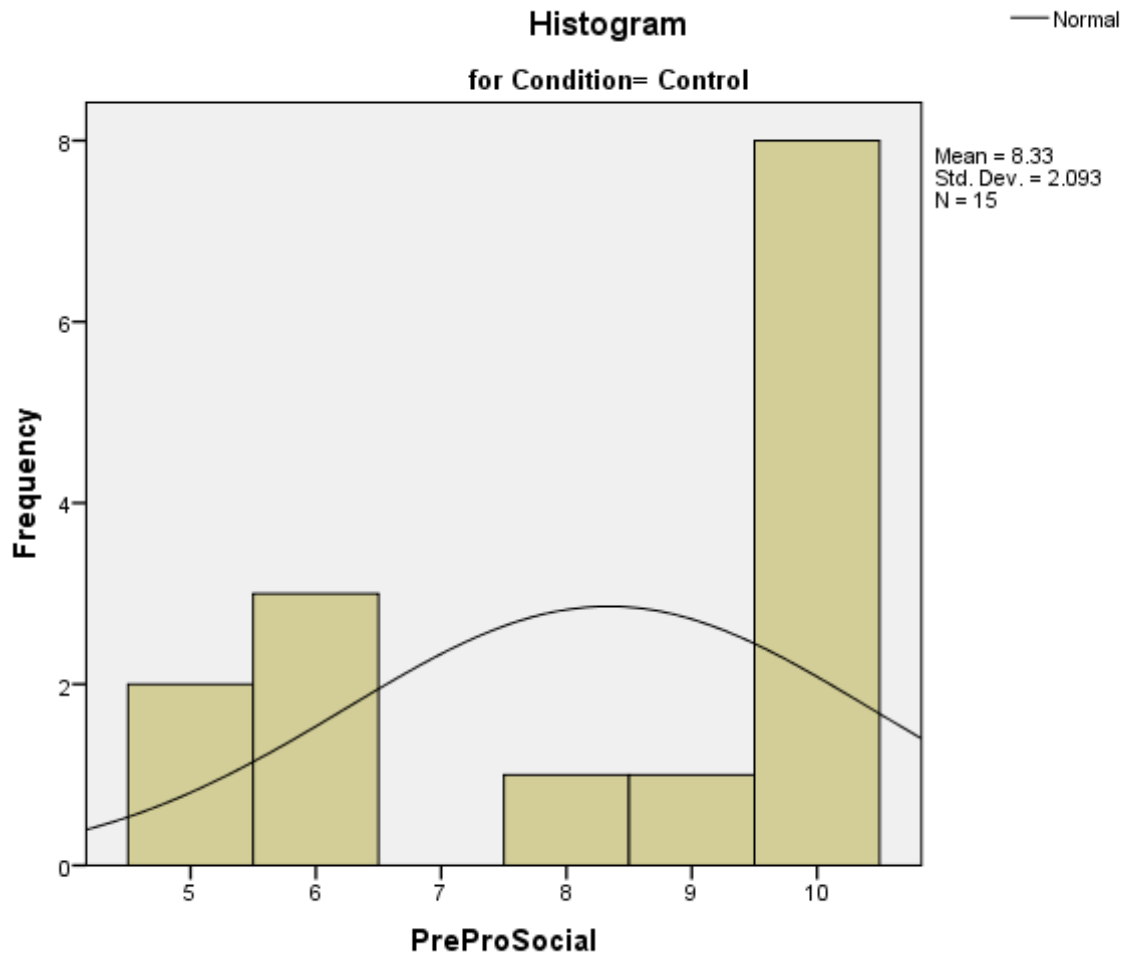


**Total Difficulties (Teacher) – Assumption Testing (Box Plot)**

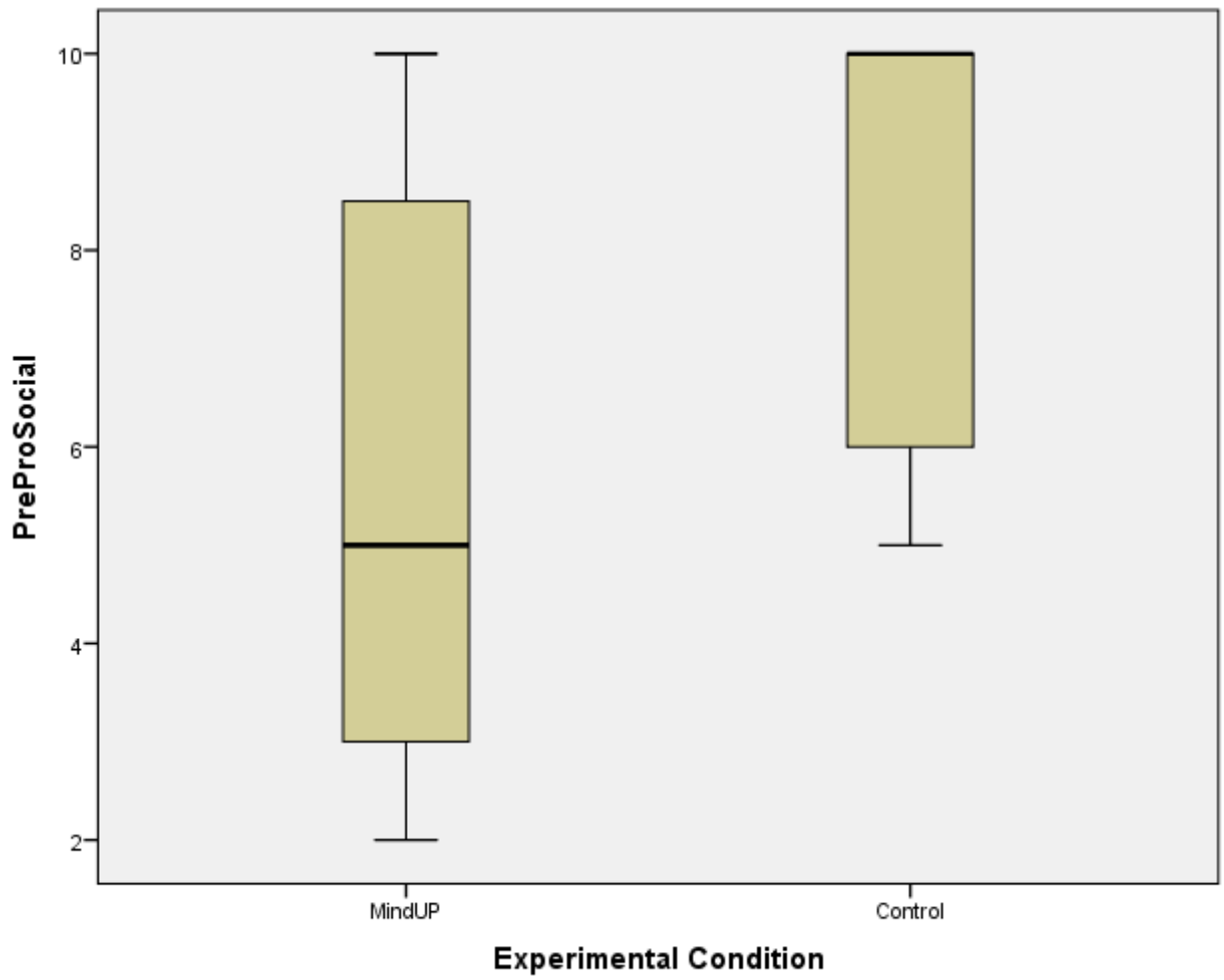


**Pro-social Behaviour (Teacher) – Assumptions Testing (Histogram)**





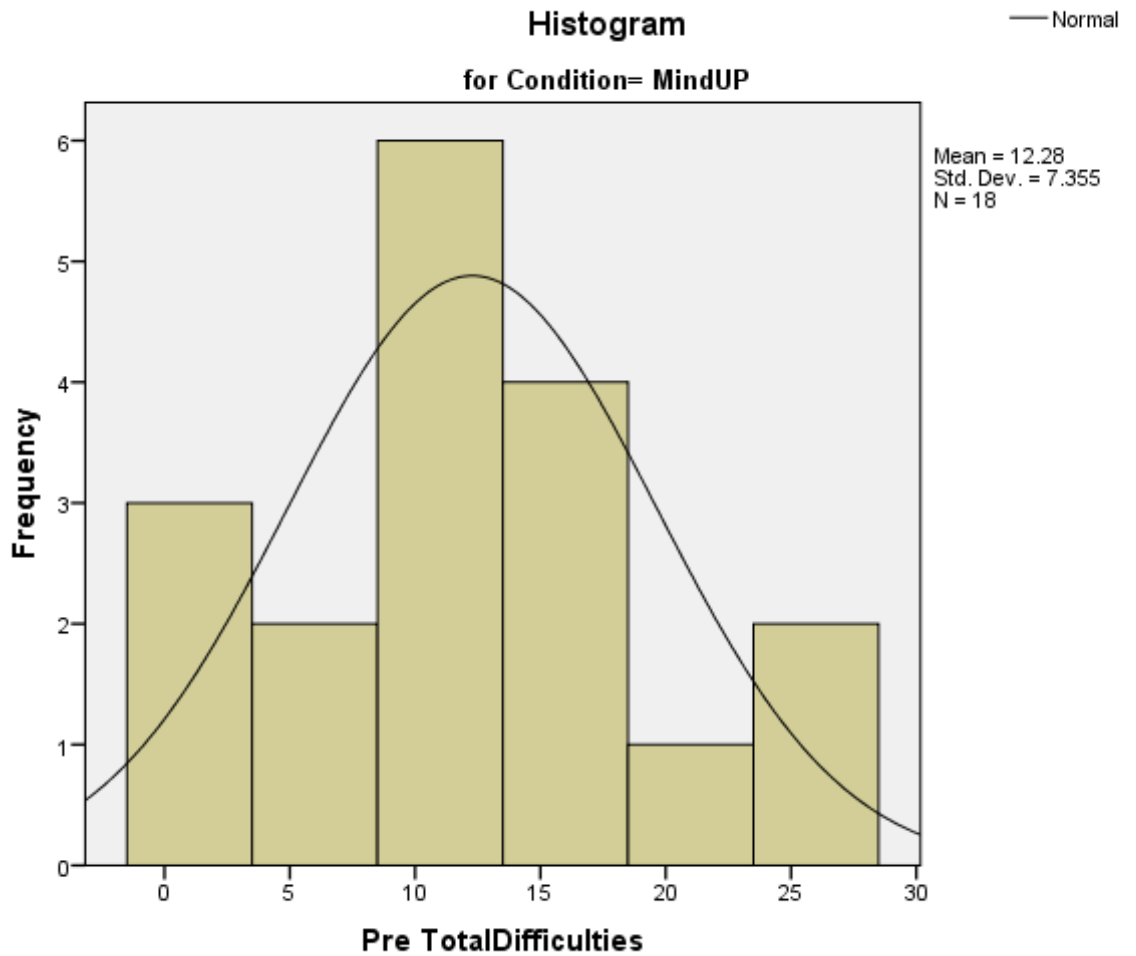
**Pro-social Behaviour (Teacher) – Assumptions Testing (Box Plot)**

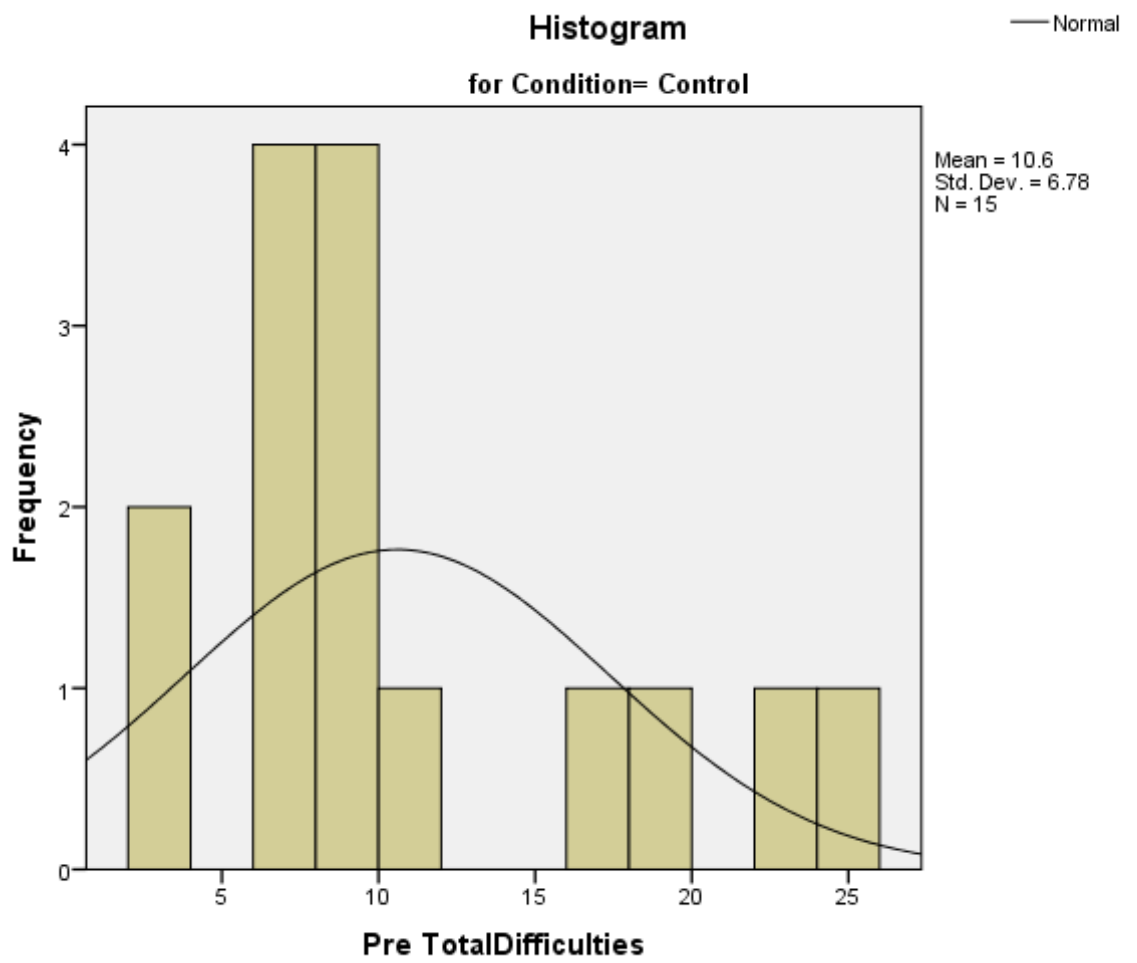


**Appendix 15: Social and Emotional Skill Investigation (Parent) – Histogram and Box Plot**

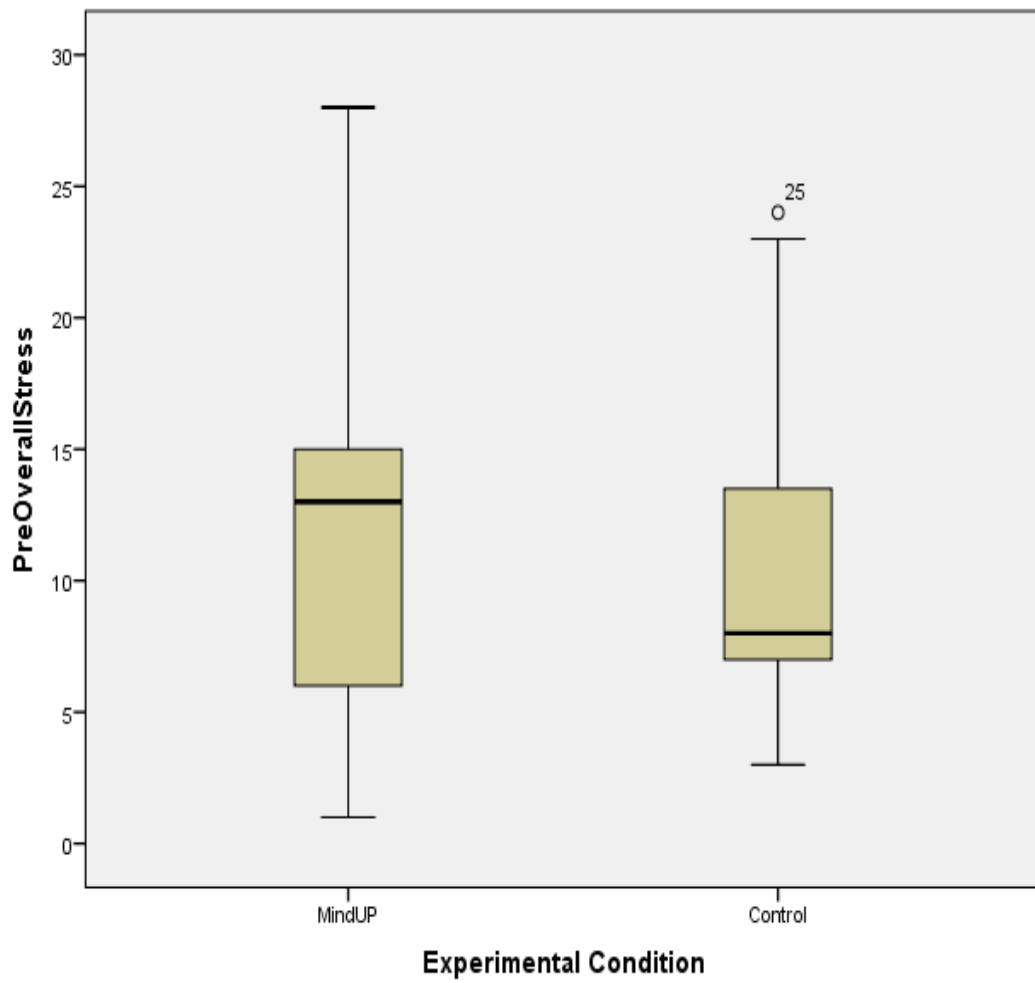
**Pre-Intervention Total Difficulties – Histogram and Box Plot**

**Total Difficulties (Parent) – Assumption Testing (Histogram)**

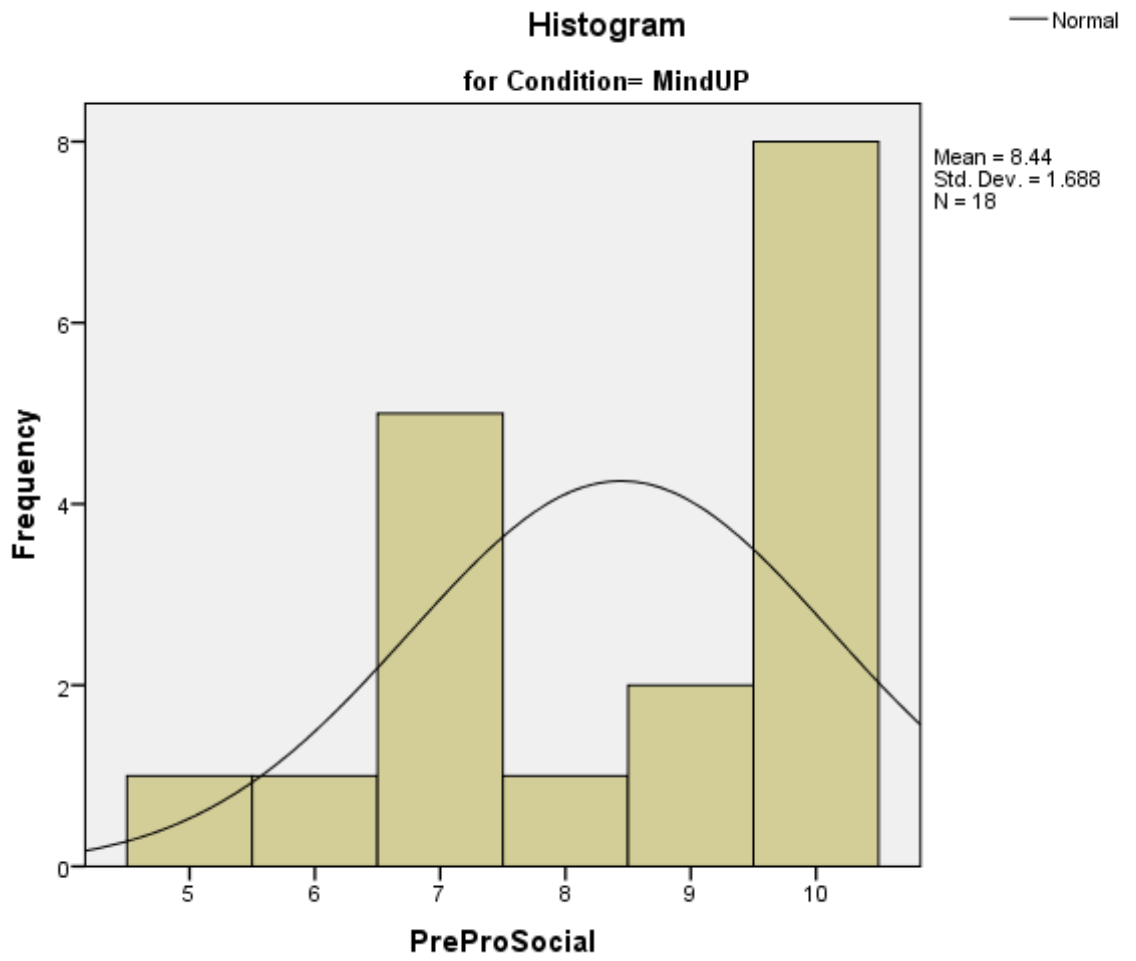




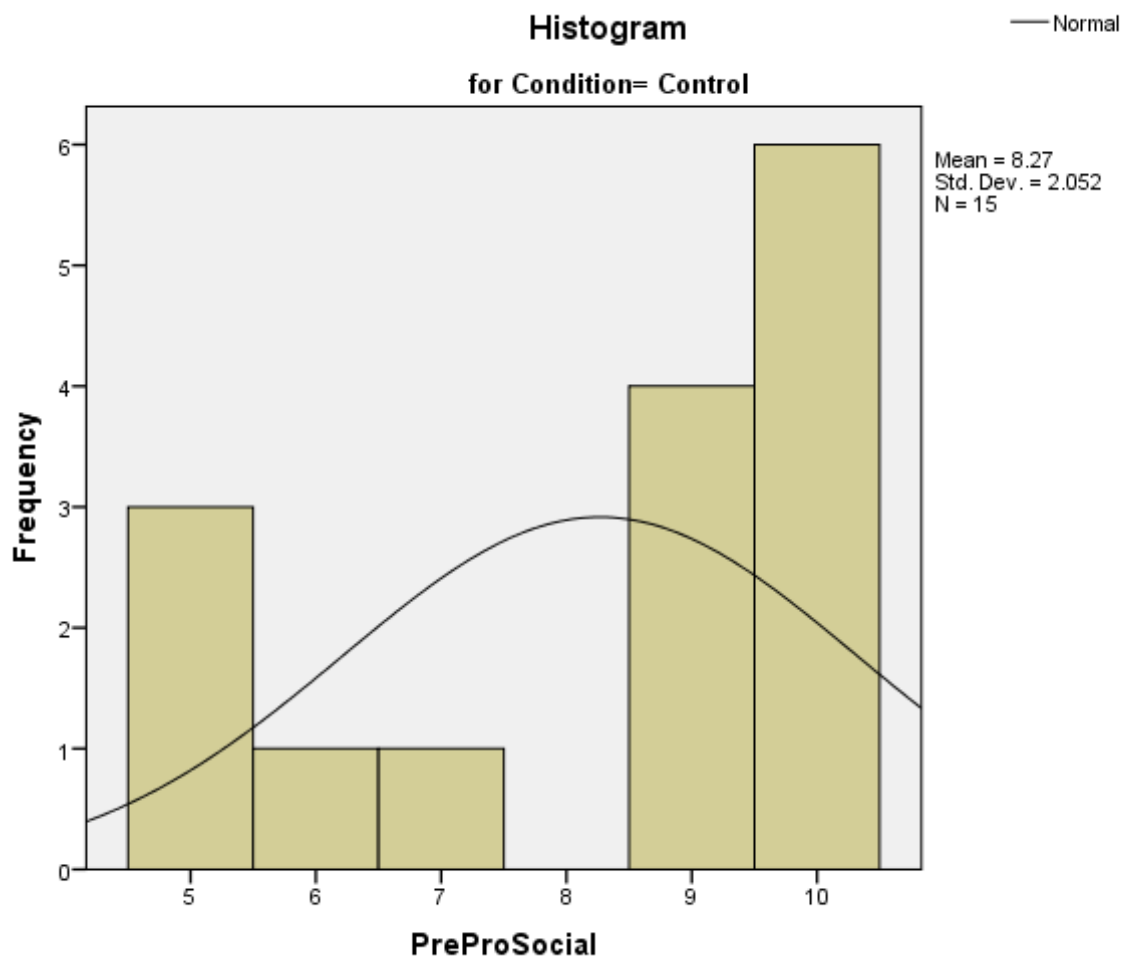
**Total Difficulties (Parent) – Assumption Testing (Box Plot)**



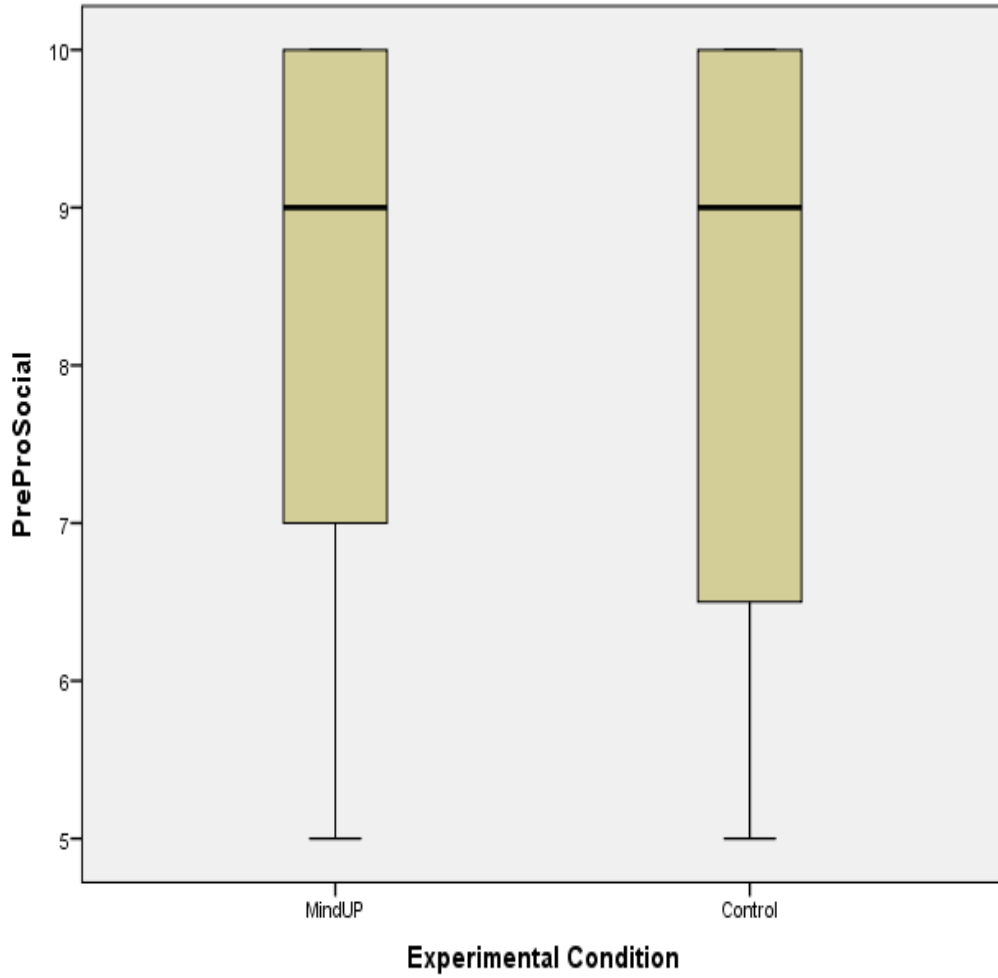
**Pro-social Behaviour (Parent) – Assumptions Testing (Histogram)**







**Pro-social Behaviour (Parent) – Assumptions Testing (Box Plot)**



## **Appendix 16: Qualitative Raw Data – Focus Groups**

### **What did you like about the mindfulness programme?**

D: Food tasting because got to try foods that really liked and some that thought didn't like.

G: I liked the bit when we were smelling different pots because I could sense different information of what we were smelling

R: I liked how the sessions were hands on and very interactive

N: I liked the bit when we read the books because we learnt about different perspectives and learnt how to know what to do in different situations

T: I liked the part when we all did the hearing

V: I actually liked everything. It was really fun! I enjoyed all the sessions which was good because sometimes it can be a bit boring for older children but they weren't at all.

M: I liked the food and the smelling. We got to smell all kinds of stuff and it helped me to think more when I smell.

S: The foodies because we hadn't tasted them for so long and then when we tasted them after waiting for so long the flavours exploded in our mouths!

K: I enjoyed that we all got to say our opinions, linked to everyday and it helped us to make the right choices

Y: I can't think of anything

F: I liked how it was different and it was interactive and made you think more differently about things

A: I liked that there were different things every week. It was fun and relaxing and made me think more

B: It was fun! I liked that it was interactive instead of everyone just sitting in a circle and listening

C: I enjoyed the activeness in the lessons instead of just sitting at a table and working

G: You made it fun and it wasn't just one thing we were learning about.

L: I don't know

A: Mine was when we were eating chocolate because it was tasty

H: I liked learning about the brain and learning about what the different parts do

L: I liked learning about the brain

W: I enjoyed it when we did mindful tasting and when we were passing the pencil around because some people messed it up and it was funny

C: I liked the tasting because of the chocolate

O: Mine was the first session when we learnt about the brain because I learnt about the parts of the brain and what happens when I fight freeze and flight.

G: I liked it when we sat in a circle and built up all our ideas

U: I liked the movement activities

**What did you NOT like about the mindfulness programme?**

D: Not really – I don't know

G: I can't think of anything

R: I really don't know

N: First day, all knowing about the brain. It would have been good to have expanded on that and know more about controlling our emotions

T: Nope

V: I didn't really like the movement one. It wasn't that fun.

M: I didn't like it when we were reading the books because it was boring and there was more writing

S: I don't know it was too good.

K: I didn't like that we didn't do a lot of games and couldn't go out more

Y: I didn't like it when you randomly selected us on the iPad!

F: I would have liked there to have been more ways for us to think about mindfulness because some things are hard

A: I didn't like that it

B: I didn't like it as much because it was very personal and I didn't like that. Sometimes it was too personal.

C: I didn't like that it didn't continue! I would have liked it to be part of our lessons

G: I can't think of anything

L: I don't know

A: The first one – I didn't like learning about the brain

H: Nothing

L: I didn't like sitting still for ages

W: I didn't like the mindful movement

C: The first one because it made me feel sick when we saw the brain poster

O: I didn't like the chocolate one because I don't like brown chocolate

G: I don't know

U: I liked everything!

**Do you think anything has changed for you since you received the mindfulness programme? If so, tell me about that...**

D: I think yeah. Usually at home I've stopped doing certain things I did before. I've started helping out more when before I would forget to do things like the dishwasher

G: What has changed for me is I'm starting to think more optimistically. Before I worried more about things at the start but now I think better and more optimistically

R: I don't know

N: I think nothing has changed for me except the laughing when doing the breathing. You helped me to stop laughing and taught me to calm down

T: None of the sessions changed me

V: I try to do more mindful eating. Before I'd eat food without caring but now I eat more slowly so I can taste it all

M: I don't think anything has changed for me except the movement session was good because it helped me to be more aware of my body. When you talked about pressure on our feet when we were balancing I noticed it more and so now I notice more when my body is hurting.

S: I am better at balancing. Before I couldn't balance at all but now I have come in first in a balancing competition!

Y: No

F: I think more about other people more and their points of view

A: I'm more mindful about what I do

C: before I would be more angry but now I think more about what I'm doing and feel like I can control that

G: Everything has changed for me and the way I think

K: I find it easier to make the right decisions and calm down

A: I'm better with my friends.

H: I made more friends!

L: I know how to calm down a little better

W: A bit has changed. I think about other people's perspective more but I didn't before

C: Kind of my brainstorming has changed

O: For me, I'm smarter with my brain

G: Whenever I have a certain emotion I think about which part of my brain is working

U: My mind gets changed – first I didn't know about my brain but now I do!

## Appendix 17: Initial Codes and Themes for Qualitative Data

### What did you like about the mindfulness programme?

**Pink** – Sensory experiences (taste, smell, hearing, movement)

**Yellow** – Enjoyment (variety, fun, sessions)

**Green** – Participation (active, hands on, variety)

**Aqua** – Social Awareness (perspectives, thinking differently, making choices, sharing ideas, brain)

**Grey** – Nothing

D: Food tasting because got to try foods that really liked and some that thought didn't like.

G: I liked the bit when we were smelling different pots because I could sense different information of what we were smelling

R: I liked how the sessions were hands on and very interactive

N: I liked the bit when we read the books because we learnt about different perspectives and learnt how to know what to do in different situations

T: I liked the part when we all did the hearing

V: I actually liked everything. It was really fun! I enjoyed all the sessions which was good because sometimes it can be a bit boring for older children but they weren't at all.

M: I liked the food and the smelling. We got to smell all kinds of stuff and it helped me to think more when I smell.

S: The foodies because we hadn't tasted them for so long and then when we tasted them after waiting for so long the flavours exploded in our mouths!

K: I enjoyed that we all got to say our opinions, linked to everyday and it helped us to make the right choices

Y: I can't think of anything

F: I liked how it was different and it was interactive and made you think more differently about things

A: I liked that there were different things every week. It was fun and relaxing and made me think more

B: It was fun! I liked that it was interactive instead of everyone just sitting in a circle and listening



C: I enjoyed the activeness in the lessons instead of just sitting at a table and working

G: You made it fun and it wasn't just one thing we were learning about.

L: I don't know

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C: I liked the tasting because of the chocolate

O: Mine was the first session when we learnt about the brain because I learnt about the parts of the brain and what happens when I fight freeze and flight.

G: I liked it when we sat in a circle and built up all our ideas

U: I liked the movement activities

**What did you NOT like about the mindfulness programme?**

Yellow – Feeling Triggered

Red – Nothing

Green – Brain awareness

Aqua – Participation

Pink – Sessions

D: Not really – I don't know

G: I can't think of anything

R: I really don't know

N: First day, all knowing about the brain. It would have been good to have expanded on that and know more about controlling our emotions

T: Nope

V: I didn't really like the movement one. It wasn't that fun.

M: I didn't like it when we were reading the books because it was boring and there was more writing

S: I don't know it was too good.

K: I didn't like that we didn't do a lot of games and couldn't go out more

Y: I didn't like it when you randomly selected us on the iPad!

F: I would have liked there to have been more ways for us to think about mindfulness because some things are hard

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B: I didn't like it as much because it was very personal and I didn't like that. Sometimes it was too personal.

C: I didn't like that it didn't continue! I would have liked it to be part of our lessons

G: I can't think of anything

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A: The first one – I didn't like learning about the brain

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W: I didn't like the mindful movement

C: The first one because it made me feel sick when we saw the brain poster

O: I didn't like the chocolate one because I don't like brown chocolate

G: I don't know

U: I liked everything!

**Do you think anything has changed for you since you received the mindfulness programme? If so, tell me about that...**

**Red** – no change

**Yellow** – Self-awareness

**Green** – Managing emotions

**Grey** - Social awareness

**Blue** – Relationship skills

**Pink** – Sensory awareness

**Aqua** – Altered thinking

D: I think yeah. Usually at home I've stopped doing certain things I did before. I've started helping out more when before I would forget to do things like the dishwasher

G: What has changed for me is I'm starting to think more optimistically. Before I worried more about things at the start but now I think better and more optimistically

R: I don't know

N: I think nothing has changed for me except the laughing when doing the breathing. You helped me to stop laughing and taught me to calm down

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M: I don't think anything has changed for me except the movement session was good because it helped me to be more aware of my body. When you talked about pressure on or feet when we were balancing I noticed it more and so now I notice more when my body is hurting.

S: I am better at balancing. Before I couldn't balance at all but now I have come in first in a balancing competition!

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F: I think more about other people more and their points of view

A: I'm more mindful about what I do

C: before I would be more angry but now I think more about what I'm doing and feel like I can control that

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K: I find it easier to make the right decisions and calm down

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