The influence of teacher characteristics on implementation variability in a universal social and emotional learning programme

A thesis submitted to The University of Manchester for the degree of PhD in the Faculty of Humanities

2016
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MANCHESTER INSTITUTE OF EDUCATION
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Abstract

The influence of teacher characteristics on implementation variability in a universal social and emotional learning programme

Research indicates a significant rise in child and adolescent mental health difficulties over the past few decades (Mental Health Foundation, 2015). Evidence-based programmes are becoming increasingly favoured as a preventative measure to address these difficulties, given that a large number of interventions delivered in schools have been shown to be effective (Domitrovich et al., 2008). While schools offer an ideal stage for the prevention of mental health difficulties, research suggests that the outcomes of evidence-based programmes are heavily moderated by implementation variability (Durlak, 2015). A key driver of effective implementation and therefore, positive outcomes, is the implementer - who in the case of school-based preventative programmes is almost exclusively the class teacher.

The aim of the current study was to investigate the influence of individual level teacher characteristics on implementation variability in a universal social and emotional learning programme, using data drawn from the evaluation of the PATHS to Success trial (Humphrey et al., under review). A concurrent embedded mixed methods design was used to gain a fuller appreciation of the individual level factors that affect implementation variability. A total of 183 teachers were included in the analyses, who completed surveys regarding their professional and psychological characteristics, as well as their perceptions of and attitudes towards interventions. Data were analysed using multiple regression, including a series of interaction terms. Missing data were addressed by means of multiple imputation. There were twelve focus teachers in the qualitative strand, with interviews conducted to investigate the individual level barriers and facilitators associated with implementation variability. Teachers’ interview data was analysed thematically.

Results indicated that teachers’ characteristics did have an influence on implementation variability, although this varied depending on the aspect of implementation. A series of multiple regression analyses indicated that implementer characteristics accounted for 9% of the variance in the fidelity model, 21% in the dosage model, and 15% in the quality model. No individual predictors were significant, although there were some marginally non-significant trends. There was also no reported increase in the variance across the three models when a series of interaction terms were added. The qualitative interviews aided the clarification of some of the quantitative findings, adding substantial depth to some of the conclusions drawn, with school leadership emerging as a significant factor in the successful implementation of the programme. There were a number of implications as a result of the findings from the current study for researchers, programme developers, and schools in understanding implementation variability at the individual level. Directions for future research are discussed in light of these findings.
Declaration

No portion of the work referred to in the thesis has been submitted in support of an application for another degree or qualification of this or any other university or other institute of learning.

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The author

The author of this thesis originally trained as an English teacher and taught in secondary schools in both Scotland and England. An interest in the role that teachers play in the education of children and young people, inspired at the outset by the complexity and demands of the profession, led to him to complete an MEd in the Psychology of Education at the University of Manchester.

The author’s Master’s dissertation focused on the effect of social and demographic factors on mental health in KS3 to KS5 pupils. This led to a successful application to be a PATHS Psychologist in the PATHS to Success evaluation, including a studentship to study towards this PhD. The author has an ardent interest in how best to address the growing concern for the mental health and wellbeing of children and young people, and now continues to practise as a trainee Educational Psychologist.

Publications:


Acknowledgements

The author would like to express his gratitude to a number of individuals without whom this thesis would not have been possible. First and foremost, grateful acknowledgement is made to the schools and teachers who gave so generously of their time.

Particular thanks are due to Professor Neil Humphrey for his continuous support, patience, and motivation; Dr. Ann Lendrum for her willingness to offer her expertise in her role as second supervisor; Dr. Michael Wigelsworth for his additional support and advice; and to Dr. Alex Barlow for her initial assistance in the collation of the datasets.

Special thanks go to Kirsty Pert, Emma Stephens, and Dr. Judith Hebron for their advice, support and good humour over the past three years. Additional thanks go to the author’s father and sister, Anthony and Rebecca Joyce, for their unwavering support and counsel over the past several years.

Finally, this thesis may have not been realised had it not been for the steadfast love and support of the author’s partner, John, who always believed it was possible.
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<tr>
<td>APDR</td>
<td>Assistant Psychologist Doctoral Research</td>
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<td>BPS</td>
<td>British Psychological Society</td>
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<td>CASEL</td>
<td>Collaborative for Academic Social and Emotional Learning</td>
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<tr>
<td>CPD</td>
<td>Continuing Profession Development</td>
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<tr>
<td>DfE</td>
<td>Department for Education</td>
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<tr>
<td>EEF</td>
<td>Educational Endowment Foundation</td>
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<tr>
<td>EI</td>
<td>Emotion Intelligence</td>
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<td>EIQ</td>
<td>Emotional Intelligence Quotient</td>
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<td>ERA</td>
<td>Emotional Regulation Ability</td>
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<td>ESE</td>
<td>Emotional Self Efficacy</td>
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<td>ESES</td>
<td>Emotional Self Efficacy Scale</td>
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<td>FSM</td>
<td>Free School Meals</td>
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<td>GBG</td>
<td>Good Behaviour Game</td>
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<td>HMIe</td>
<td>Her Majesty’s Inspectorate of Education</td>
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<td>HT</td>
<td>Head Teacher</td>
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<td>ICC</td>
<td>Intra Class Correlation Coefficient</td>
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<td>ICS</td>
<td>Implementer Characteristics Survey</td>
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<td>IQ</td>
<td>Implementation Quality</td>
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<td>IT</td>
<td>Information Technology</td>
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<td>IY TCM</td>
<td>Incredible Years Teacher Class Management Programme</td>
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<td>KS2</td>
<td>Key Stage 2</td>
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<td>KS27</td>
<td>Kid Screen 27</td>
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<tr>
<td>MAHSC-CTU</td>
<td>Manchester Academic Health Science Centre Trials Coordination Unit</td>
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<tr>
<td>MAR</td>
<td>Missing At Random</td>
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<tr>
<td>MCAR</td>
<td>Missing Completely at Random</td>
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<td>MMR</td>
<td>Mixed Methods Research</td>
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<td>MNAR</td>
<td>Missing Not At Random</td>
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<td>Mixed Methods Research</td>
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<td>NIHR</td>
<td>National Institute for Health</td>
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<td>Ofsted</td>
<td>Office for Standards in Education</td>
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<td>Ofqual</td>
<td>The Office of Qualifications and Examinations Regulation</td>
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<tr>
<td>PATHS</td>
<td>Promoting Alternative Thinking Strategies</td>
</tr>
<tr>
<td>PROSPER</td>
<td>Promoting School-Community-University Partnerships to Enhance Resilience</td>
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<tr>
<td>QUANT</td>
<td>Quantitative</td>
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<td>QUAL</td>
<td>Qualitative</td>
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<td>RQ</td>
<td>Research Question</td>
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<td>SATS</td>
<td>Standard Assessment Tests</td>
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<td>SEAL</td>
<td>Social and Emotional Aspects of Learning</td>
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<td>SEC</td>
<td>Social and Emotional Competence</td>
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<td>SEL</td>
<td>Social and Emotional Learning</td>
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<td>SEN</td>
<td>Special Educational Needs</td>
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<tr>
<td>Acronym</td>
<td>Description</td>
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<td>SPSS</td>
<td>Statistical Package for Social Sciences</td>
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<td>SSIS</td>
<td>Social Skills Improvement Scale</td>
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<tr>
<td>TA</td>
<td>Teaching Assistant</td>
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<td>TF-CBT</td>
<td>Trauma Focused Cognitive Behavioural Therapy</td>
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<td>VIF</td>
<td>Variance Inflation Factor</td>
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<td>ViSC</td>
<td>Violence Prevention Programme</td>
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Chapter 1: Implementation Matters

1.1 Introduction

1.1.1 Social and Emotional Learning in schools

Research indicates a worrying rise in child and adolescent mental health difficulties over the past few decades (Green, McGinnity, Meltzer, Ford, & Goodman, 2005; Maughan, Collishaw, Meltzer, & Goodman, 2008; McLaughlin, 2011; Meltzer, Gatward, Goodman, & Ford, 2003; Rutter, 2005). The Mental Health Foundation describes mental health as “the worries we all experience as part of everyday life to serious long-term conditions” (Mental Health Foundation, 2015). Typically, mental health symptoms are divided into groups known as ‘neurotic’ or ‘psychotic' symptoms. ‘Neurotic’ includes symptoms that can be regarded as acute forms of typical emotional experiences such as anxiety or depression. ‘Psychotic’ are less common, atypical symptoms that impede an individual’s perception of reality, including delusions or hallucinations. Psychosis is a symptom of the more severe forms of mental health problems, such as schizophrenia, substance abuse, bi-polar disorder or certain forms of personality disorders (Mental Health Foundation, 2015). Given the associated outcomes of such difficulties in later life, which can include serious antisocial behaviour (Maughan, Rowe, Messer, Goodman, & Meltzer, 2004), psychopathologies (Hofstra, van der Ende, & Verhulst, 2002), leaving school without qualifications and unemployment (Colman et al., 2009; Healey, Knapp, & Farrington, 2004), researchers have focused on identifying causal routes and attempted to implement preventative measures.

School-based social and emotional learning (SEL) programmes have been identified as a potentially effective means of preventing the above problems. Currently ‘in vogue’ within the education system, SEL programmes have engaged the collective imaginations of practitioners, researchers and policy-makers alike. The Collaborative for Academic, Social and Emotional Learning (CASEL) define SEL as:

“A process for helping children and even adults develop the fundamental skills for life effectiveness. SEL teaches the skills we all need to handle ourselves,
our relationships and our work effectively and ethically. These skills include recognising and managing our emotions, developing caring and concern for others, establishing positive relationships, making responsible decisions, and handling challenging situations constructively and ethically. They are the skills that allow children to calm themselves when angry, make friends, resolve conflicts respectfully, and make ethical and safe choices” (http://www.casel.org)

As such, a SEL programme is one that is designed to impart one, or more than one, of the core SEL competencies as detailed by CASEL (Payton et al., 2008). SEL ‘programmes’, sometimes described as ‘interventions’, ‘innovations’ or ‘initiatives’ are designed to impart five interrelated sets of behavioural, cognitive and affective competencies. These include: self-awareness (e.g. recognising thoughts and emotions), self-management (e.g. managing stress and controlling impulses), social awareness (e.g. taking the perspectives of others and empathising), relationship skills (e.g. establishing and maintaining healthy relationships) and responsible decision making (e.g. making constructive and respectful choices about personal behaviour). SEL programmes are primarily universal in nature - that is, they are designed to be delivered to all children and are believed to promote numerous positive outcomes, including improved social and emotional competence, decreased aggression, improved attendance, enhanced academic attainment and reductions in mental health difficulties (Durlak, Weissberg, Dymnicki, Taylor, & Schellinger, 2011; Humphrey, 2013).

PATHS (Promoting Alternative THinking Strategies) is an example of a school-based SEL curriculum that helps children to manage their behaviour, understand their emotions and work well with others. It is a universal intervention for all children in a given class. PATHS consists of a spiral curriculum of lessons that address pertinent themes such as identifying feelings in both oneself and in others, controlling impulsive behaviours, reducing emotional stress, and empathising with others’ perspectives. The SEL curriculum is augmented with generalisation activities that nurture the development of new skills throughout the duration of the school day (e.g. using the control signals in the yard before coming back into the classroom), and parent materials that help generalise the programme at home (e.g. taking a compliments sheet home to reinforce positive, conducive praise). A burgeoning body of research suggests that high-quality, effectively implemented SEL interventions can have wide-ranging positive
outcomes for children, including improvements in academic attainment (Durlak et al., 2011; Reinke et al., 2014). There is also some evidence to suggest that socio-economically disadvantaged children may experience differential gains by partaking in SEL programmes when compared with their more socially advantaged peers (Wilson & Lipsey, 2007).

Thus, as SEL has become increasingly important in educational research, the way in which these interventions are assessed is of equal importance. Critically, research has the power to differentiate between those programmes that have a solid evidence base and those whose evidence base is still under development (Vostanis, Humphrey, Fitzgerald, Deighton, & Wolpert, 2013). SEL programmes require a great deal of resources in order to be implemented effectively, both in a financial sense and in a human capital sense. Negative consequences can ensue when time and resources are squandered on implementing a programme that, simply put, does not have a significant enough evidence base (Merrell and Gueldner, 2010). As Durlak and DuPre (2008) assert in their review, the road from research to practical implementation is complex, often fraught with complications. Ergo, there is somewhat of a disparity between ‘efficacy’ trials that are carried out under optimally controlled conditions and the ‘real world’ of the school environment. Furthermore, research suggests that the outcomes of SEL programmes are heavily mediated by implementation variability, (e.g. how well they are delivered in the classroom) (Durlak & DuPre, 2008; Durlak et al., 2011). A key driver of effective implementation and therefore, positive outcomes, is the implementer - who in the case of SEL is almost exclusively the class teacher. The implementation focus in the present study uses data gathered from the PATHS to Success trial, a cluster randomised controlled trial of the PATHS curriculum in the Greater Manchester area of England.

1.1.2 The study and importance of implementation
If we are to understand the nature and complexity of how evidence-based SEL programmes are brought to scale and delivered in real-world scenarios, we must focus on how they are delivered. It is here that study and importance of implementation comes into play. Implementation, in simple terms, is “the process by which an intervention is put into practice” (Humphrey, 2013, p86). Focusing on research outcomes can tell us ‘what’ is going on within a given intervention but cannot tell us the ‘how’ or the ‘why’.
Only in recent years has literature focusing on implementation begun to emerge. Indeed, the inclusion of implementation data has been considerably neglected; Durlak et al. (2011) reported that as many as 43% of studies failed to monitor or include implementation data of any kind in their analyses and therefore excluded it. Understanding implementation is pivotal for several reasons, most significantly because implementation variability can influence intervention outcomes. For example, research by Letarte, Normandeau and Allard (2010) on the ‘Incredible Years’ parenting programme found a significant positive relationship between quality of implementation and improvements on positive parenting practices, and parents perceptions of their child’s behaviour. Implementation studies include wider information on how programmes are delivered, such as (but not exclusive to):

- Fidelity: (e.g. How closely does the teaching practitioner stick to the implementation guidance and the core components of the curriculum?)
- Dosage: (e.g. How many sessions were delivered compared to the programme guidance?)
- Reach: (e.g. Was the intervention delivered throughout the school to all pupils?)
- Quality: (e.g. How well does the teaching practitioner deliver the given programme content?)
- Participant Responsiveness: (e.g. How well do pupils respond to the materials and the teaching practitioner?)

The assessment of implementation allows researchers to explain both anticipated and unanticipated consequences of an intervention. Focusing on implementation allows us, according to Domitrovich and Greenberg (2000), to know exactly what has transpired in an intervention, especially given that they are often implemented differently than originally designed (Durlak & DuPre, 2008; Raudenbush, 2008). It allows for internal validity and aids the understanding of how multiple aspects of the programme interact together (e.g. participants and implementers). Furthermore, it allows for formative feedback throughout the intervention and advances the way in which programmes can be replicated from research into ‘real-life’ scholastic settings. Both Greenberg, Domitrovich, Graczyk, and Zins (2005) and Durlak and DuPre (2008) demonstrated that disparate aspects of implementation each have the ability to influence programme
outcomes. As Humphrey (2013) suggests, this may help to elucidate why SEL programmes fail to be as successful in real-world settings where they are watered-down and adapted with less support as readily available than in an efficacy trial. Nevertheless, contemporary research has suggested that, given the nature of the working environments of teaching practitioners, it is unrealistic to expect ‘perfect’ implementation and therefore a degree of adaptation is inevitable. Indeed, Durlak and DuPre’s (2008) expansive review found that positive results were still possible with around 60 to 80 percent implementation fidelity. It is therefore important that we understand the balance that is needed between programme fidelity and methodology on one side and the need for local level adaptation on the other.

A paucity of research exists on the implementation of the PATHS programme, with the exception of a few studies that have focused on the importance of principal leadership (e.g. Kam, Greenberg, & Walls, 2003), and the influence of a few teacher characteristics (e.g. Ransford, Greenberg, Domitrovich, Small, & Jacobson, 2009). However, limitations exist in both of these studies, in light of the fact that both relied heavily on self-report data. Therefore, a significant gap in the literature exists regarding the PATHS programme and the factors that affect the implementation of it.

1.1.3 Conclusion

Thus, in recent years, SEL programmes have continued to increase in popularity. We know that SEL programmes are thought to be able to help prevent emotional and behavioural difficulties: decreasing ‘risk’ factors whilst increasing ‘protective’ factors, thereby making them popular across the world in a multitude of educational environments and contexts. However, what is becoming increasingly clearer is the need to understand how these interventions can succeed or fail through the process of implementation. If a programme fails to meet the desired outcomes this may due to programme, evaluation (e.g. if the wrong tools are used to assess outcomes), or implementation failure. Therefore, if we are to successfully understand the implementation process, we must also understand the factors that have the ability to affect it.
1.2 Defining Implementation

1.2.1 Why does implementation matter?

The importance of implementation cannot be overstated; it allows us as researchers to understand both how and why interventions throughout the educational and prevention research literature work and function (Domitrovich et al., 2008; Meyers, Durlak, & Wandersman, 2012). Greenberg et al. (2005) state that the development of an intervention usually traverses from the initial identification of a problem through to a broader circulation phase that ends in its practical application. It is here, during the initial trial, or ‘efficacy’ phase, that implementation should first be scrutinised. According to Summerfelt (2003), the statistical power of an intervention, which is reliant on valid and reliable measures as well as suitable design and sampling, loses power as it moves from the planning stages in a ‘clinical’ setting to efficacy trials. Therefore, it is critical to assess implementation during efficacy trials as it enables researchers to know whether inadequate outcomes are due to poor implementation or accountable to a poorly designed intervention (O’Donnell, 2008; Summerfelt, 2003). This, in turn, allows for programme modifications and improvements if necessary.

By utilising an efficacy trial an intervention is able to receive the ‘gold standard’ of programme evaluation, this referring to the evidence-based practice approach that the intervention has undergone (Dusenbury et al., 2010; Greenberg et al., 2005). Unsurprisingly, this method of evaluation is highly favoured with policy makers and funding bodies as it engenders a greater degree of confidence in the intervention’s ability to deliver the desired outcomes. Nevertheless, an intervention receiving gold standard accreditation is still no guarantee of programme success (Domitrovich et al., 2008; Greenberg et al., 2005). In real-world settings practitioners are often unable to deliver and replicate the optimal conditions that were available to the original researchers and programme designers. As such, research from multiple fields of study has suggested that implementation quality is the key to programme success and so ‘effectiveness’ trials are of equal importance (Durlak & DuPre, 2008; Greenberg et al., 2005; Meyers et al., 2012).
Effectiveness trials are designed to deliver the intervention, or programme, in an environment that allows only the use of resources and professional services that would normally be available (Becker, Darney, Domitrovich, Keperling, & Ialongo, 2013). The predominant aim is to allow for the broad execution of an intervention into real world settings that are both varied and diverse, allowing for the identification of components which lead to variability in the quality of programme implementation and therefore impact on the developer’s goals (Becker et al., 2013; Greenberg et al., 2005). As Rush (2009) suggests, efficacy studies can only evaluate efficacy under specific conditions. If effectiveness studies alter in their outcomes, then logically, it is not the case that the intervention will never work. Rather, the intervention is likely to work only under specific conditions.

Domitrovich and Greenberg (2000) and Humphrey (2013) offer several important reasons (Box 1) as to why it is vital for us as researchers to evaluate implementation:

**Box 1: Reasons for assessing implementation**

- Implementation information allows us to know exactly what has occurred within an intervention.
- Implementation information is vital in being able to demonstrate internal validity of an intervention and to solidify the conclusions that we can draw about its role in altering programme outcomes.
- Information disseminated from implementation aids in understanding the intervention to a greater degree – how disparate elements of implementation fit together and how trainers, implementers and participants interact.
- Information that is gathered from implementation can be used to impart continuous feedback that can subsequently enhance programme delivery.
- Implementation data can improve the understanding of how to best replicate programme effects in real-world settings, when interventions that are deemed ‘effective’ are brought to scale.

Adapted from Humphrey (2013) and Domitrovich and Greenberg (2000)

There has been a tangible shift in the way in which researchers regard implementation, with a slow but steady move towards including aspects of implementation data in the
analysis of interventions. Early reviews for example, by Durlak (1997) found that only 5% of studies included implementation data of any kind. This figure has risen considerably, 19 years later, with 69% of studies now including some form of implementation information (Wigelsworth et al., under review). Nevertheless, this means that almost a third of all studies are still not including pertinent implementation data required to form a greater understanding of how a given intervention functions. Furthermore, implementation data in the extant literature has tended to localise its analysis to dosage and fidelity (Durlak et al., 2011), ignoring other important aspects of implementation that will be addressed later in this chapter. Thus, it is becoming increasingly clear that ‘implementation matters’ due to the burgeoning body of evidence (e.g. Ransford et al., 2009; Domitrovich et al., 2015; Durlak, 2015) that links implementation variability to outcomes.

1.2.2 Elements of implementation

In recent years researchers have attempted to identify and classify the different aspects of implementation that are both observable and measurable. The field of prevention research has, for a long time, acknowledged the necessity to evaluate programme implementation in order to better understand what factors play a hand in programme failure or success. With the expanding dissemination of prevention research, systematic evaluations of factors that affect implementation are becoming increasingly common. However, our current knowledge is still limited due to the fact that in the past these factors have not been frequently assessed (Carroll et al., 2007; Durlak & Wells, 1998; Ozer, 2006). Indeed, despite the concern in contemporary research regarding implementation fidelity, it is not one that has been historically studied. Programme developers often assumed that their interventions would be faithfully replicated and accurately brought to scale (Elias, Zins, Graczyk, & Weissberg, 2003; O’Donnell, 2008; Ransford et al., 2009). Implementation fidelity is commonly defined as the degree to which programme implementers deliver in a way concordant with the programme developers’ intentions (Dusenbury, Brannigan, Falco, & Hansen, 2003). In a review of close to 600 prevention and promotion interventions, Durlak and DuPre (2008) identified eight aspects of implementation (Table 1) that can be assessed, the first five of these being generally acceptable ways of measuring fidelity (Domitrovich & Greenberg, 2000; Durlak & DuPre, 2008; Dusenbury et al., 2003; Humphrey, 2013).
Table 1: Eight aspects of implementation

<table>
<thead>
<tr>
<th>Aspect of implementation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fidelity</td>
<td>The extent to which the intended treatment model is adhered to at the micro level (e.g. adherence to a specific lesson script as detailed in the observation proforma).</td>
</tr>
<tr>
<td>Adaptation</td>
<td>The nature of the changes made to the intervention (either surface or deep level).</td>
</tr>
<tr>
<td>Dosage</td>
<td>How much of an intervention has been delivered.</td>
</tr>
<tr>
<td>Quality</td>
<td>How well different aspects of an intervention are delivered.</td>
</tr>
<tr>
<td>Participant responsiveness</td>
<td>The degree to which participants engage with the intervention.</td>
</tr>
<tr>
<td>Programme reach</td>
<td>The scope and proportion of participation.</td>
</tr>
<tr>
<td>Monitoring of control / comparison conditions</td>
<td>Determining what SEL-related activities are taking place at the control sites.</td>
</tr>
<tr>
<td>Programme differentiation</td>
<td>The extent to which activities within the intervention can be distinguished from existing practice.</td>
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Adapted from Humphrey (2013), Greenberg et al. (2005) and Durlak and DuPre (2008).

Noted in the existing literature is the necessity to properly assess fidelity, dosage, quality, participant responsiveness and programme differentiation in order to appropriately evaluate implementation (Dusenbury et al., 2003; O'Donnell, 2008). Yet, in reviewing those studies that have chosen to include implementation information, most focus only on one or two aspects of implementation (as detailed in section 1.2.1), typically fidelity and dosage (Domitrovich & Greenberg, 2000; Greenberg et al., 2005). Assessments of these forms of implementation are usually measured quantitatively and report data in percentages (Durlak & DuPre, 2008; O’Donnell, 2008). Why this is so is perhaps due to the relative ease in which this data can be collected and quantified; measures of quality, for example, are far more subjective and thus challenging to define. Research in this field widely supports fidelity, dosage and quality as the most significant aspects of implementation that have the ability to affect programme outcomes and are the aspects affected to the greatest degree by programme
implementers (Beets et al., 2008). In light of this, these aspects of implementation will be addressed with a greater level of detail in this chapter.

Fidelity
Programme fidelity is typically assessed at the implementer, or in the case of SEL interventions, teacher level (Dane & Schneider, 1998; O’Donnell, 2008). Fidelity refers to the degree to which programme components are delivered as intended by the programme developers. Indicators that are often used in assessing fidelity include programme content, methods and activities. Fidelity data is usually reported as a percentage of the programme components that were delivered compared to the number advised. For example, if an implementer covered 15 of the 30 programme components, the component fidelity score would be 50%. There are however some potential issues with the reporting of fidelity data; as O’Donnell (2008) suggests, the simple completion of assigned tasks is perhaps more a measure of students’ compliance than of actual engagement with the programme materials. This is particularly significant when attempting to evaluate the performance of outcomes in a given intervention. Notably, fidelity to the materials is based on what is essential, opposed to what is merely desirable (Owens et al., 2013). Throughout the literature there is consensus that programme fidelity can be determined by assessing whether these essential, or ‘critical’ components of an intervention are present or not (Century, Rudnick, & Freeman, 2010; O’Donnell, 2008; Owens et al., 2013). A working definition of ‘critical components’ is perhaps best described by Century et al., (2010) as the “operationalizations of developers’ intervention theories” (p.202). As such, programme fidelity is described as the degree to which the critical components of a given intervention, or programme, are in existence when the programme is delivered (Century et al., 2010). Durlak and DuPre (2008) suggested that absolute programme fidelity was unrealistic and that studies with around 60% fidelity could still yield positive outcomes, giving rise to an adaptation debate that will be addressed in subsequent sections.

Century et al. (2010) tease apart the critical components into two distinct categories: structural and instructional. Structural components can best be described as the ‘bread and butter’ of the programme itself, essentially what the implementer needs to do in order to deliver the programme, typically described in an intervention manual. The instructional elements are how the implementer goes about delivering these, which can
include specific teaching strategies through to a solid understanding of the concepts that are being taught and generalised. Repeated failure to deliver programmes with appropriate fidelity has given rise to the belief that fidelity is the singularly most important factor in determining whether an intervention is successful in delivering developer outcomes for students (Schoenwald et al., 2011). There is compelling evidence that fidelity levels are markedly associated to the amount of positive change attained by a programme or intervention. Durlak and Dupre (2008) established that mean effect sizes were at least two to three times greater when programmes were implemented with high levels of implementation, particularly in terms fidelity. Other positive examples include interventions for parental management training (Forgatch, Patterson, & Degarmo, 2006) and smoking prevention programmes for children and adolescents (Thomas, Baker, & Lorenzetti, 2015), both yielding similar results.

Although widely supported in the literature to date there are, however, some inconsistencies. For example, Domitrovich et al. (2010) found that there were no instances in which fidelity and child-engagement accounted for any significant variance for child-related programme outcomes when they were analysed in the same model. Similarly, McGrew, Bond, Dietzen and Salyers (1994) and Sanchez et al. (2007) also demonstrate exceptions to the finding that high fidelity is related to better outcomes. This conflicting picture can perhaps be attributed to a number of different factors. Firstly, the relationship between fidelity and outcomes may be dependent on the particular type of outcome and how it is being assessed; stronger results might be expected, for instance, between implementation fidelity and proximal (over distal) outcomes (Domitrovich et al., 2008). Secondly, the way in which fidelity observations occur can differ from study to study. This has the ability to affect the way in which results are reported. As Humphrey (2013) suggests, if fidelity is high across multiple implementation environments, this in turn produces a modest range of scores that makes it more difficult to establish links with outcomes (Domitrovich, Gest, Jones, Gill, & DeRousie, 2010; Humphrey, 2013). Strict fidelity in itself for some implementers can be seen as problematic. The didactic nature of a prescribed programme or intervention can, in part, remove a degree of professional autonomy that implementers are accustomed to in their regular duties and activities - programme adaptation issues can begin to surface as a result of this (Domitrovich & Greenberg, 2000). On one hand, programme developers wish for interventions to be delivered as intended - with as little
adaptation as possible. On the other, ‘buy-in’ at the implementer, or teacher level is equally vital given the power that implementers have to be able to influence programme outcomes. A tension surrounding the need or appropriateness of programme adaptation has created a great deal of debate throughout the literature that shall be addressed in the next section.

Adaptation
The debate surrounding the degree to which programmes must be delivered with absolute fidelity is one that has raged for many decades. Berman and McLaughlin’s (1976) Rand study reported that although a lack of programme fidelity may contribute to intervention failure, the success of a programme was far more complex than mere didactics. The need-in-context for a school or organisation is perhaps more telling; schools that were truly motivated to solve a problem for their cultural context opposed to monetary or ‘political’ gain in the local authority, were more likely to show commitment to the intervention and its goals. This led to the understanding that the social context of an intervention and the needs of those that deliver and implement cannot be overstated (Dane & Schneider, 1998; Dariotis, Bumbarger, Duncan, & Greenberg, 2008; Domitrovich et al., 2008; Durlak & DuPre, 2008). Thus, the ‘essential’ and ‘desirable’ components of an intervention are once again apparent (Century et al., 2010). Yet, adaptation seems to share an uncomfortable relationship with fidelity in that developers, fundamentally, regard it as being undesirable. Dusenbury et al. (2003) argue that whilst the ‘critical’ components (Century et al., 2010) of an intervention should ideally remain constant, schools and organisational bodies will always adapt in a way which is most suitable for their own needs and, therefore, a degree of flexibility is required. Dusenbury et al. (2003) add that an intervention that has been designed to address a wide range of problems will, in all likelihood, be more adapted as institutions choose to implement only the specific elements that they deem ‘relevant’ for handling their own distinctive needs. Some adaptations are undeniably the result of geography, culture, climate, the type of resources that are available to the implementation, and other legitimate contexts that require change (Ennett et al., 2011).

Ringwalt et al. (2003) furthers this point by suggesting that a degree of adaptation by implementers when delivering prevention programmes is not only likely, but also
inevitable. Indeed, the results of their teacher self-report questionnaire, sent to 1674 implementers, revealed that only around 15% adhered to the programme closely, with as many as 20% admitting that did they not use the guide/intervention manual at all. Lendrum (2010) notes that these results are particularly interesting given that the questionnaires are of a self-report nature. Typically, self-report measures would be expected to deliver more “socially desirable answers” (Lendrum, 2010, p.58) with participants reporting higher levels of programme fidelity, instead of disclosing a lack of adherence. Implementers that held a greater belief in the possible positive effects of the intervention, effective training and leadership support, were found more likely to deliver the intervention with higher fidelity (Ringwalt et al., 2003). This spotlights, again, the critical role that implementers play in the delivery of positive programme outcomes.

If adaptation is, as Ringwalt et al. (2003) and Durlak (2010) suggest, ‘inevitable’ then it is important for researchers to understand why the adaptations are occurring and what the possible effect on programme outcomes can be. Whereas some feel that programme modifications undermine fidelity and should be kept away from at all costs, others assert that adaptation is essential and potentially beneficial, especially if the adaptation is in the form of new activities or services (Daro & Cohn-Donnelly, 2001; Durlak, 2010; Ennett et al., 2011). Flexibility in programme implementation can improve the participation from implementers, giving a greater sense of ownership and therefore resulting in long-lasting programme endurance (Backer, 2001). Nevertheless, considerable deviations away from the original programme can cause serious problems; for example, in a ‘life-skills’ study conducted by Dusenbury, Brannigan, Hansen, Walsh and Falco (2005) all implementers were found to be making adaptations. Virtually all were negative changes that diminished the programme objectives.

Programme adaptations are either deliberate or unintentional modifications of a programme that can occur through (a) additions or deletions; (b) modifications to the essence of the programme; (c) in the procedural delivery/duration of programme components (Backer, 2001; Durlak & DuPre, 2008). Lendrum (2010) provides a useful framework in addressing the broader terms of programme modifications as either ‘surface’ or ‘deep’ level adaptations. Surface level adaptations refer to the relatively minor changes that an implementer may make, including: changes to the language of
the programme, replacing images to suit the intended audience, and substituting cultural references in order to make a better ‘fit’ for the programme recipients. These surface level adaptations may strengthen the programme outcomes because of increased ownership and its perceived relevance to the environmental context (Daro & Cohn-Donnelly, 2001; Humphrey, 2013; Lendrum, 2010). Conversely, deep level adaptations involve far more extensive modifications to the programme, such as removing or altering the modules, using staff that have not been trained appropriately, or lessening the frequency or length of the predetermined sessions. These adaptations are considered to be of greater danger to programme success because they have the potential to affect the way in which the change process happens (Dusenbury et al., 2005). Nevertheless, it is clear that there is still much to be discovered regarding the way in which the change process occurs and the way in which implementers have the ability to alter it. To aid our understanding Domitrovich and Greenberg (2000) suggest that researchers should methodically adjust variables such as quantity or ‘level’ of training, intervention content and dosage, to determine the effect that individual elements have on programme outcomes. However, given the complexity of this task, realising these recommendations may prove to be extremely difficult.

Research conducted recently by Hansen et al. (2013) on drug prevention usage has continued to address the issue of ‘high-quality adaptations’ and the impact that these might have. In this study data was collected about the nature of each session, the fidelity, the percentage of the programme that was skipped, the degree to which objectives were achieved, dosage, participant responsiveness, quality of teaching, teacher understanding of the programme, impact on targeted behaviours and mediators as well as classroom management. Implementers that made positive adaptations to the structure of the programme and the directions given to pupils had a positive effect on pupil behavioural outcomes, in that a greater percentage of pupils continued to refrain from using drugs. In contrast, teachers that made deep adaptations had a lower percentage of students who remained non-drug users. Overall, their conclusions are that implementers should adapt sparingly; the frequency to which they adapt and the quality of the adaptations can have a profound impact on programme effectiveness (Hansen et al., 2013). Evidently, it is not always clear what level of implementation is required to achieve positive results. To determine this balance Durlak and DuPre (2008) state that it is critical that programme evaluations be designed to gather implementation
information, analyse the manner of adaptations made, the rationale for making adaptations and the consequences of the adaptations on observable outcomes. This links back once more to the discourse on the importance of addressing the critical elements (Century et al., 2010), or active ingredients, required in order for an intervention to be successful. A recent review by Blase and Fixsen (2013) notes that when desired outcomes of an intervention are not achieved, a thorough understanding of the core components and the degree to which they were implemented is critical. This aids the understanding of whether an intervention is ineffectual, or whether it was simply implemented poorly.

**Dosage**

Dosage is typically measured in terms of the number of components (e.g. lessons) that are delivered by the implementer during the course of an intervention. Compared to the other elements of implementation it is relatively easy to report and, therefore, tends to be one of the most assessed pieces of implementation information in the literature (Durlak & DuPre, 2008). With its roots in medical science, dosage is emerging as an increasing dimension of interest in prevention, behavioural and educational fields. It is suggested that dosage functions in prevention programmes in a similar way to the delivery of pharmaceutical drugs; a certain amount is required to build up in order for the treatment to be effective (Humphrey, 2013). Many questions have emerged in trying to understand the role that dosage plays in effective interventions, such as, how much of an intervention is required to deliver the intended outcomes, as well as the feasibility of dosage that is required for certain prevention programmes (Daro, 2010). Domitrovich and Greenberg’s (2000) review of implementation issues in over thirty mental health prevention programmes discovered that in the four studies that measured dosage and associated it to outcomes, higher levels of dosage were related to better outcomes, although effect sizes or significance were not reported thus making it difficult to judge the magnitude of the improvements. As before, with the fidelity literature, there are some inconsistencies (Domitrovich et al., 2010), with some variance in the evidence base regarding the impact that dosage has on programme outcomes. For example Reyes, Brackett, Rivers, Elbertson, & Salovey (2012) found that there were no main effects of dosage on student outcomes in their trial of the RULER intervention. Given that there is some degree of evidence in the literature, however, regarding improved programme
outcomes due to higher dosage, research has continued to tease apart the nature of the relationship between dosage and fidelity.

Fidelity is often defined as delivering a programme as intended by the programme developers in order to achieve the desired outcomes. This is often illustrated by a logic model, which represents the theory of change upon which the programme has been designed and the outcomes that are expected when the programme is delivered and implemented as intended. Dosage is critical to understanding how much of the central intervention elements are required to reach the appropriate outcomes (Wasik, Mattera, Lloyd, & Boller, 2013). When assessing programme implementers (e.g. teachers), the relationship between dosage and fidelity exists in numerous ways. Teacher level dosage, for example, could be concerned with the amount of training required for a teacher to implement a new intervention with high levels of fidelity (Becker et al., 2013). On the other hand, researchers may be more interested in how many times participants need to be introduced to an intervention unit, or lesson, before it is understood (Durlak, 2010). Evidently, dosage is a fundamental element of fidelity and can be comprehended on multiple levels.

Identifying the optimal dosage is important. Once may be insufficient, but several times may not be the answer either; Wasik et al. (2013) advocate that striking the right balance is what is most critical. Prevention and educational research demonstrates that a singular dose of a treatment is generally not considered effective for participants (Durlak et al., 2011; Joyce & Showers, 2002). Specifically, research on teacher training suggests that single workshops, comprised mainly of didactic, pedagogic components have little impact on the way in which teachers implement prevention programmes when returning to the classroom environment (Becker et al., 2013; Dusenbury et al., 2010; Joyce & Showers, 2002). Alternatively, continuing professional development initiatives that were delivered more intensely and frequently (e.g. by utilising a coaching model) were shown to have better outcomes for both students and teachers (Becker et al., 2013). Although teaching experience and duration have been documented to some degree (Ransford et al., 2009), currently very little is known as to the affect that implementers have on dosage, or how their individual level characteristics play a role in how frequently teachers deliver prevention programmes.
The prevention literature has generally operated under the assumption that more of an intervention will generally be a better thing, resulting in increased positive outcomes (Domitrovich et al., 2010; Durlak et al., 2011; Humphrey, 2013). Nevertheless, research that has systematically reviewed session frequency and intensity of interventions suggests that increasing the intensity and/or frequency does not always result in improved outcomes. Research conducted by Zaslow, Tout and Halle (2012) established that coaching sessions for teacher skills and student literacy were more effective when conducted once a month when compared to four times a month. Similarly, a more recent study by McGinty et al. (2011) into preschoolers’ print knowledge development found that lower exposure of print referencing sessions yielded larger effects. In essence, too many sessions were found to have a reduced benefit on student learning. These studies effectively demonstrate the importance of understanding the right, or ‘optimal’, dosage required to achieve the desired programme outcomes; more of an intervention is not necessarily beneficial.

The context of an intervention and the dosage received has also shown to be important. Large-scale studies into literacy and numeracy interventions in preschool students demonstrate that those who receive a full day of teaching opposed to a half day show significant gains over their counterparts (Cooper, Allen, Patall, & Dent, 2010). Compelling as this evidence might seem, it is important to note that the quality of the teaching received plays an appreciable role in these findings. Simply taking into account the implementation information from dosage alone is insufficient. Those children who had full-day access to programmes of a higher quality showed significant improvements over those in half-day settings. However, if the quality of the full-day programme is inferior then increased dosage does not have the same favourable results (Robin, Frede, & Barnett, 2006). Simply receiving more of a programme that is lacking in quality does not lead to better outcomes for participants. Dosage, therefore, must be considered alongside other factors of implementation such as programme fidelity and quality; the implementer heavily influences the delivery quality of an intervention.

**Quality**
Defining quality in implementation terms is somewhat complex. ‘Adherence’, ‘fidelity’, and ‘quality’ are often used interchangeably. There is little consensus in the literature as to how quality is defined; often described as ‘quality of delivery’, ‘delivery process’ or
‘delivery behaviour’. Whilst quality of delivery has been defined in numerous ways in various studies, it is perhaps best defined as “ratings of provider effectiveness which assess the extent to which a provider approaches a theoretical ideal in terms of delivering program content” (Dusenbury et al., 2003, p.244). Alongside dosage and fidelity, quality of delivery is an important aspect of implementation in that it has the ability to advance or compromise programme outcomes (Dane & Schneider, 1998; Domitrovich et al., 2010; Dusenbury et al., 2005). Classically, quality is infrequently analysed owing to the fact that it is problematic to assess unaccompanied by observations which require a great deal of human-capital, time and resources. Quality is assessed in a number of different ways; most commonly it is assessed in terms of how the content of the programme is delivered, especially for didactic, universal interventions (Domitrovich et al., 2010). In light of the fact that these universal interventions are highly didactic, the interpersonal style of the implementer is of particular importance. Being responsive and sensitive to the needs of the participants has the ability to impact the delivery of the intervention, which can subsequently affect participant responsiveness. In order to consolidate how quality can be measured, multiple aspects of implementers’ delivery can be taken into account (Dusenbury et al., 2005). These can include (but are not exclusive to):

- Implementer interest and enthusiasm (e.g. rate the implementer’s interest and enthusiasm in his/her delivery of the session)
- Levels of preparedness (e.g. how well prepared is the implementer for the session?)
- Clarity of expression (e.g. how clearly does the implementer explain the key concepts and activities in the session?)
- Ability to differentiate by response (e.g. how well does the implementer respond to participant queries/meet the needs of all the participants if it is required?)

High-quality delivery also needs to include the level of programme generalisation that implementers are providing. The quality of classroom processes, such as the discourse between teachers and pupils, has long been associated with positive student developmental outcomes. Participants benefit from an intervention when they feel respected, when sessions are well structured and when implementers advance
understanding by matching what they are teaching with their classes’ developmental needs (Abry, Rimm-Kaufman, Larsen, & Brewer, 2013).

Although it makes sense that quality can directly influence the outcomes of a given intervention, only around 10% of studies have included it as implementation information (Durlak & DuPre, 2008) and, therefore, the evidence base on which to draw is small. Quality of delivery can be variable depending on the amount of time that an implementer has been working with an intervention as well as the time of the year when ratings are recorded. Domitrovich et al. (2010) found that monthly ratings of implementation delivery quality improved over the course of the year. This is perhaps unsurprising considering the familiarity that implementers would have with the programme over a period of time; greater familiarity and comfort in delivering an intervention could allow for improved quality of delivery (Becker et al., 2013).

Where research has included quality as a measurable aspect of implementation the findings have been somewhat inconclusive (Kam et al., 2003). For example, Abry et al. (2013) in an evaluation of the ‘Responsive Classroom’ approach, found no overall direct relationship between quality of teacher implementation and student outcomes. This may have been accountable to the fact that the teachers, despite being proficient implementers, were not fully on board with the change process of the new SEL programme. Fullan (2001) suggest that the process of change can create a ‘disequilibrium’ that can interfere with the regular proceedings of the classroom, subsequently causing teachers to be ambiguous or ineffective in their practice. While leadership support has been shown to be beneficial for implementers in administering high-quality delivery (Kam et al., 2003; Owens et al., 2013), it is implementers that fundamentally drive the change process within their classroom environments - understanding how individual level characteristics affect the quality of delivery is crucial.

**Participant Responsiveness**

Dane and Schneider (1998) advocate that participant responsiveness is a measure of participant response to programme sessions, which includes indicators such as level of participation or enthusiasm. To date, many programme developers have used participant responsiveness as a barometer of high quality implementation (Dusenbury et al., 2003;
Greenberg et al., 2005). The assumption being, if participants enjoy the programme and are actively interested in its activities, they are therefore more accepting of it and thus more likely to benefit from the intervention. The responsiveness of participants is likely to be heavily influenced by other aspects of implementation, in particular implementation quality. Teachers that deliver lessons with energy and enthusiasm are much more likely to engage learners, indeed, many SEL programme manuals refer to quality of delivery as an essential component in eliciting desired outcomes from participants (Domitrovich et al., 2010).

Empirical evidence to support the *combined* effect of disparate aspects of implementation is lacking. Research, however, into participant responsiveness as an important aspect of implementation is steadily growing (Berkel, Mauricio, Schoenfelder, & Sandler, 2011). For example, a study measuring participant responsiveness in the Family Bereavement Program (Schoenfelder et al., 2013) determined that participant baseline characteristics predicted participant responsiveness and, in turn, responsiveness predicted program outcomes. Families that had greater difficulties (including child behaviour problems) were determined to be more responsive to the intervention as indicated by greater attendance. Better group participation and greater consumer satisfaction were also indicators of high participant responsiveness. Schoenfelder et al. (2013) also determined by means of confirmatory factor analysis, that skill use (or generalisation) outside of the sessions was the strongest of the models tested within the study.

In a recent study conducted by Schultes, Stefanek, van de Schoot, Strohmeier and Spiel (2014), implementation fidelity and participant responsiveness were analysed simultaneously using evaluation data from the violence prevention programme (ViSC). Results demonstrated that implementation fidelity was highly associated to gains in teachers’ self-efficacy to prevent violence, while only teachers with higher levels of participant responsiveness significantly altered their behaviour in circumstances involving bullying. Consequently, the study was able to demonstrate the importance of differentiating these separate aspects of implementation in order to reliably interpret evaluation results.
Programme Reach

SEL programmes are designed to be universal in their nature, that is, all participants should be present in the classroom when the intervention is delivered. Participation of students, however, may vary dependent on the school environment. Students are often removed for other activities such as, extra curricula activities (e.g. music lessons), targeted interventions (e.g. nurture groups), or for other academic curricula. Humphrey, Lendrum and Wigelsworth (2010) found that in their evaluation of the secondary SEAL trial in England there was a significant disparity in the degree to which pupils from different schools reported their involvement in the programme. In order for universal interventions to be deemed ‘effective’ programme developers expect the majority, or all, of the participants to be present for each session. Data gathered in relation to programme reach is somewhat lacking; nevertheless, studies that have included it as an aspect of implementation have found that participation rate has influenced intervention outcomes. For example, in studies by both August, Bloomquist, Lee, Realmuto and Hektner (2006) and Robin et al. (2006), participation rate was shown to be positively associated with improvements in student results. Further research into this aspect of implementation is required; Durlak and DuPre’s (2008) review found that only five studies had included information on programme reach. This has had very little change in the past eight years, signifying a significant gap in literature.

Programme differentiation and monitoring of control groups

Programme differentiation refers to the extent to which intervention activities can be distinguished from other, existing practice. Dusenbury et al. (2003) suggest that although often considered a component of fidelity, programme differentiation actually measures something quite distinct. Programme differentiation is interested in determining how similar or different a given intervention is to what that a school was already doing. Therefore, the process of examining programme differentiation is an essential evaluation aspect of new interventions. Critically, it allows the detection of elements that can make a difference to outcomes and determine whether certain elements are unnecessary (Carroll et al., 2007). As Humphrey (2013) observes, higher levels of programme differentiation could be considered advantageous as the given intervention is therefore seen as more ‘distinctive’. However, lower levels of differentiation allow staff to feel more comfortable with an intervention and, therefore, find it easier to absorb into their existing practice.
The monitoring of control groups, or knowing the ‘usual practice’ to which an intervention is being compared is particularly vital (Humphrey, 2013; Kam et al., 2003). For example, if an intervention is shown to be producing poorer outcomes than those of the control schools it may not be the intervention itself; instead, the control groups may be implementing similar practices or interventions that have invalidated the comparison. Greenberg et al. (2005) note that in today’s literature this situation is arising far more frequently, particularly in environments in which numerous prevention initiatives are administered concurrently without the synchronisation of services. Durlak (1998) referred to this particular issue as “The fantasy of untreated control groups” (Durlak, 1998, p.14), noting that many evidence-based prevention programmes are obstructed by crudely implemented interventions with no untreated control group. Fundamentally, this composite leads to inaccuracies and oversights in quantifying the programme’s real impact.

1.2.3 How is implementation assessed?

In considering the disparate aspects of implementation it is important that we turn our attention to how implementation is actually assessed. Detailed in the precursory sections, there are prevailing aspects of implementation that are assessed far more than any other (Durlak & DuPre, 2008). This is perhaps due to the relative ease in which they are recorded compared to conceivably more complex aspects, such as quality or participant responsiveness. Consequently, given the critical information that other aspects of implementation can provide, it is important that a comprehensive analysis of all factors is provided. Hansen (2014) aptly notes that defining implementation is fraught with complexity due to the varying means by which implementation is regarded and assessed:

“The language of fidelity assessment is in no way universally applied nor is it universally understood. Quite the contrary, many of the terms researchers, program developers, evaluators, and policy makers use end up having quite specific and sometimes idiosyncratic meanings. Even the most basic of terms—fidelity, adherence, dosage, engagement, program differentiation, and adaptation—may have one meaning for an evaluation staff and a very different meaning for practitioners. This places the development of suitable self-report measures on the horns of a dilemma.” (p. 336)
Implementation can be assessed both quantitatively and qualitatively, with both forms of measurement being particularly useful (Domitrovich et al., 2010; Domitrovich & Greenberg, 2000). Quantitative assessment of elements of implementation can be extremely useful in that these can be statistically modelled against outcomes, but they can also impart an overly simplified image of the intricate processes at work (Humphrey, 2013). Qualitative analysis can provide important insight to help bring meaning to the data gathered in the quantitative phase.

**The development of fidelity criteria**

To start, Emshoff (2008) suggests several methods that can be used for identifying fidelity criteria:

- Build on a specific programme model that has already been clearly described and deemed ‘effective’ (Meyers et al., 2012).
- Administer component analysis to decide which programme components are essential (Century et al., 2010).
- Examine expert opinions from surveys and literature reviews regarding effective programme components.
- Carry out qualitative research to determine the opinions of programme implementers and ascertain what elements are effective.
- Utilise the programme’s logic model to develop the theoretical connections between activities and outcomes.

**The implementation toolbox**

Once the fidelity criteria have been established, the next step is to generate and implement various methods for measuring compliance to criteria across all eight aspects of implementation fidelity. Commonly, assessment of fidelity is based on (a) experts rating observations, interviews, client records, filmed sessions, project documentation; and (b) interviews or surveys fulfilled by programme staff or implementers (James Bell Associates, 2009). Irrespective of which data collection methods are utilised, programme implementation should be examined over time across multiple programme participants due to variations in implementation (Durlak & DuPre, 2008; Meyers et al.,...
2012); in the case of SEL programmes these can include, as an example, teachers, pupils and parents. For example, in assessing the quality of the PAX Good Behaviour Game intervention, Domitrovich et al. (2015) completed ratings of implementation quality four times during the academic year, roughly equating to once per term, and collected dosage information from teachers in a weekly log. The optimal frequency of assessing implementation fidelity should, according to Durlak and DuPre (2008), Domitrovich et al. (2010) and recent research by Schultes et al. (2014), strike a balance between assessing frequently enough to prevent programme ‘drift’ but not so frequent as to impair the meaningfulness of the data or consume too many resources.

**Implementer self-report**

A commonly used method for assessing fidelity involves the execution of an implementation log, checklist or survey by programme implementers - these can be conducted using either paper or web-based mediums. These evaluation surveys are useful to programme providers in that they allow for assessment of implementation when they are not present, allow for ongoing assessment and place a minimal burden on evaluation resources. These evaluation tools can be used on a monthly, weekly, or quarterly basis and track specific aspects of implementation such as: activities conducted and time spent, participant attendance, methods of delivery, participant responsiveness and content covered (Dusenbury et al., 2010). These self-report surveys can be tailored to deliver yes/no responses, Likert scale responses, or open-ended responses dependent on the level of detail necessary for programme evaluation.

**Participant surveys, interviews and focus groups**

Participant surveys, interviews and focus groups are effective for capturing participant and implementer responsiveness to a given intervention. Programme evaluators can develop surveys and protocols for both interviews and focus groups that collects information such as how much implementers engage with the programme, the usefulness or relevance of the resources, or implementers’ impressions of the sustainability of the programme.

**Implementer interview protocols**

Implementer interview protocols are useful for augmenting the data that has been collected through observations or self-report surveys. Interviews can be conducted in-
person or on the telephone and can be administered to gather more flexible information from implementers who have a unique perspective on programme delivery (e.g. reasons for adaptations or barriers to implementation).

Self-report measures, such as those detailed, come with their own inherent limitations. Typically, self-report measures may be more biased and have lower reliability than observational methods (Domitrovich et al., 2010; Ringwalt et al., 2003). For example, implementer ratings of programme fidelity tend to be positively skewed due to implementers wishing to produce more socially desirable answers (Hansen, Bishop, & Bryant, 2009; Ringwalt et al., 2003). Self-report data may also be limited by the fact that implementers may not be aware that they are making adaptations (Dusenbury et al., 2005). Additionally, implementers may not be able to accurately recall, all of the time, pertinent implementation information. Arguably, however, self-report measures are the most effective way to gain insight into a problem, and are the most powerful way to gain a unique perspective on the individual. For a fuller discussion on self-report measures refer to section 6.6.1.

**Observations**

Independent observations can provide an assessment of programme implementation with greater objectivity (Dusenbury et al., 2010) than through self-report measurement. For example, observers can evaluate whether: implementers delivered the recommended content, used the suggested mode of delivery, level of enthusiasm, implementer clarity and participant responsiveness. Observational protocols may include checklists, scaled rating forms, as well as qualitative descriptions of programme implementation. Observers, to compare and verify their ratings against the implementer’s, can use self-report data gathered from implementer surveys. Observers should be well trained in the core components of the programme model as well as in the approach for implementing the observation protocol objectively and with accuracy. As part of observer training, observers should practice coding until they reach a certain level of inter-rater reliability; a score of .80 (intra-class correlation coefficient) is a typical benchmark for a satisfactory level of inter-rater reliability (Hallgren, 2012). A thorough observation protocol should include a coding manual that states precisely each programme constituent and details the method for rating and scoring the observations (Bishop et al., 2013; Hallgren, 2012).
There is a degree of evidence that observational data is strongly correlated, to a greater extent, with programme outcomes than data obtained through self-report measures (Dane & Schneider, 1998). There is little evidence in the literature, however, that has directly compared these two strategies (Durlak & DuPre, 2008). Direct observations can be costly, time consuming and, in some cases, increase bias; implementers may, for example, attempt to adhere more closely to the protocol when they know that they are being observed (James Bell Associates, 2009).

1.2.4 Conclusion

The preceding sections have addressed the individual aspects of implementation, how many should be included in assessing implementation appropriately, and how to evaluate implementation with rigour. As noted above, fidelity and dosage are the most recurrently employed methods. Nevertheless, studies that only include implementation information on fidelity and dosage might be convinced into thinking that implementation failure in either of these two areas is causal to poor outcomes; when in fact, it may be due to an element of implementation that has not been taken into account, such as quality, participant responsiveness, or reach (Domitrovich, 2010; Humphrey, 2013). By the same token, a ‘type III’ error may occur when aspects of implementation have not been assessed appropriately; failure to reach the desired programme outcomes may be wrongly attributed to research or theory failure when, in fact, it is due to poor implementation. Consequently, review and inclusion of as many aspects of implementation as possible is essential.

The evidence base that supports the importance of implementation and its affect on outcomes also acknowledges that within each aspect of implementation is considerable variance. The importance of understanding the factors that affect each aspect of implementation, particularly implementer characteristics, shall be detailed within the subsequent sections.
1.3. Factors affecting implementation

1.3.1 Defining factors affecting implementation
Each of the disparate aspects of implementation have demonstrated throughout the evidence base, to a lesser or greater degree, the ability to be able to influence intervention outcomes. Evidence in the extant literature also reports that within these aspects of implementation is a considerable degree of variance; programmes may be delivered with varying degrees of fidelity, dosage, quality and so on and so forth. Researchers are eager to identify the sources of variance in implementation variability. Determining the nature of this variability has tremendous practical ramifications (Domitrovich et al., 2008; Humphrey, 2013). The collective works of Durlak and DuPre (2008), Forman, Olin, Hoagwood, Crowe and Saka (2009) and Greenberg et al. (2005) have extensively addressed factors affecting implementation. Thus, an existing evidence base on which to draw is particularly useful. Although gaps and inconsistencies still exist within the implementation literature it is clear, nevertheless, that the study of implementation is of critical importance. There is now general consensus in the sphere of implementation science that prevention-based programmes implemented in schools, outside the reach of efficacy trials or studies that are tightly controlled, are not classically implemented with high quality (Domitrovich et al., 2008; Dusenbury et al., 2005; Lendrum, 2010; Ringwalt et al., 2003). A crucial yet often disregarded aspect of the intervention dispersal process in schools is the impact and influence of contextual factors at numerous levels on the quality of programme implementation (Domitrovich et al., 2008; Dusenbury et al., 2003; Fixsen & Ogden, 2014; Schultes et al., 2014).

1.3.2 The Implementation Quality (IQ) conceptual model
Domitrovich et al. (2008), consistent with an ecological systems model (Bronfenbrenner, 1979), submit a multilevel model (Figure 1) that considers the contextual factors that may “affect, either directly or indirectly, the implementation quality of school-based interventions” (Domitrovich et al., 2008, p.7). The multilevel model takes into account the influences of macro-level factors (e.g. leadership and human capital / government policies), school-level factors (e.g. decision structure / school characteristics) and individual level factors (e.g. professional / psychological characteristics). The model suggests that these contextual factors may have greater or
lesser importance dependent on the phase of the implementation and dissemination process. As the model addresses implementation quality as the primary outcome of interest, it is located directly at the centre. Implementation ‘quality’ in this sense is the overall standard of implementation; thus, it is the disparity between what programme developers intend to be delivered and what is actually delivered. Therefore, there is a necessity to specify the model against which actual practice will be assessed (Domitrovich et al., 2008). The IQ model is one of several different conceptual models (e.g. Jennings and Greenberg, 2009; Forman et al., 2009) that have attempted to theorise the way in which different factors affect implementation. The IQ model (Domitrovich et al., 2008) was chosen as the guiding conceptual framework for the current study as it is the author’s conviction that it most robust model to pull together the factors that affect implementation in a succinct and parsimonious way.

**Figure 1**: The IQ model

From Domitrovich et al. (2008)

Domitrovich et al. (2008) propose that two conceptually discrete constituents of implementation quality must be considered: the **intervention** itself and the **support**
system for the intervention (Chen, 2003). According to Chen (2005) interventions are schemes or innovations that are designed to bring about a ‘change process’, linked by a causal mechanism to intended programme outcomes. These programmes, or interventions, show a great deal of variance in terms of both of the targeted audience and the risk factors that they are intended to address. Implementation support systems are designed to reduce the degree of variability in delivery by training implementers and providing them with a foundation on which to draw and deliver the intervention (Chen, 2003; Durlak & DuPre, 2008; Meyers et al., 2012; O’Donnell, 2008). The intervention and the support system are independent of each other, albeit interrelated components of a unified whole. Given this dual focus, these two elements are layered at the centre of the conceptual model (Figure 1). Domitrovich et al. (2008) note that the model is standardised and specified for the intervention and support system in terms of core elements and delivery model; these three components, detailed below, form part of the model representing implementation quality.

The implementation model

Core elements of the intervention model
Programmes that have undergone an extensive phase of development contain a series of features or practices that are precisely interconnected to the underlying principles of the intervention and detail the mechanism of change. These ‘features’ or practices’ are detailed in the section on fidelity and are comparable with the ‘critical components’ of an intervention (CASEL, 2005; Century et al., 2010). Randomised control trials have been used in the literature to assess whether programme components achieve the desired proximal and distal outcomes. This substantiates theoretical principles that are the foundation of intervention models (Payton et al., 2008). Domitrovich et al. (2008) assert that the absence of core components, negative adaptations, or core components that are poorly delivered, all have the capacity to substantially reduce the impact of the intervention. Assessment of the implementation quality of core elements is therefore used to continually improve overall practices.

Standardisation of the implementation model
Intervention procedures and practices may vary greatly across different environments and contexts; some interventions may target systems, whereas others are designed to
target groups of individuals. For example, classroom lesson plans from a preventative intervention, such as PATHS (Greenberg, 2010), are not relevant to other interventions that are designed to bring about systemic change, such as the school-wide Good Behaviour Game (Kellam, Reid, & Balster, 2008). Be that as it may, even systemic models that represent a convergence of practices and systems of support require effective monitoring of implementation to ensure standardisation across different sites (Bradshaw, Reinke, Brown, Bevans, & Leaf, 2008).

**Delivery model**

The delivery model is defined in terms of the mode, frequency, duration and timing of the intervention, as well as the actual implementers who deliver the core components of the programme. Research which focuses on the relationship of ‘delivery strategies’ to programme implementation is still in the early stages (Domitrovich et al., 2008). Regarding duration, the evidence base suggests that larger effect sizes are shown only in interventions which are of a significant enough length; Gottfredson and Wilson (2003) found that in shorter preventative interventions of only a couple of months, in the substance abuse literature, no relationship was found to have existed between duration and student outcomes. However, in the SEL literature Greenberg et al. (2005) found that interventions of at least two years were shown to be significantly more effective than those of a year or less; systemic interventions are thought to take even longer. Concerning the mode of delivery, very little evidence has been reported regarding the differences between an infused delivery model versus a conventional one. An infused mode of delivery is one that is integrated into the school’s day-to-day curricula, being delivered gradually throughout the school day instead of one, intensive session. Research conducted by Vicary et al. (2006) in their evaluation of Life Skills Training found there was no positive long-term difference with either mode of delivery, although participants in the programme showed some short-term improvements in self-reported substance abuse.

Research comparing different agents of intervention delivery has also yielded inconsistent results. A meta-analysis of 94 prevention-based studies by Gottfredson and Wilson (2003) suggested that certain deliverers of substance abuse programmes produced larger effect sizes. For example, research by Spoth, Guyll, Lillehoj, Redmond and Greenberg (2007) and Becker et al. (2013) demonstrated an improvement in
implementation quality when a classroom teacher, rather than other agency professionals delivered an intervention. Conversely, results of other studies have shown no differences in student or implementation outcomes when programme specialists, rather than teachers, are used (Ennett et al., 2011; Rohrbach, Ringwalt, Ennett, & Vincus, 2005).

**The support system**

**Core elements of the support system**

Irrespective of an intervention’s specific content or mode of delivery, practically all programmes require some form of support system in order to be implemented effectively (Chen, 2003). Typically, training is the first stage of a support system given to implementers before an intervention begins, often with all implementers being gathered together and trained at a central location. Teacher training has long been acknowledged as an effective tool in delivering high-quality implementation and is an essential component of prevention programmes (Hansen & Dusenbury, 2004). Studies have demonstrated that receiving training is an important step of the support system; teachers that have received little or no training were shown to implement with less fidelity than their counterparts (Fixsen & Ogden, 2014; Little, Riggs, Shin, Tate, & Pentz, 2013). Traditional teacher training entails a singular training session delivered as a part of continuing professional development. However, a developing expanse of research in the field of education has suggested that whilst this traditional approach may help to increase knowledge about a particular domain, it seldom transposes into high-quality implementation in the classroom environment (Fixsen, Naoom, Blase, & Friedman, 2005). As detailed by Joyce and Showers (2002) in their meta-analysis, training that was merely pedagogic and instructional did little to impact on implementation quality unless it was integrated with classroom coaching, a point which has lead to continuing empirical development and further research (Cappella et al., 2012). Consequently, classroom coaching has the potential to enhance teachers’ expertise and affect the quality of implementation (Stormont, Reinke, Newcomer, Darney, & Lewis, 2013). Coaching models are continuously under development in several social and emotional learning programmes as well as in many other prevention based programmes (Wilson & Lipsey, 2007). The consultation, or ‘coaching’, model most commonly recognised as part of an effective support system utilises a two-phase
coaching model that incorporates a *universal phase* followed by a *tailored coaching phase*. The universal phase is delivered to all teachers regardless of their individual level of skill. The tailored coaching phase allows bespoke training dependent on the needs of the teacher. The tailored phase is typically used where teachers need additional implementation support whereas other teachers receive an optimal amount of support, just enough to perpetuate high-quality implementation (Becker et al., 2013).

In their recent review of supporting a two-phased coaching model, Becker et al. (2013) advocate that the objective of coaching teachers is to enhance their skills in certain practices, for example, programme implementation or generalised teaching skills. In order to meet these objectives, coaches can inform their approach by *observing* in the first instance. Classroom observations allow for coaches to understand the dynamic that takes place between teacher and student, as well as taking notes on overall implementation quality (Dusenbury et al., 2010). Regularly visiting classrooms throughout the year also allows coaches to have an effective grasp on programme dosage. The data gathered through these initial classroom visits allows coaching professionals to better ‘tailor’ their approach to individual teachers. *Modelling* of lessons and core concepts is another routinely utilised coaching technique that presents teachers with the opportunity to see the programme in effect in their own classroom environment. Subsequently, this can be adapted to incorporate elements of team-teaching that allow the classroom teacher to lead. Coaches are also able to provide guidance on specific elements of the intervention, help modify resources and provide encouraging feedback. Coaches are also available to assist in helping to overcome potential barriers to implementation (e.g. not having enough time due to other demands), or issues that might be arising on a school-wide basis (e.g. other staff are not as engaged). Continuing empirical research would seem to suggest that performance feedback provided by coaches is a vital component in assuring that teachers deliver with high-quality implementation (Becker et al., 2013; Blase, Duffy, Wandersman, & Weisz, 2014; Domitrovich et al., 2008; Dusenbury et al., 2010).

**Standardisation of the support system**

Domitrovich et al. (2008) note that while standardisation has been recognised as a significant intervention factor associated with high-quality implementation, it is extremely rare for it to be applied to the intervention support system, due in part to the
fact that the support system is often controlled by the programme developers. However, as the requirement for replicating preventative interventions by independent bodies increases, this facet of implementation observation will become more applicable. Developed interventions, with a greater evidence base, are already aware of the need for trainers to train other implementers who will then cascade training within their own environments to other professionals (Barth et al., 2011; Becker et al., 2013).

**Delivery of the support system**

Empirical evidence testing support system delivery is somewhat sparse. Nevertheless, research would seem to suggest that training of teachers in person, or through ‘live’ training, opposed to simply referring to a manual or documents is more effective (Little et al., 2013). Assessments of intensity of initial teacher training yields inconsistent results; some studies in drugs and alcohol prevention show no significant initial implementation quality improvement when the training is intense rather than brief (Rohrbach, Graham, & Hansen, 1993; Rohrbach, Ringwalt, Ennett, & Vincus, 2005). It is generally acknowledged that assessment and testing of the support system delivery is highly complex and varies across disparate interventions; there is a distinct lack of guidance regarding the intensity or frequency of mentoring that is required. As such, given the scarcity of exemplary models related to the delivery of the support system, detailed research into consultation or ‘coaching’ models is expanding rapidly (Becker, Bradshaw, Domitrovich, & Ialongo, 2013; Reinke, Stormont, Herman, & Newcomer, 2013).

Consensus is growing that in order to translate implementation of new programmes and strategies into the classroom, prevention programmes need to be versatile to the problems and complexities that implementers face in providing effective teaching. A recent study by Reinke et al. (2014) indicated that behaviour support plans with pupils prone to disruptive behaviour were made more effective when coaches spent time with teachers, providing performance feedback on a weekly basis. Student outcomes improved with decreased rates of disruptive behaviour, increased prosocial behaviour and a trend towards improved on-task behaviour. Comparatively, a matched sample of students with disruptive behaviours did not indicate improved outcomes in schools with no coaching support. Thus, whilst it is evident that consultation and coaching can improve programme outcomes, there is still a need to understand the optimal level of
mentoring that is required in order to achieve high levels of implementation quality and resulting changes in student outcomes.

### 1.3.3 Macro-level factors

Whilst the present study’s objective is to focus on the influence of individual level factors on implementation variability, in the interest of comprehensiveness there will be an initial examination of the broader factors. The first level of the model is the broadest (figure 1), detailing the community-level factors that have the ability to influence the implementation quality within schools. These factors are not solely limited to education but encompass government and community entities also.

**Policies and financing**

The first level of the model represents the ‘macro-systemic’ sources of influence, such as policies or practices at government and local authority level that have the potential to influence the implementation quality of evidence-based programmes in schools, typically by administrative or financial means. In England the ‘pupil premium’ is the primary source of funding for schools that wish to engage in evidence-based programmes. The pupil premium is designed to give schools extra funding to raise the attainment of disadvantaged pupils from reception to late Key Stage 4; pupil premium funding is given to both mainstream and non-mainstream schools (DfE, 2016). Pupil premium funding now covers other vulnerable groups as well (e.g. looked after children). Previously free school meal (FSM) eligibility has been demonstrated to be a reliable indicator of socioeconomic status for children and adolescents (Green et al., 2005). While many schools are using their pupil premium to boost achievement of their disadvantaged pupils, evidence suggests that not all schools are utilising the pupil premium as effectively as possible, nor are they using appropriate evidence-based practices (DfE, 2016). Schools that are judged by Ofsted to need improvement, and where there are concerning issues regarding the attainment of disadvantaged pupils, are required to commission an externally led pupil premium review.

Issues may arise where, typically, schools that are not located in areas of high social deprivation may not choose to spend their pupil premium on evidence-based prevention programmes, preferring instead to use pupil premium funding to fund extra support for older Key Stage 2 (KS2) pupils in achieving higher academic grades. It is widely
acknowledged in the implementation literature that the ‘social validity’ of a programme is highly important, specifically the ‘need-in-context’ - the extent to which implementers believe it necessary. Schools will not choose to spend their pupil premium funding on evidence-based programmes if they feel that they are not necessary (Lendrum, 2010; Merrell, 2010). Both policy and parliamentary action, therefore, can have a powerful impact on implementation processes. Programme developers and researchers who understand this ‘need-in-context’ for policy makers and administrators at government, local authority and school level will be better equipped to tailor prevention programmes accordingly.

**Leadership and human capital**

Community capacity and empowerment have not historically been given a great deal of attention in prevention based research (Blase et al., 2014; Domitrovich et al., 2008; Greenberg et al., 2005), yet they represent macro-level factors which may influence the implementation process within schools. Community science researchers at times create community-level prevention programmes that target particularly pertinent community issues, such as drug or alcohol abuse programmes (Rohrbach et al., 2005). Some of these programmes, such as ‘Triple P’, utilise community coalitions as a mobilisation strategy (Asgary-Eden & Lee, 2012). To date, the function and group adoption of evidence-based programmes has primarily been the research focus, rather than how they are implemented. Nevertheless, Spoth & Greenberg (2005) acknowledge that community coalitions have the potential to positively impact certain aspects of the implementation support system by offering both training and technical expertise. Other macro-level factors that have an impact on the quality of implementation include the availability of qualified professionals to implement prevention-based programmes, coaches or trainers to support implementation and the allowance for continuing professional development (CPD) within the local authority (LA). Prominent leaders within LAs, that actively support prevention-based programmes, are also thought to be important in the sustainability of high-quality implementation (Castro, Barrera, & Martinez, 2004).

**Community-university partnerships**

Research and awareness has significantly grown regarding the importance of community-university partnerships in promoting the use of evidence-based prevention
programmes in schools. A meta-analysis conducted by Thomas et al. (2008) of 22 family-based programmes for preventing smoking by children and adolescents, found that programmes utilising university partnership models (e.g. PROSPER) were deemed the most effective in achieving positive implementation outcomes. University partnership models focus on assessing local needs ‘in context’, observe the implementation process and evaluate programme outcomes. CASEL utilises a comparable model which is designed to support schools across multiple year groups, designed to help facilitate high-quality implementation and ensure that interventions that are put into practice become sustainable (Payton et al., 2008). Domitrovich et al. (2008) state, “this model helps participants build a vision, identify community needs, select appropriate intervention strategies, and create a support system for their training” (p.13).

1.3.4 School-level factors
The second level of the model represents the school as an administrative entity that has an influence on programme implementation. An awareness of the organisational context of schools is vital in implementing and sustaining evidence-based programmes seeing that teachers, students and other agency professionals are all lodged, and interconnected, in this shared setting (Durlak et al., 2011; Meyers et al., 2012). In this level of the multilevel model are factors that correlate to the school’s administrative and organisational functioning, such as the availability of resources, school strategies or policies, leadership, and school/classroom climate. Owens et al. (2013) suggest that school climate is indicated by the perceptions and attitudes of the staff, including perceptions of their workplace and of their student relationships. Characteristics within the school, and the classroom, are also considered in this level of the model shown to have an existing evidence base in affecting the quality of programme implementation.

Administrative leadership
Research demonstrates that administrators in schools can have a profound impact on transforming schools that are committed to using original programmes and practices (Collie, Shapka, & Perry, 2012; Kam et al., 2003). Leaders that defer to using evidence-based practices can have a significant impact on the effectiveness and quality of implementation within a school (Gottfredson & Gottfredson, 2002). Beyond supporting interventions, effective administrative leaders also take part in planning and training,
provide necessary oversight to ensure the smooth and effective running of the programme, and ensure that staff members are aware of programme involvement as part of their job roles (Ransford et al., 2009). Effective leaders allow staff appropriate time as part of their curriculum planning to implement a given intervention; formally committing staff to prevention-based activities increases accountability and, therefore, quality of implementation (Ennett et al., 2011; Rohrbach et al., 2005). Conversely, a study by Kam et al. (2003) in disseminating PATHS under real world conditions, in 13 different classrooms across 3 schools, found that where principle leadership support was lacking, outcomes for students were significantly reduced. This was attributed to low staff morale and a lack of sufficient time to implement effectively.

**Personnel expertise**

The level of personnel expertise within a school can be another contributory factor as to how well prevention-based programmes are implemented. Enhanced training and technical support for a ‘programme coordinator’ is a model for building capability within a school (Joyce & Showers, 2002; Powell & Diamond, 2013). This prevention programme coordinator is then able to deliver enhanced generalisation strategies to other implementers to enhance implementation effectiveness. Availability of highly qualified staff, coaches and educational psychologists within schools and local authorities can have a significant influence on the support system and how well interventions are implemented.

**Resources**

The availability of resources to deliver evidence-based programmes in schools, including funds, materials, knowledge, skills and equipment are all important organisational level factors that must be considered (Asgary-Eden & Lee, 2012). Allocation of monies for training, suitable work space, staff time, technology and equipment are all necessary for a school to effectively implement an intervention. A study by Hanson et al. (2014), examining perceived challenges to implementation of an empirically supported mental health treatment programme for youth (Trauma-Focused Cognitive Behavioural Therapy; TF-CBT), emphasised the importance of appropriate resources in effectively implementing the programme. It was noted that as prevention programmes adapt and evolve the necessity for appropriate resourcing and technology is becoming more prevalent. Despite the fact that school resources are often controlled at a
local authority level, school administrators still have influence over the availability of spacing and staff time (Domitrovich et al., 2008; Hanson et al., 2014).

**Mission-policy alignment**
Teaching and learning policies are the greatest concern to a school’s mission to provide effective education to its students. Preventative interventions that are aligned to the school’s mission are most likely to be adopted and delivered with the greatest success (Durlak & DuPre, 2008). A school’s primary concern is the academic achievement of its students; social and emotional learning programme developers that recognise and emphasise the link between SEL skills and the school’s mission-policy alignment to provide academic rigour, will typically be prioritised, sustained and delivered with high-quality implementation (Durlak & DuPre, 2008; Durlak et al., 2011).

**Decision structure**
The decision structure in schools refers to the degree of autonomy that teachers have in which to solve problems that they encounter in the classroom. In essence, the degree of ‘flexibility’ that they have in how they teach (Owens et al., 2013). The decision making structure of a school is important; by involving members of a group, or organisation in decision making processes decreases the resistance to change and increases implementers’ perceptions of effective programme appropriation. For school-based preventative interventions, implementers who have an active role in the decision making processes of what intervention to adopt and how they should be implemented within the cultural context, are inspired to a greater degree to strive for high-quality implementation (Durlak, 2010; Ringwalt et al., 2003).

**School culture**
Culture and climate are clearly identified as disparate elements within the mental health literature and are each shown to influence the implementation of services, applicable also to a school environment (Aarons, 2005; Collie et al., 2012). The school culture influences the way in which day-today tasks are delivered, and is a reflection of the value system, norms and consensus of its members. Comparatively, climate is a reflection of an individual’s perceptions (Asgary-Eden & Lee, 2012). School culture is considered a significant factor to evaluate, given that the dissemination of evidence-based programmes may require the growth of the school’s academic mission-policy
which links directly to its culture. Asgary-Eden and Lee (2012) propose that culture is best evaluated by surveying the members of an organisation, and then combining their feedback on assessment items that refer to shared expectations and group norms. Past experiences with SEL may alter how preventative programmes are adopted into the school culture; negative experiences may lead to teachers delivering interventions with lower implementation quality (Hanson et al., 2014; Ransford et al., 2009). In like manner, environments that are less authoritative or controlling are inclined to have personnel who are more receptive to adopting evidence-based practices (Aarons, 2005; Ransford et al., 2009).

**School climate and organisational health**

A broad consensus of a definition of school climate is somewhat problematic. What is apparent is that researchers now prefer to refer to school climate as a measure of subjective school experiences. These are based on individual perceptions of the school life and reflects “norms, goals, values, interpersonal relationships, teaching and learning experiences, and organisational structures.” (Zullig et al., 2014, p.83). Research into school climate often focuses on the social or psychological characteristic of the construct and encompasses student, staff and parent perceptions. The way in which an organisation is able to adapt to change over a period of time is considered as a meaningful indicator of school climate (Grayson & Alvarez, 2008). Zullig et al. (2014) in a large secondary school study found that positive prevention programme outcomes and implementation quality were strongly associated with school climate factors, including perceptions of academic outcomes and school ‘connectedness’. Climatic factors were reported as crucial elements that effect student motivation to learn. School leaders set the tone and outlook for positive behaviour, which then directly affects middle leaders, staff and consequently classroom learners.

Although the organisational context of schools is deemed tremendously important, very little has been established regarding the mechanisms that link climate to a school’s capacity to implement evidence-based programmes effectively (Domitrovich et al., 2008). Schools that are institutionally ‘healthy’ and impart a positive, safe, and supportive environment may contribute to implementers’ efficacy and readiness to support the intervention (Ransford et al., 2009). Furthermore, teacher’s *collective* self-efficacy, the belief that the school’s endeavour as whole can have a positive impact on
learners, has been found to be positively associated with student attainment (Skaalvik & Skaalvik, 2010). Thus, implementation quality is likely to be impacted by implementers’ collective self-efficacy.

**Characteristics of the school**

As with the previous section, the mechanisms of school characteristics are not fully understood or empirically validated (Ozer, 2006); research that has been conducted generally acknowledges student mobility and the size of the institution as factors that may affect the implementation quality of a given intervention (Gottfredson & Gottfredson, 2002). It stands to reason that schools with smaller cohorts, in rural areas, should be able to implement preventative-based programmes better than in larger, urbanised areas. Schools in the latter category typically will have a larger number of at-risk students and therefore may encounter larger difficulties in implementing prevention programmes with high fidelity (Gottfredson & Gottfredson, 2002). This is perhaps due to the higher rates of student mobility or absenteeism, which results in students receiving less of the critical components of an intervention that are necessary in order for it to be successful (Century et al., 2010). Additionally, schools in disadvantaged neighbourhoods may have a higher rate of staff turnover, accountable to stress or burnout, which in turn decreases the level of effective practitioners able to deliver the intervention (Wehby, Maggin, Moore Partin, & Robertson, 2011).

**Classroom climate**

There are a multitude of factors that relate to the climate of a classroom, with no singular element being the absolute definition. Classroom climate is a construct of both social and psychological factors, including: student-teacher relationships, mutual respect for others, sense of belonging, teaching practices, rules, and collegiality (Becker et al., 2013; Dane & Schneider, 1998). There are a myriad of preventative-based programmes that are classroom based, including SEL and drug prevention interventions. Environments that are stressful or conflicting may negatively impact on intervention implementation and effectiveness. Student misconduct has the ability to affect developing social behaviours and result in ubiquitous social and mental health difficulties in later life. Teachers who have to spend more time on behavioural management instead of effective instruction may implement with lower fidelity.
Unsurprisingly, the classroom climate plays a critical role in the successful implementation of evidence-based programmes (Abry et al., 2013).

### 1.3.5 Individual-level factors

The third level of the IQ model relates to the individual-level factors that have the ability to benefit or erode the implementation of interventions in schools. Although research to date has identified some theoretical links as to how individual-level factors may affect high-quality implementation, very little empirical research currently exists on how implementer characteristics influence implementation quality (Domitrovich et al., 2008; Ransford et al., 2009; Ross, Romer, & Horner, 2012). As such, this is the central focus of the current study and will be explored in great detail in the subsequent chapters.

**Professional characteristics**

This aspect of the IQ model refers to individual differences in implementers’ education and experience. Very little training is given to teachers on preventative-based programmes and may vary significantly between training providers. Intervention by other agency support staff such as social workers, clinical, or educational psychologists typically work on an individual basis with small groups of staff. Therefore, the level of training into preventative-based interventions can vary greatly from school-to-school. Staff may vary in their skills, experience and levels of education; such factors are assumed to influence implementation in a variety of ways. It is also important to note that preventative interventions carried out as part of a trial and the ‘real world’ of educational practice varies greatly (e.g. the difference between efficacy and effectiveness). In trials there is a far larger emphasis on training and support because the researchers are attempting to optimise conditions, whereas in the real world schools are often left to their own devices, training and supporting their teachers as they see fit.

Teachers who are more comfortable with the core concepts of SEL programmes, developed through CPD, are likely to be able to implement with a greater degree of success. Furthermore, the length of time teachers have to hone and develop their teaching practices should positively influence implementation quality. There is also the possibility, however, that teachers who have been teaching for longer may have become ‘stuck in their ways’ and therefore reticent to alter their practice. To date, studies which
have tried to examine the relationship between implementers’ professional characteristics and programme implementation, have had mixed findings. So, for example, one study found fewer years teaching to be associated with higher levels of implementation quality (Rohrbach et al., 1993). However, other research has failed to replicate this link (Ringwalt et al., 2003). Ergo, further research is essential to determine the role that training and coaching play in effective implementation and is an area that shall be examined in greater detail in the present study.

**Psychological characteristics**

This element of the IQ model focuses on aspects of implementers’ psychological profiles. Relevant theory by the likes of Jennings and Greenberg (2009) and existing research (e.g. Ransford et al., 2009; Ross et al., 2012) has led to a focus on certain psychological characteristics, including: burnout, teaching self-efficacy, and emotional self-efficacy. These and other psychological characteristics (e.g. personality) are thought to influence implementation via their impact on workplace productivity, approaches to classroom management, and other important aspects of teacher behaviour. Awareness of the role played by certain characteristics can help researchers to better understand both positive (e.g. enthusiasm or receptiveness) and negative (e.g. anxiety or anger) reactions to interventions for both implementers and participants (Becker et al., 2013; Domitrovich et al., 2008).

*Professional burnout* is defined as the result of continual exposure to work-related stressors (Maslach, Schaufeli, & Leiter, 2001; Schaufeli, Leiter, & Maslach, 2009; Wehby et al., 2011). The most common definition for burnout is a three-tiered, psychological syndrome that includes a state of emotional exhaustion, depersonalisation, and feelings of low personal accomplishment that may occur in response to chronic role stress (Maslach & Jackson, 1981; Maslach, 1976; Jackson, Schwab, & Schuler, 1986). If teachers are burned out, they may be less likely to have the psychological stamina required to venture beyond the bare minimum required of them, and in this case, to implement SEL programmes effectively. Burnout is a significant risk factor for breakdown in departmental communication, (Michie, 2002; Ransford et al., 2009). It is likely that teachers who show high rates of stress and a low sense of efficacy will have a negative impact on their students’ learning. However, studies have found that teachers who experienced high burnout and high efficacy did
not differ in their implementation quality from those with lower levels of burnout (Brouwers & Tomic, 2000; Ransford et al., 2009); this suggests that the interaction between psychological characteristics is also salient. High self-efficacy, in this instance, may ‘buffer’ the negative effects of burnout. Therefore, in light of this evidence, the present study shall attempt to determine whether interactions of certain individual level factors (such as self-efficacy or burnout) have an influence on variability in implementation, and whether these findings can be replicated.

Teacher self-efficacy may be regarded as teachers' confidence in their own ability to organise, create goals and deliver activities that are necessary to attain given educational objectives. Greater self-efficacy in the literature is generally associated with higher quality implementation (Kallestad & Olweus, 2003; Rohrbach et al., 1993; Domitrovich et al., 2008; Jennings & Greenberg, 2009). It is likely that this influences implementation behaviour as such efficacy beliefs indicate a self-judgement of a teacher’s capacity to affect student performance and have a powerful influence on teachers’ behaviours. A review by Han and Weiss (2005) suggested the importance of investigating teachers’ barriers to implementation, which included teaching self-efficacy beliefs and burnout. Nevertheless, it too overlooked teacher’s own social and emotional competence which may contribute to a teacher’s sense of self-efficacy (Jennings & Greenberg, 2009). Also considerably overlooked in the literature is teachers’ emotional self-efficacy and its affect on implementation behaviour; thus, the present study shall continue to develop the evidence base in this area and attempt to determine the importance of self-efficacy in teachers’ delivery of evidence-based programmes.

Teacher’s emotional self-efficacy has been defined as a set of skills for processing emotion-relevant information (Mayer & Salovey, 1997). Specifically, it is the ability to self-perceive emotions, to access and generate emotions to assist thought, to understand emotions and emotional knowledge, and to reflectively regulate emotions to promote emotional and intellectual growth. Emotionally intelligent teachers are also presumably better able to model social and emotional skills. Recent findings suggest that emotionally intelligent teachers appear to indirectly impact student conduct in the classroom by creating an atmosphere of support and an effective context for learning (Nizielski, Hallum, Lopes, & Schutz, 2012). However, Evers, Brouwers and Tomic (2002) and Domitrovich et al., (2008) note that to date there is a significant lack of
research in determining how these psychological characteristics relate to implementation of academic or preventative interventions. Further research into psychological functioning is critical to understanding how teachers as implementers can impact on implementation and programme outcomes.

Perceptions and attitudes towards interventions
This final aspect of the IQ model focuses on how teachers think and feel about a given intervention. A multitude of programme characteristics that are reflected in implementers’ perceptions and attitudes appear to influence implementation quality. A framework by Brackett, Reyes, Rivers, Elbertson and Salovey (2012) suggests that implementer comfort, commitment, and culture are the most applicable aspects to evaluate.

SEL programmes are not without criticism, described by some, including some teachers (Humphrey et al., 2010), as a waste of time and resources that remove attention from what is really important in schools (Craig, 2007; Ecclestone & Hayes, 2008). It stands to reason then that teacher perceptions and attitudes towards SEL interventions will likely impact upon on implementation quality. For example, the perceived value of a programme is an important factor; if teachers do not see the value of cultivating a specific skill or delivering lessons on particular topics, there is a higher probability that they will omit those activities, even when they are essential, core elements of a given programme. Although in its infancy, research in this area seems to support such propositions. For example, in the substance abuse prevention literature, Rohrbach et al., (1993) noted that teachers’ acceptance of an intervention and whether the intervention was chosen in consultation with school staff was a strong predictor of implementation quality. Teachers needed to feel that their school culture supported them in the implementation of SEL programmes. Attitudinal links to implementation behaviour have also been demonstrated in Rogers (2003) and Dusenbury et al., (2003, 2010) with teachers rejecting programmes that require overly intensive training by external professionals. Across the literature, teachers in self-report measures demonstrated implementing SEL with higher fidelity when they were satisfied with quality of training sessions that they received (Greenberg et al., 2005; Domitrovich et al., 2008; Bradshaw, Koth, Thornton, & Leaf, 2009; Jennings & Greenberg, 2009). It is imperative therefore that research continues to better understand how teachers’ perceptions and attitudes to
SEL can impact implementation quality. Despite consideration of the role and importance of implementers and their characteristics in theoretical frameworks for school-based prevention and SEL (Domitrovich et al., 2008; Ransford et al., 2009; Reinke et al., 2013), there has been only limited empirical study of these aspects to date. The aim of the second chapter, therefore, is to address this key gap in the literature by exploring implementer characteristics in far greater detail than has previously been attempted.
1.4 Summary Statement

This summary provides an overview of the main sections detailed in this chapter on implementation and its critical role in the successful outcomes of evidence-based programmes.

- An overview of the development of SEL programmes in schools was provided, including details on the core SEL competencies as set out by CASEL. A preliminary rationale for the importance of studying implementation was also detailed.

- Defining implementation and the reasons for assessing implementation were addressed. The key elements of implementation were introduced, as well as a description of each aspect.

- A detailed overview of fidelity, adaptation, dosage, quality, participant responsiveness, programme reach, programme differentiation, and monitoring of control groups was explored.

- The way in which implementation is assessed was examined. Methods of assessment consisted of: implementer self-report, participant surveys, interviews, focus groups, implementer interview protocols, and observations. A focus was placed on the contentious nature regarding how implementation is assessed.

- A section on factors affecting implementation was explored, including the introduction of the Implementation Quality model and the rationale for its use over other theoretical frameworks. The support system, macro level factors, school level factors, and individual level factors were all explored.

- The intention of exploring individual level factors in greater detail in Chapter 2, given the limited empirical evidence to date, was noted in the conclusion.
Chapter 2: Individual Level Factors Affecting Implementation

2.1 Introduction
The teaching profession has changed substantially over the past few decades. Teachers are required to perform with greater professional rigour, delivering a crowded academic curriculum whilst ensuring that their pupils’ social and emotional needs are being met. As a result, teachers are leaving the profession in far greater numbers than ever before due to the increased rates of stress and burnout (Association of Teachers and Lecturers, 2015). Domitrovich et al.’s (2008) IQ model suggests that individual level factors in implementation quality have the greatest impact on programme effectiveness (Figure 1); factors with higher significance are placed at the centre of the model. It is likely that teachers who demonstrate higher levels of stress, low emotional and teaching self-efficacy, and negative attitudes towards their profession are likely to have a detrimental impact on their pupils’ learning and deliver new curricula at a lower levels of implementation quality (Ransford et al., 2009). Given the critical role that teachers are thought to play in the successful delivery of evidence-based programmes, the following sections in this chapter shall focus on the key aspects of the individual level in the IQ model: psychological characteristics, professional characteristics, and perceptions of and attitudes towards an intervention. Summary statements and the presentation of the main research questions follow this.

2.2 Psychological characteristics

2.2.1 Definition of emotional self-efficacy
Emotional self-efficacy has garnered a great deal of interest both within and outside the field of psychological research, beginning with Daniel Goleman’s Emotional Intelligence (1996). Teacher’s emotional self-efficacy has been defined as a set of skills for processing emotion-relevant information (Mayer & Salovey, 1997). Specifically, it is the ability to perceive emotions, to access and generate emotions to assist thought, to understand emotions and emotional knowledge, and to reflectively regulate emotions to promote emotional and intellectual growth. Other research has defined EI as a variety of
emotional self-perceptions on the lower rung of personality hierarchies (Petrides, Furnham, & Mavroveli, 2007). These two perspectives, respectively, are termed as ability EI and trait EI. In recent times, the concept of emotional self-efficacy (ESE), as distinct from the trait EI approach, has been considered (Kirk, Schutte, & Hine, 2008) and is conceptualised as belief in one’s own emotional functioning capabilities. ESE and trait EI vary from each other in that ESE is exclusively concerned with self-perceptions related to emotional functioning; trait EI includes other aspects of self-perception and characteristics not incorporated by ESE (Kirk et al., 2008). Given that the emergent terminology, ‘emotional self-efficacy’ is relatively new in the literature the terms emotional intelligence (EI) and emotional self-efficacy (ESE) shall be used where appropriate, dependent on the studies referenced.

EI has been shown to be a relevant construct in different domains of daily life, including mental and physical health, social functioning, and academic and workplace performance (Mayer, Roberts, & Barsade, 2008; O’Boyle, Humphrey, Pollack, Hawver, & Story, 2010). A multitude of studies have attempted to examine the importance that EI plays in individual functioning. Simultaneously, various researchers have evaluated differences in emotional abilities as a function of sociodemographic variables such as age, gender or level of education (Day & Carroll, 2004).

In context with the present study, EI is an important psychological characteristic to consider when regarding implementation quality, given that emotionally intelligent teachers are also presumably better able to model social and emotional skills. It stands to reason that better modelling of social and emotional skills could lead to superior implementation quality in SEL programmes. Empirical validation of this conjecture has yet to be verified in the literature and thus warrants further investigation. Recent findings suggest that emotionally intelligent teachers appear to indirectly impact student conduct in the classroom by creating an atmosphere of support and an effective context for learning (Nizielski et al., 2012). Stough, Saklofske and Parker (2009) suggest that research focusing on the relationships between higher EI and decreased occupational stress creates an opportunity for advancing effective stress management and building resilience. It stands to reason then that these relationships may also be important in improving implementation quality in prevention science, as teachers are able to manage their own emotional states more effectively.
2.2.2 Emotional self-efficacy and gender

Extant literature on emotional intelligence indicates a clear notion that there is a difference between men and women (Naghavi & Redzuan, 2011); women often lead the delivery of prevention curricula, particularly in primary schools given that 80 percent of the school workforce are female (DfE, 2014). Whether the gender of the implementer in prevention programmes is important, due to gender’s relationship with skills in EI, remains undetermined. The pervading stereotype widely held is that females experience emotions, both positively and negatively, to a greater degree than males (Fernández-Berrocal, Cabello, Castillo, & Extremera, 2012). The explanation focused on social aspects indicates that whereas females acquire an education skewed towards the emotional, males are educated to understate certain emotions, such as fear or sadness (Sánchez, Fernández-Berrocal, Montañés, & Latorre, 2008). Baron-Cohen (2002, 2003) suggested that certain areas of the brain, dedicated to emotional processing, could be larger in the brains of women; advancing the notion that emotional processing is as much a biological factor as it is a social one. Nevertheless, emotional processing is not simply an issue of biology. Research suggests that gender socialisation also plays a significant role; for example, if cultural expectations dictate that females are more empathetic and caring than males, then parents, career advisors, and teachers will guide them towards professions that require concern and empathy for others, such as nursing, child-care, or primary school teaching (Andersen, Ertac, Gneezy, List, & Maximiano, 2013).

In a range of empirical studies pertaining to emotion through biological and social explanations, women consistently demonstrate greater ability. Caution is warranted, however, in that these ‘greater’ abilities are often demonstrated through self-perception measures. Concluded throughout is that women have greater emotional knowledge; they demonstrate higher social abilities, they have more interpersonal competencies, and express both positive and negative emotions with greater fluency and frequency (Fernández-Berrocal et al., 2012). Nevertheless, whilst all such studies demonstrate women as having superior EI, there is a great deal of contention regarding the specific dimensions of EI in which they are more advanced. Castro-Schilo and Kee (2010) reported differences in experimental aspects of EI such as emotional facilitation and perception, whereas Farrelly and Austin (2007) in contrast found differences in the
understanding and handling emotions - strategic aspects of EI. Departing from these findings a third group of studies by McIntyre (2010) showed EI improvements in perception, facilitation, understanding of emotions and the total EI score. Finally, studies by Palmer, Gignac, Monocha and Stough (2005) and Extermera et al. (2006) found women to be superior in all dimensions of EI functioning. Similarly, Joseph and Newman’s (2010) meta-review of EI, which included differences between genders, concluded that women achieved higher scores than that of their male counterparts on all dimensions of EI, with moderate effect sizes ranging from .29 to .49. Self-report bias, unequal proportions of both men and women, inconsistent tools of measurement, and cross-sectional analysis plague many of these studies. It is problematic to draw appropriate conclusions or provide definitive evidence as a result of this.

Fernández-Berrocal et al. (2012) in their study of 559 participants (170 men, 389 women) took a different perspective by controlling for age, which is one of the primary sociodemographic characteristics that interacts with gender as well as EI, to allow clarification for how gender affects EI. Findings revealed that gender differences initially reported for EI are moderated by age for the divisions of total score, strategic processing and facilitation. Thus, it is possible that age is a strong contributory factor in EI and should be taken into consideration when drawing conclusions. The researchers note that caution is also required when concluding that gender affects EI in the absence of tests for possible interactions between gender and other variables that may influence EI (Fernández-Berrocal et al., 2012).

In reviewing the empirical evidence there appears to be strong support towards the hypothesis that women possess superior emotional abilities. The findings from these studies suggest that exploration of the relationship between gender, age and EI deserves further scrutiny, whilst attending to the methodological inconsistencies mentioned. Referring back to the study in question, whether female teachers are capable of delivering preventative programmes with greater implementation quality as a result of superior emotional skills remains unexplored.

### 2.2.3 Emotional self-efficacy in the classroom

Researchers have argued that EI may predict key determinants of performance in the workplace to a greater degree than classically accepted constructs such as general
intelligence or personality (Mayer, 2001). Evidence suggests that the ability to work with emotion is central to a teacher’s profession; tolerance, adaptability, teamwork and interpersonal relationships are key. The emotional skills of teachers have been demonstrated to influence how students control themselves, their engagement and attachment to the school (Durlak et al., 2011). In a study of 123 secondary school teachers by Brackett, Palomera, Mojsa-Kaja, Reyes and Salovey (2010), assessed by the Mayer–Salovey–Caruso Emotional Intelligence Test (MSCEIT), teachers who had higher scores of emotional regulation ability (ERA) also reported significantly less burnout and higher satisfaction with their jobs. ERA is suggested to be a protective factor, in this instance, against burnout and higher levels of teacher stress. This hypothesised process is thought to occur due to the fact that EI safeguards against burnout because higher levels of EI should lead to better management of various emotional states. The study is limited, however, by the restricted range of assessment tools, additional indicators for all constructs would be required for a more rigorous analysis. Furthermore, the study was cross sectional and assessed only one geographical location in England; longitudinal assessment with a larger, more diverse sample of teachers would aid causational validity.

There have, as a result of studies like these, been calls for a greater emphasis on emotion in teacher training (e.g. Corcoran & Tormey, 2010). The way in which teachers work with emotion is conceptualised by Corcoran and Tormey (2010) in three distinct ways: affective teacher-student relationships, teacher emotional competence, and as EI. Emotional intelligence models are thought to be the clearest and most accessible in measuring the ability to work with emotion. Empirical studies on EI in teachers, however, number in the few. Theory surrounding EI might lead us to suppose that having higher EI would be associated with high quality implementation, in both academic and SEL curricula, yet there is little existing evidence to address this. Whilst Brackett et al. (2010) may suggest that teachers with higher ERA scores are more satisfied and less burnt out, questions still exist surrounding whether this translates to improved student outcomes. In addition, it has been determined that teachers can have higher or lower scores on disparate sub-skills within the EI framework, and so an issue worth considering is how different sub-skills of EI relate to teacher performance (Concoran & Tormey, 2012).
Goe, Bell and Little (2008) state that teacher performance can be evaluated in terms of: inputs, processes, and outputs. A considerable mass of ‘teacher effectiveness’ is weighed heavily on the outputs; the impact that the teacher has on student achievement. Whilst it is tenable to consider improvements in student outcomes, across academic and social outcomes, as the barometer for teacher performance, Darling-Hammond and Synder (2010) submit that this is problematic at the individual level as it is difficult to factor out interceding variables. It is widely acknowledged that there is no ‘best method’ of assessing teacher effectiveness, with a multitude of assessment tools now attempting to do so, ranging from assessment of processes through to assessing relevant expertise with an agreed-on set of standards (Corcoran & Tormey, 2013). If measures of teacher performance are under dispute then it stands to reason that the same can be said for teacher measures in working with emotion. Preceding sections within this thesis have already highlighted the effectiveness of SEL programmes in schools (e.g. Durlak, 2011). With so much emphasis placed on the teaching of emotion to students, it raises the question as to why teachers’ ability to work with emotion is lacking in the extant research base. Much of the literature that has touched on this field to date refers to teacher’s emotional abilities as ‘affective teacher-student relationships’.

Affective teacher-student relationships have emerged from a number of conceptual frameworks, including that of attachment theory (Bergin & Bergin, 2009); teachers that are warm and empathetic create a safe base for their students, assuming the role of primary caregiver. This is particularly relevant to early years and primary education. Roorda, Koomen, Split and Oort (2011) report on a meta-analysis of 64 studies on the impact of the emotional aspects involved in teacher-student relationships. The studies involved an estimated 88,417 students, and the characteristics explored involved positive and negative relationships with engagement and achievement. Positive teacher-student relationships were found to be moderately associated with student engagement ($r = .34$), and a smaller association with achievement ($r = .16$). Corcoran and Tormey (2013) note that part of the challenge in assessing affective teacher-student relationships is in finding reliable means of assessment, a question that has been at the forefront of how EI is assessed.

In the developing literature base EI skills have been linked to how teachers perform in a number of different ways (Table 2). In considering this literature, it would seem
reasonable that EI is likely to be the foundation for emotionally competent teaching skills. However, as yet, no empirical evidence exists to allow assessment of whether higher levels of measured ESE relate to improvements in student outcomes in SEL interventions. In summary, there are grounds for thinking that EI might well be a relevant measure for predicting teacher performance and implementation quality in SEL curricula. The present study shall therefore address this significant gap in the literature.

Table 2: Emotional intelligence (EIQ) branches and the teaching role

<table>
<thead>
<tr>
<th>Skill area / branch</th>
<th>Role in teaching and in the literature on teaching</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perception appraisal and expression of emotion (PEIQ)</td>
<td>• Attentiveness to emotional information in both teacher and students (Whitcomb et al., 2008, p. 269)</td>
</tr>
<tr>
<td></td>
<td>• Emotional understanding (Hargreaves, 1998)</td>
</tr>
<tr>
<td></td>
<td>• See also (Hoekstra &amp; Korthagen, 2011)</td>
</tr>
<tr>
<td>Emotional facilitation of thinking (FEIQ)</td>
<td>• Different emotions can be effective for different reasoning tasks (Isen, Daubman, &amp; Nowicki, 1987; Palfai &amp; Salovey, 1993)</td>
</tr>
<tr>
<td></td>
<td>• Emotional scaffolding of learning (Roseik, 2003)</td>
</tr>
<tr>
<td>Understanding and analysing emotional information (UEIQ)</td>
<td>• Teaching as involving constant emotional ebb and flow, (Intrator, 2006) or a whirlpool of ever changing emotions (Erb, 2002)</td>
</tr>
<tr>
<td>Regulation of Emotion (MEIQ)</td>
<td>• Associated with more positive emotional states among teachers, greater emotional self-control, greater understanding of appropriate displays of emotion, greater job satisfaction and more support from principals and colleagues (Brackett et al., 2010)</td>
</tr>
</tbody>
</table>

From Corcoran and Tormey (2013)

2.2.4 Emotional self-efficacy and stress

Teacher’s ESE, as well as other factors such as friendships, efficacy and personal life are considered to be influential in a teacher’s performance with social and emotional abilities in the classroom (Jennings & Greenberg, 2009). When teachers lack the necessary social and emotional competencies (SEC) to handle difficult behaviour in the classroom, as well as other challenges, they experience emotional stress. High levels of emotional stress can have a seriously detrimental effect on job performance and lead to burnout (Aloe, Amo, & Shanahan, 2013; Ransford et al., 2009). Therefore, the
psychological health of teachers is central to the ‘success’ of students in both academic and SEL performance. Early studies into emotion and stress (e.g. Salovey & Mayer, 1990) suggested that EI - broadly defined at the time as identification, processing, and regulation of emotion - held the key to buffering against negative outcomes for teachers. Newer research by Stough et al. (2009) determined that there was a relationship between higher EI and enhanced coping skills that led to a reduction in occupational stress levels. This provides a useful direction for enhancing successful stress management and resiliency in teachers. Jennings and Greenberg (2009) put forward a model of a ‘prosocial classroom’ (Figure 2), another key theoretical model which illustrates how a teacher’s EI (central to SEC) influences the classroom atmosphere, implementation quality, and student outcomes. The model advocates that teachers’ emotional and psychological wellbeing dictates how much and how well they implement evidence-based programmes.

**Figure 2**: The prosocial classroom: A model of teacher social and emotional competence and classroom and student outcomes.

In this model, teachers with higher SEC are inclined to display better skills in classroom management; more likely to be proactive, skilful with ‘emotional expressions’ and verbal support to promote enjoyment and enthusiasm for learning, helping to guide student behaviours (Jennings & Greenberg, 2009). Their higher SEC allows for superior
classroom management by appreciating how conflict occurs. For example, children that become scapegoats due to subtle provocation by their peers will be picked up on by a SEC teacher. Goddard, Hoy and Woolfolk Hoy (2004) argue that when emotionally intelligent teachers know how to handle their behaviours and emotions they are better at handling emotions and behaviours in others. They can manage their emotions in healthy ways that help promote effective classroom outcomes without jeopardising their health.

Jennings and Greenberg (2009) recognise that individual level factors, as addressed in Figure 1, are not discrete; understanding how these variables interact with each other must be taken into consideration. To review, SEL is the process of developing skills to recognise and manage emotions, make responsible decisions, develop concern for others, handle challenging situations effectively, and establish positive relationships (Payton et al., 2008). The present study focuses on the implementation of the PATHS (Promoting Alternative Thinking Strategies) curriculum. PATHS includes techniques to facilitate controlled emotional expression, such as teaching students to calm down effectively before attempting to problem solve (Kusche & Greenberg, 1994). PATHS is designed to facilitate a) improvements in classroom climate and b) teachers’ responsiveness to pupils’ psychological and emotional needs. They both require process-based activities that teachers apply to commonplace situations as they occur spontaneously in the classroom and therefore emphasise the significance of teacher modelling (Becker et al., 2013). Programmes like PATHS require a greater deal of teacher SEC, yet many SEL interventions do not impart candid instruction for teachers in this regard (Becker et al., 2013; Jennings & Greenberg, 2009). Most SEL programmes assume that the teacher is equipped to serve as both an exemplar and an effectual emotional coach.

The first chapter focused on the importance that implementation quality plays in successful programme implementation. Whilst many studies have demonstrated the effectiveness of SEL programmes for students (e.g. Durlak et al., 2011), their successful implementation may hinge on the teacher’s emotional competence to generate an environment favourable to SEL. There is substantial evidence suggesting that the quality of teacher implementation of SEL programmes studied at the primary level affects student outcomes and that teacher implementation quality depends on the dimensions of EI, in particular perception and expression of emotion, social awareness,
and emotional regulation in relationships with others (Roorda et al., 2011). An implemeneter who is aware of their own emotional responses, personal stressors, and can identify and understand a pupil’s emotional reactions may be better equipped to deliver SEL programmes explicitly through the lessons, the generalisation activities, and acting as an effective role model. Although these emotional skills are integral to the work of a teacher, they are not easily identified; emotional regulation is often concealed as a norm expected by teachers in their profession.

Research into the relationship between EI and SEL work, and their significance on teachers’ psychological well-being has rarely been presented in the literature. A recent study by Yin, Lee, Zhang and Jin (2013) using structural equation modelling, attempted to tackle this gap by examining teachers’ EI, ‘emotional labour’ strategies and their impact on teachers’ sense of job satisfaction. Yielding a considerable sample of 1281 primary and secondary school teachers, it was found that teachers’ EI had a significant impact on teaching satisfaction and their use of emotional labour strategies (akin to SEC skills); for example, ‘deep acting’ and ‘expression of naturally felt emotions’. The nature of the emotional labour activity, or SEC skill, mediates the role of EI. Limitations exist through the participant gender imbalance (70% female), although as stated before these figures are representative of the actual gender distribution in the teaching profession. A cross sectional research design was utilised; longitudinal research would have helped clarify the direction of the regression pathways. Nevertheless, this study supports the claim that EI is beneficial for teachers’ psychological well-being, and may play a protective factor against teacher burnout (Yin et al., 2013). The present study will continue to address this key gap in the literature by exploring the impact that ESE not only has on implementation quality, but also its relationship with teacher burnout and other explanatory factors.

2.3 Teaching self-efficacy

2.3.1 Definition of self-efficacy
During the past three decades there has been a growing interest in teacher self-efficacy. Self-efficacy is rooted in the theoretical framework of social cognitive theory, emphasising the evolution and application of ‘human agency’ - to be an agent is to
intentionally make things happen by one’s actions (Bandura, 2001). Bandura (2001, 2006) maintains that in this notion, people are “self-organising, proactive, self-regulating, and self-reflecting” (Bandura, 2001, p.2). From this standpoint, self-efficacy affects the goals and behaviours of an individual and is directly guided by one’s actions and environmental conditions (Schunk & Meece, 2006; Skaalvik & Skaalvik, 2010). Bandura (1993) states, “It is difficult to achieve much while fighting self-doubt” (p. 118). Efficacy beliefs determine how opportunities and challenges are perceived, as well as the length of time that an individual will endure in the face of adversity (de Jong et al., 2014). This effort expenditure is directly related to the perceptions of the individual and their ability to deliver a task successfully (Hanson et al., 2014). The next step for researchers is to transfer Bandura’s concept of self-efficacy to education, specifically focusing on how self-efficacy can influence teachers’ abilities to work successfully within the classroom. Based on social cognitive theory teacher self-efficacy may be conceptualised as teachers’ beliefs in ability to set targets, organise, and deliver activities that are necessary to attain positive student outcomes (Skaalvik & Skaalvik, 2010). Ergo, in theory teachers with high self-efficacy may be better equipped to deliver evidence-based programmes with higher quality implementation.

With Bandura’s definition of self-efficacy in mind several instruments have been developed to assess teachers’ personal self-efficacy. Skaalvik and Skaalvik (2010) note some of the limitations with these in that many do not assess teacher self-efficacy as a ‘multidimensional’ construct, do not reflect the challenges imposed on teachers, nor do they reflect the variety of tasks that teachers undertake. Therefore, the present study utilises a multidimensional measure of self-efficacy in light of this critique. Nevertheless, despite using different tools of measurement and instruments, several studies have discovered that teacher self-efficacy predicts both teaching practices and student engagement (de Jong et al., 2014; Skaalvik & Skaalvik, 2007). For example, an early study by Ross (1992) in 36 secondary school classes found that student achievement was higher in classrooms of teachers who had greater confidence in the education that they were providing. However, a self-efficacy measurement was taken only once during the course of the study; it raises questions as to whether the results may have varied if multiple measurements were taken over various time points. It would also have helped to show whether teaching self-efficacy is a variable state rather than a trait. Other notable early research by Cheung and Cheng (1997) demonstrated
that students’ own self-efficacy and attitudes towards learning were greater in classes where teachers’ own self-efficacy was higher. Teachers with higher self-efficacy also show improved motivation (Midgley, Feldlaufer, & Eccles, 1989) and are more likely to stay in the teaching profession (Burley, Hall, Vileme, & Brockmeier, 1991; Skaalvik & Skaalvik, 2010). There is also some evidence to suggest that self-efficacy may act as a protective factor against burnout (Brouwers & Tomic, 2000) which shall be discussed more fully in subsequent sections.

2.3.2 Self-efficacy in classroom management and teaching practice

Classroom management is one of a multitude of important skills and functions that teachers have in meeting the pedagogic demands of schooling. Effective classroom management has, in several studies, demonstrated favourable outcomes for students and teachers alike. For example, a study by Friberg, Huzinec and Borders (2008) in a stratified randomised sample of 500 secondary students, found moderate to high effect size gains in student achievement ($r = .54$) in classrooms where teacher classroom management was rated highly. Conversely, classroom management continues to be a major concern and challenge for teachers (Brouwers & Tomic, 2000), with difficulties in managing student behaviour attributed as one the most significant causes of teacher burnout and attrition (Aloe et al., 2013). Research in the last decade has suggested that maintaining control of the classroom environment is one of the fundamental ‘core tasks’ for teachers, alongside learning and instruction (Evers, Tomic, & Brouwers, 2004). The role of classroom management in teacher well-being is particularly well documented by den Brok, Fisher and Koul, (2005) in their model for interpersonal teacher behaviour (Figure 3), in which they distinguish two separate aspects of influence: Dominance-Submission, and Cooperation-Opposition. The influence dimension refers to the level of control that teachers have on what is going on in their classrooms, whereas the proximity dimension refers to the level of consensus and harmony that teachers have with their students. Based on these dimensions eight different teacher behaviour types emerge (e.g. DO strict, SC student freedom, OS dissatisfied).
With these behaviour types in mind Vesely, Saklofske and Leschied (2013) and Wubbels, Brekelmans, den Brok and van Tartwijk (2006) established various profiles of teaching styles recognised by both teachers and students. Evidence was found to suggest that the interpersonal behaviours of teachers changed proportionately to the length of time teaching. Teachers at the beginning of their careers demonstrated more uncertain behaviours, which was related to higher levels of classroom disruption. It was also reported that after approximately five years in the profession an increase in authoritative teaching styles was evident (Wubbles et al., 2006). Variation in the style of teaching affects student outcomes quite distinctly; research shows that authoritative teaching behaviour is associated with higher student attainment, while higher cooperative teacher behaviours are associated with increased student motivation (Ertesvåg, 2011; Walker, 2009). Therefore, an acknowledgement of the different interpersonal teaching behaviours and their impact on student outcomes should be considered. In teaching practice this has implications in particular for newly qualified teachers who may not have the same level of awareness as experienced teachers to vary their behavioural style (Dicke, 2014; Wubbels et al., 2006; Walker, 2009).
More recent views of classroom management in the literature go beyond the recurrently held belief that classroom management is about perpetuating discipline and control (Aloe et al., 2013; O’Neill & Stephenson, 2011). Brophy (2006) suggests that ‘student socialisation’ is highly related to classroom management and in some of the existing literature has been included as part of the working definition in how it is defined (O’Neill & Stephenson, 2011; Skaalvik & Skaalvik, 2014). Student socialisation involves setting expectations and ideals where desirable behaviours are taught, modelled and encouraged to both individual pupils as well as the larger classroom body (Brophy, 2006). The objective is to engender high levels of self-discipline in pupils and integration to school via enhanced student–teacher relationships (O’Neill & Stephenson, 2011); improved student-student relationships are also targeted as part of this strategy as they have been shown to improve protective factors against high-risk behaviours such as drug and alcohol abuse (Hansen & Dusenbury, 2004).

In order to manage the classroom effectively teachers must possess knowledge, skills and a belief in their capacity to execute decisions that sustain an effective learning environment (Merritt, Wanless, Rimm-kaufman, & Peugh, 2012). Bandura (2001) suggested that ‘self-belief’ is a critical component for personal achievement. Teachers need to believe that they are capable of handling challenging situations otherwise they will be less likely to act; self-doubts can countermand knowledge and skills (Bandura, 2001; O’Neill & Stephenson, 2011).

Believing in one’s capabilities to ‘organise’ and ‘execute’ a given course of action to create given attainments under varying contexts, using the skills one possesses, is what we now perceive to be self-efficacy (Bandura, 2001). Teacher self-efficacy can be perceived in separate domains (Tschannen-Moran & Hoy, 2001). In their seminal paper on the construct of teacher self-efficacy, Tschannen-Moran and Hoy (2001) propose that self-efficacy for classroom management, student engagement, and instructional strategies are all distinct domains - supported by the results of factor analyses. Later research by O’Neill and Stephenson (2011) stresses that teachers’ self-efficacy in their classroom management capabilities is thought to be the most important factor in teachers’ astuteness of their teaching self-efficacy.
2.3.3 Self-efficacy, burnout and teacher strain

Research has found that teachers who possess a strong sense of self-efficacy: set more challenging goals for both themselves and their students; endure for longer in the face of challenges (Ross, 1992); adopt a wider range of evidence-based practices (Cappella et al., 2012; Ross et al., 2012); deliver prevention curricula with higher levels of implementation quality (Ransford et al., 2009); have a greater range of classroom management strategies (Pianta & Hamre, 2009); positively affect students’ self-esteem and prosocial attitudes (Jennings & Greenberg, 2009); and experience lower levels of stress (Schwarzer & Hallum, 2008). Furthermore, a study by Shachar and Shmuelevitz (1997) with 121 secondary school teachers discovered that taking part in cooperative learning and collaboration with colleagues explained the greatest amount of variance, through regression analysis, in teachers’ sense of self-efficacy; teacher demographic variables accounted for only small amounts of variance.

Teachers’ efficacy in teaching and classroom management has also been shown to share a relationship with strain and burnout. A longitudinal study by Brouwers and Tomic (2000) found that teachers who reported higher levels of self-efficacy in handling errant student behaviour reported lower levels of teacher burnout (e.g. exhaustion) six months later. Additionally, Aloe et al. (2013) in a meta-analysis of 16 studies, found that higher levels of teachers’ self-efficacy were associated with lower levels of burnout. Research has also brought to light that higher levels of classroom inefficiency and student misconduct (i.e. low teacher self-efficacy), significantly predicted higher coinciding levels of teacher burnout (Egyed & Short, 2006). Negative student behaviours (e.g. disrespect) contribute to a poor classroom climate, which can bring around a negative, reciprocal cycle in which fractious student behaviours create a negative classroom climate that subsequently results in additional fractious behaviours (Dicke, 2014; Reinke et al., 2014). As student misconduct increases, the negative classroom climate also incorporates a deteriorating emotional climate, where teachers become emotionally depleted and, eventually, exhausted as they attempt to re-establish order. Jennings and Greenberg (2009) note that emotional exhaustion may lead to teachers feeling ineffective in their classroom management, as well as their teaching, therefore leading to teachers depersonalising their students, further adding to a negative classroom climate. Moreover, a negative classroom climate reciprocally increases teacher strain and burnout (Collie et al., 2012). Preceding research has found that students’ lack of
respect towards their teachers predicted both depersonalisation burnout and emotional exhaustion burnout, whereas lack of student sociability predicted burnout in both personal accomplishment and depersonalisation (Hastings & Bham, 2003; Ransford et al., 2009).

Type of student misbehaviour has been shown to have an affect on teachers in different ways, dependent on gender. Male teachers are reported to be more affected by disruptive behaviours, whereas female teachers have been found to be more affected by disrespectful student behaviours (Schwarzer & Hallum, 2008). Another study, drawing on 411 student’s self-reports of disruptive behaviour and perceptions of burnout, discovered that students’ reports of disruptive behaviours were significantly related to their perceptions of their teachers on all three dimensions of teacher burnout (Evers & Tomic, 2003). Furthermore, teachers’ classroom management self-efficacy is indicated to be a separate predictor of teacher burnout as opposed to the general domain of teaching efficacy (Ransford et al., 2009).

It is important to note that most of the previous studies mentioned are subject to self-report bias given that they have first and foremost relied on teachers’ and students’ reports of behaviours and burnout (Aloe et al., 2013; Hastings & Bham, 2003; Ransford et al., 2009). Given the considerable literature base of teacher self-efficacy and its relationship to outcomes for both teachers and students, the present study will seek to develop the extant literature by exploring the associations of self-efficacy to implementation variability, as well as its relationship with other individual level factors.

### 2.4 Teacher burnout

#### 2.4.1 Definitions of burnout

Burnout reflects an occupational-specific form of prolonged strain as a result of recurrent, continual exposure to external stressors. To date, a universal definition and an accepted, empirically tested model of burnout are still absent (Schaufeli et al., 2009). Nevertheless, the most common conceptualisation of burnout by Maslach (1976) characterises burnout into three separate subdomains: depersonalisation, signifying a feeling that the world has become vague, less real, or lacking in significance – in this
case, mostly towards the teacher’s uncaring attitude towards students; *emotional exhaustion*, signified by feelings of being emotionally drained or depleted; and reduced *personal accomplishment*, where one has negative opinions or attitudes towards one’s own abilities and achievements. This three-dimensional component structure is one that has been validated in many studies across diverse subpopulations and varying occupations (Cano-García, Padilla-Muñoz, & Carrasco-Ortiz, 2005; Ransford et al., 2009; Schaufeli et al., 2009). Furthermore, the multifaceted structure of burnout has been successfully applied to teacher populations (Byrne, 1991; Fives, Hamman, & Olivarez, 2007). Teacher burnout has been associated with unfavourable outcomes such as physical and mental illness, attrition, and leaving the profession (Brouwers & Tomic, 2000).

2.4.2 Teacher burnout and school demographics

It is important to consider the demographic characteristics of the local authority or the school level, as the level of challenge that teachers face may vary considerably depending on whether their school is rural or urban, primary or secondary, and the proportion of students with special needs (Kelly & Barnes-Holmes, 2013). Research has shown that urban teachers are significantly more stressed than their rural counterparts, experiencing poor working conditions and poorer staff collegiality. These poorer working conditions and staff relationships were predictive of burnout for urban teachers (Baran et al., 2010). Even so, substandard working conditions and lack of time were also predictive of burnout for rural teachers. Furthermore, teachers within mainstream education experienced greater levels of stress from classroom disruption, lack of time, lack of resources, poor student attitudes, and Ofsted and Her Majesty’s Inspectorate for education (HMIe) inspections (Poplin, Rivera, & Durish, 2011). The existing body of evidence suggests that teachers within secondary schools experience higher levels of stress than those in primary settings (Byrne, 1991; Dorman, 2003), although this may be accountable to the particular stressors that were assessed.

2.4.3 Burnout in the workplace

Within the elements of burnout, emotional exhaustion has been considered by numerous researchers as the central dimension (Baran et al., 2010; Skaalvik & Skaalvik, 2014). Cropanzano, Rupp and Byrne (2003) offer a plausible rationale for this by suggesting that emotional exhaustion has a stronger relationship with outcome variables than the
other elements of burnout (Baran et al., 2010; Lee & Ashford, 1996). Cropanzano et al. (2003) reported on the existing literature on burnout and discovered that teachers who refer to being ‘burned out’ are most frequently alluding to feelings of emotional exhaustion. Furthermore, emotional exhaustion can be clearly differentiated from other psychological abstractions (Cropanzano et al., 2003), concluding that emotional exhaustion appears to be the first stage of burnout, followed by depersonalisation, whereas reduced personal accomplishment occurs independently (Dicke, 2014). Ransford et al. (2009) note that teachers at the beginning stages of their careers are more likely to experience emotional exhaustion, as the other dimensions of burnout take longer to manifest.

Maslach et al. (2001) in their expansive review of burnout across all occupations, found that burnout appears to decrease proportionately with the level of work experience secured by the professional. Early career professionals, in essence, are at greater risk from burnout than their more experienced counterparts. However, when addressing teaching populations the results of research on the comparison between newly qualified and experienced teachers’ burnout are unpredictable. For example, in comparing over 500 different groups of teachers, depending on their level of experience, Klusmann, Kunter, Voss and Baumert (2012) found no difference between newly qualified teachers and those teaching for longer than five years. Other research has found that newly qualified teachers reported lower levels of emotional exhaustion than teachers who had been practicing longer (Hong, 2010). Hong (2010), in a study examining the differences between four different time points in teachers’ careers, reported that emotional exhaustion was greatest for teachers who had been practicing for over five years when compared to those that had been practicing for a year or less. Nevertheless, these contradictory results could be clarified by the findings of Ingersoll (2002), who found that the greatest turnover and attrition rates observed for teachers arose in their first years of teaching and after several years of teaching when they were near retirement, therefore producing a ‘U-shaped pattern’, rather than a linear pattern of attrition with respect to experience or age. In light of the view that attrition can be viewed as an indicator for high burnout (Gibbs, Greig, Mackay, & Stringer, 2012; Guarino, Santibanez, & Daley, 2006), these results can be explained with consideration to changeable burnout levels. Hence, burnout levels are higher at the beginning of teachers’ careers, which lessen at the mid-point but then escalate to higher levels at the
end (Dicke, 2014). Depending on which level of experience is compared, there is little to no distinction in the levels of burnout among teachers with greater experience.

The longitudinal research into teacher burnout also displays an inconsistent pattern (Brouwers & Tomic, 2000). When making comparisons between these studies, it is important to reflect on the differing levels of experience that teachers have as well as the difference in the time points at which they are measured. For instance, Fives et al. (2007) reported a reduction in emotional exhaustion in newly qualified teachers within their first year of teaching; significant increases in efficacy and decreases in burnout symptoms were evident over time. On the other hand, research by Burke, Greenglass and Schwarzer (1996) reported an increase in symptoms of burnout, specifically emotional exhaustion and depersonalisation, at the two and three year time point. A similar study utilising 492 teachers across different year groups found that newly qualified teachers experienced high levels of burnout as early as the beginning of their first year of teaching, with emotional exhaustion remaining consistent throughout the first year; teachers’ perceptions of their working environment significantly and meaningfully explaining their levels of burnout (Gavish & Friedman, 2010). The study demonstrated that three variables contributed to predicting burnout: lack of appreciation and professional recognition from students; lack of appreciation and recognition from the public, and lack of collaborative and supportive ambience. Therefore, predicting exactly how and why teacher burnout occurs is a convoluted and complex problem for researchers.

The complex inconsistency in the extant literature may be attributable to the fact that many of these studies are afflicted, as before, with self-report bias and shared variance issues, as well as the fact that the reviewed literature primarily relies on cross-sectional methodologies with a few longitudinal exceptions. Whilst it is important to acknowledge these limitations, previous studies have still found associations between predictors of teacher stress, shared experience of teacher burnout and negative health outcomes that support further research. Associations with demographic characteristics, such as age and years in teaching, must also consider that teachers who do not manage their work stress effectively may be more likely to leave the profession in the first couple of years. Therefore, teachers who are mature or have additional years experience may have ‘survived’ the early strains of their profession, succeeded in their careers, or discovered an effective means of coping with their stressors. As the literature on teacher
characteristics and burnout is unpredictable, these various teacher attributes should be reflected on when evaluating relationships with teacher burnout. The present study shall continue to develop the known literature base on teacher burnout as well as developing the associations that it has with the implementation of prevention curricula. Specifically, burnout’s relationship and interactions with other individual level factors shall be addressed, such as teaching self-efficacy.

2.4.4 Conclusion
Relevant theory regarding teachers’ psychological characteristics by the likes of Jennings and Greenberg (2009) and existing research (e.g. Ransford et al., 2009; Ross et al., 2012) has led to a focus on certain psychological characteristics, including: burnout, teaching self-efficacy, and emotional self-efficacy. These and other psychological characteristics are thought to influence implementation via their impact on workplace productivity, approaches to classroom management, and other important aspects of teacher behaviour. Awareness of the role played by certain characteristics can help researchers to better understand both positive (e.g. enthusiasm or receptiveness) and negative (e.g. anxiety or anger) reactions to interventions for both implementers and participants (Becker et al., 2013; Domitrovich et al., 2008). To conclude, theory cannot be applied easily to the understanding of implementers’ psychological characteristics, and how they interact, due to the extent of variation and the considerable disparity in the literature regarding the extent to which these factors affect preventative programmes. The findings of the literature review suggest that psychological factors are related to self-reported implementation and may be important to address in order to improve the effectiveness and implementation of evidence-based programmes.

2.5 Professional Characteristics

2.5.1 Time and experience
Based on the assumptions above, it can be concluded that: classroom management skills, exposure to training, time in the profession, and level of experience are considered to be very important for teachers. Very little training is given to teachers on preventative-based programmes and may vary significantly between training providers. Intervention by other agency support staff such as social workers, clinical, or
educational psychologists classically work on an individual basis with small groups of staff. As such, the level of training into preventative-based interventions can vary greatly from school-to-school. Staff may vary in their skills, experience and levels of education; such factors are assumed to influence implementation in a variety of ways. The length of time teachers have to hone and develop their teaching practices should positively influence implementation quality. To date, studies, which have tried to examine the relationship between implementers’ professional characteristics and programme implementation, have had mixed findings. So, for example, Rohrbach et al. (1993) in a study of 60 American school teachers found that fewer years of teaching experience were associated with higher levels of implementation quality. Teachers with less experience were thought to be more enthusiastic and have a higher sense of self-efficacy. However, other subsequent research by Ringwalt et al. (2003), in a much larger sample of 1905 teachers, failed to replicate this link; teachers with greater experience in the profession delivered a substance use prevention programme with higher levels of implementation quality. Hence, further research is essential to determine the role that training, coaching and teaching experience play in effective implementation.

2.5.2 Exposure to training and coaching
Contemporary approaches to improve implementation quality of preventative programmes through teacher consultation and classroom coaching over the last decade are starting to show promise (Becker et al., 2013). The process of coaching involves tailored guidance and feedback in order to allow teachers to better understand the essence of what programme developers have intended and to effectively encourage this, through teaching, with quality and fidelity (Dusenbury et al., 2010). Several reviews have demonstrated that teacher training has long been acknowledged as an effective tool in delivering high-quality implementation and is an essential component of prevention programmes (Hansen & Dusenbury, 2004). The way in which training is delivered, however, appears to be the most significant factor.

Traditional teacher training often entails a singular training session delivered as a part of continuing professional development. However, a developing expanse of research in the field of education has suggested that whilst this traditional approach may help to
increase knowledge about a particular domain it seldom transposes into high-quality implementation in the classroom environment (Fixsen et al., 2005). For example, Lopez, Osterberg, Jensen-Doss and Rae (2011) demonstrated that preventative two-day workshops improved providers’ usage of evidence-based practices, but did nothing to improve overall outcomes. As detailed by Joyce and Showers (2002) in their seminal review, training that was merely pedagogic and instructional did little to impact on implementation quality unless it was integrated with classroom coaching, a point which has led to continuing empirical development and further research (Cappella et al., 2012). Consequently, classroom coaching has the potential to enhance teachers’ expertise and affect the quality of implementation as the training is embedded far beyond the traditional approach (Stormont, Reinke, Newcomer, Darney, & Lewis, 2012).

Coaching models are continuously under development in several social and emotional learning programmes as well as in many other prevention-based programmes (Wilson & Lipsey, 2007). Coaching, or consultation, models in many of these programmes - including the PATHS programme of the present study - utilise a two-phase coaching model that incorporates a universal phase followed by a tailored coaching phase. The universal phase is delivered to all teachers regardless of their individual level of skill. The tailored coaching phase allows bespoke training dependent on the needs of the teacher. The tailored phase is typically used where teachers need additional implementation support whereas other teachers receive an optimal level of support, just enough to perpetuate high-quality implementation.

There is relatively limited information about the volume and nature of activities that coaches employ when supporting teacher implementation, particularly for social, emotional and behavioural interventions. Research that evaluates how coaches support teachers in the implementation of prevention-based programmes can aid the development of implementation science (Cappella et al., 2012). In their recent review of supporting a two-phased coaching model, Becker et al., (2013) uphold that the objective of coaching teachers is to enhance their skills in certain practices, for example, programme implementation or generalised teaching skills. In order to meet these objectives coaches can inform their approach by observing in the first instance.
Classroom observations allow for coaches to understand the dynamic that takes place between teacher and student as well as taking notes on overall implementation quality (Dusenbury et al., 2010). Regularly visiting classrooms throughout the year also allows coaches to have an effective grasp on programme dosage. The data gathered through these initial classroom visits allows coaching professionals to better ‘tailor’ their approach to individual teachers. Modelling of lessons and core concepts is another routinely utilised coaching technique that presents teachers with the opportunity to see the programme in effect in their own classroom environment. Subsequently, this can be adapted to incorporate elements of team-teaching that allow the classroom teacher to lead. Coaches are also able to provide guidance on specific elements of the intervention, help modify resources and provide encouraging feedback. Coaches are also available to assist in helping to overcome potential barriers to implementation (e.g. not having enough time due to other demands) or issues that might be arising on a school-wide basis (e.g. other staff are not as engaged).

Whilst still in the early stages of evaluation, studies that have examined the impact of coaching on preventative interventions have been positive. In an evaluation of The Incredible Years Teacher Classroom Management (IY TCM) programme (Webster-Stratton, Reid, & Hammond, 2001; Webster-Stratton, & Reid, 2004), an evidence-based preventive intervention for supporting teacher use of effective classroom management practices, results from 52 teachers indicated that those who received more performance feedback had higher levels of implementation over time in comparison with teachers who received less feedback (Reinke et al., 2013). Moreover, a significant interaction between the level of coaching a teacher received and their implementation of proactive classroom management was found. Increased implementation quality over time was observed for teachers with lower initial levels of implementation who received more coaching, whereas implementation decreased over time for teachers who received less coaching. The significant interaction between the total coaching time a teacher received and their implementation of proactive strategies over time may indicate that the combination of coaching activities is of particular importance. In another study of 129 primary school teachers implementing the Good Behaviour Game (GBG), research showed that coaching was associated with improved implementation quality. In particular, repeated modelling of lessons was demonstrated as an effective way for coaches to show teachers the success of the GBG on increasing on-task behaviour and
reducing classroom disruptions for their own students, thereby engaging teachers to implement the GBG (Becker et al., 2013).

Contention exists within the literature regarding the effectiveness of on-site versus off-site (remote) coaching for teachers. Powell and Diamond (2013) in a study of 45 teachers implementing the Head Start programme examined the effectiveness of these different coaching approaches. The intervention focused on Head Start teachers’ vocabulary and phonemic awareness instruction, and was delivered through onsite classroom visits and technologically mediated methods that included a video-intensive hypermedia resource, such as ‘Skype’ or ‘Facetime’. Overall compliance with coaching sessions was high; independent viewing of implementer exemplar videos, however, was highly varied between practitioners. Onsite coaching sessions were shown to deliver a greater level of detail and allowed teachers to work on differentiating materials for their students with the coaches, beyond the simple learning objectives required for the whole class. Coach feedback in onsite visits also included a higher frequency of first-time advice components, whereas feedback that was delivered remotely more frequently expanded on advice and consultation that had been given in person onsite. A comparison model would have been needed, which the study lacked, to effectively analyse and compare coaching approaches; the study did not permit conclusions but suggests that future research should aim to determine the effects of planned variation in onsite and remote delivery of coaching. Small sample sizes were addressed as limitations for all studies as well as unmeasured school-level factors (e.g. leadership support) that might have been accountable for improvements in implementation quality. A small number of coaches were used in all studies, limiting the generalisation of the results; it is possible that unaccounted coach effects could have also influenced the results. The implementation analysis may not have been sensitive enough to detect some of the variation in implementation quality and detect changes in quality over a longer period of time.

2.5.3 Conclusion
Research findings regarding teachers’ time and experience, and the affect that these variables have on implementation quality, have been inconsistent (Ringwalt et al., 2003; Rohrbach et al., 1993). Further research is required regarding whether more experienced or newly qualified teachers implement prevention-based curricula more effectively. The
findings on training and coaching, however, are clearly highlighted as an important support system for optimising the implementation quality of preventative interventions. Studies from researchers, such as Becker et al. (2013), have demonstrated that coaching models can be implemented with high quality by most teachers, and that differentiated coaching models may be beneficial in customising the requirements of teachers requiring additional support. The coaching support system is highly complex and a process that seems to develop and unfold over time; continuing research is needed to determine more fully the impact that both training and coaching has on both implementation quality and preventative-based programme outcomes.

2.6 Perceptions of and attitudes towards an intervention

Teachers are the primary implementers of SEL programmes in schools and therefore their perceptions of and attitudes towards a given intervention are likely to impact programme delivery, evaluation and outcomes. A multitude of programme characteristics that are reflected in implementers’ perceptions and attitudes appear to influence implementation quality. The framework by Brackett, et al. (2012) suggests that implementer comfort, commitment, and culture are the most applicable aspects to evaluate. Teacher beliefs are a benchmark of their perceptions and judgments; these, in turn, affect the way in which they deliver their lessons (Pajares, 1992).

2.6.1 Comfort

Brackett et al. (2012) suggest in the first instance that teacher comfort is based upon their willingness to continue and deliver an intervention that they feel both confident and enthusiastic about. Brackett et al. (2012) state that teacher confidence and animation during programme delivery are linked to the adherence of a programme’s protocol. It is arguable, however, that teachers’ confidence and animation are a set of characteristics more closely related to quality, rather than programme fidelity. Thus, from this perspective, quality of delivery may be viewed as an output of teacher comfort. Rohrbach (1993) and Little et al. (2013) demonstrate that fidelity of implementation has been found to increase when teachers are comfortable with the programme, delivery method and strong beliefs regarding the value and effectiveness of the programme. Teachers need to master the programme technicalities so that they may deliver the programme in its entirety and avoid dispensing with activities they might not
understand or be comfortable with. In another study, Dusenbury et al’s (2010) assessment of the ‘All Star’ drugs and alcohol prevention programme highlights the importance of teacher comfort in successfully delivering high quality implementation; the programme relies heavily on interactive techniques and teachers must be comfortable with these techniques and the intervention to deliver these successfully. A coaching model in this instance was suggested as one possible means of easing teachers into intervention practices, subsequently leading to greater levels of comfort. Further, in an earlier study of 114 primary and secondary school teachers, those who expressed a high level of self-efficacy, enjoyed teaching, and who felt confident about their teaching abilities were, in fact, highly effective in the classroom. These teachers were the most receptive to the implementation of new and advanced instructional practices or programmes. Conversely, those who were deemed less effective and confident appeared to be the least receptive to such implementation, although it is possible that the study could have been impeded by self-report bias (Guskey, 1988).

Collie et al. (2012) investigating how teachers’ perceptions of SEL influenced their sense of stress, teaching efficacy and job satisfaction found that one of the most powerful school-based predictor variables was a teachers’ sense of comfort in implementing SEL. They propose an explanatory model of teachers’ perceptions and contextual variables that affect teacher outcomes (e.g. comfort and commitment). This model is shown in Figure 4.

**Figure 4:** Model of relationships between teacher perceptions and outcomes

![Figure 4: Model of relationships between teacher perceptions and outcomes](From Collie, Shapka and Perry (2012))
A negative association was found between stress related to students’ behaviour and discipline and positively associated with job satisfaction and teaching efficacy. These findings are concordant with those of Jennings and Greenberg’s (2009) prosocial classroom model (Figure 2), which demonstrates that a teacher’s SEC is pivotal to four classroom characteristics. Collie et al. (2012) using a large sample of 664 Canadian teachers, in both primary and secondary settings, found through structural equation modelling that teachers who were comfortable implementing SEL also had higher SEC. As detailed by Jennings and Greenberg (2009), these teachers may experience more positive manifestations of the four classroom characteristics (e.g. healthy teacher–student relationships), which may help them to experience lower levels of stress and greater job satisfaction.

2.6.2 Commitment

The second variable from the Brackett et al. (2012) framework that affects SEL programme effectiveness is teacher commitment. Teachers must be committed to SEL, integrating SEL practices into their classrooms as part of their ongoing CPD. Professional development and commitment to prevention programme principles greatly increases the probability of implementing a new school innovation (Emshoff, 2008). Furthermore, commitment to SEL professional development from all stakeholders in the school is vital to prevention programme success, including a ‘shared vision’ by all staff and administrators. Research by Kam et al. (2003) in 13 different classrooms across an American school district suggested that both principal and implementer leadership qualities and commitment were particularly important in impacting student outcomes in low-SES, urban, primary schools. If teachers are committed to learning about SEL, forming part of their core teaching practice, they are far more likely to implement and model the appropriate skills with greater success. However, Collie et al. (2012) found that in contrast to findings concerning comfort in implementing SEL, higher commitment to advancing SEL skills had conflicting results. Commitment was positively associated with stress related to pupils’ behaviour and workload; yet, it was also positively related to job satisfaction. The desire to improve skills may be related to a reduction in self-efficacy; teachers that are committed to improving their SEL skills may feel that they have a deficit in this area and therefore trigger an increase in stress levels. In the national evaluation of the Social and Emotional Aspects of Learning
(SEAL) trial, Humphrey et al. (2010) state that at the classroom level, teachers’ ‘will and skill’ may have an impact on how the intervention is delivered. Teachers’ attitudes to change and their beliefs about the value of the intervention are likely to impact on the commitment to implementing it. Indeed, SEL programmes are not without criticism, described by some, including some teachers (Humphrey et al., 2010), as a waste of time and resources that remove attention from what is really important in schools (Craig, 2007; Ecclestone & Hayes, 2008). Teachers display a great deal of variance in their knowledge and understanding of SEL, as well as how comfortable they are in implementing interventions. Not all implementers feel that SEL instruction falls under their remit as teachers and, therefore, will be less committed to its delivery (Humphrey, 2013).

2.6.3 Culture
The third factor that can influence teachers’ implementation quality is the degree to which teachers feel that the culture of the school supports the development of SEL programmes. School culture is heavily influenced by principle leadership, which affects SEL programme implementation and long-term sustainability. For example, in the substance abuse prevention literature Rohrbach et al. (2005) note that adoption of evidence-based practices in US school districts depends, in the first instance, on the support from school principles. School principles were also seen as a key factor in determining whether (a) the programmes were adopted with high quality implementation, and (b) sustainable. In fact, research has demonstrated that intervention effects are most powerful when principal administration support and implementation quality are high (Ransford et al., 2009). Additionally, when school principles are conscious of their importance in supporting implementation through positive feedback and observing teachers, teachers’ programme implementation has also improved (Rohrbach et al., 1993). As Kam et al. (2003) demonstrated that positive programme outcomes were obtained when a programme was supported by principle leadership in conjunction with high levels of implementation, it is also important to understand how teachers regard the implementation support system (e.g. coaching) provided to them as well as how supported they feel by the head teacher. It is possible that teachers who feel well supported by their head teacher, accompanied by appropriate technical support, would experience lower levels of stress and burnout in the implementation of a new preventative programme, thus resulting in higher implementation quality.
In summary, teachers have differing perceptions and attitudes that may regulate the extent to which an SEL programme is delivered as intended by programme developers and has the intentional impact on students (Brackett et al., 2012; Durlak & DuPre, 2008). Sufficient research has demonstrated that teachers’ perceptions and attitudes towards their school climate is a key predictor of teachers’ sense of stress, teaching efficacy, and job satisfaction. Despite this, with the exception of a few studies (e.g. Collie et al., 2012) we still know relatively little on how these perceptions and attitudes interact. Understanding these interactions is important because research has called to attention the important relationships between these three teacher outcomes. Furthermore, perceptions and attitudes of school-based variables, such as teachers’ comfort with SEL, influence implementers and their experience of burnout, job satisfaction and teaching efficacy in different ways.
2.7 Summary Statements

This summary provides an overview of the main sections detailed in this chapter on individual level factors and the rationale for their inclusion in the present study.

- **Psychological characteristics**: first, the concept of emotional self-efficacy and its relationship with gender, the teacher role, and stress was explored. Further, the concept of teaching self-efficacy and its relationship with classroom management and teacher strain was reviewed. Finally, definitions of teacher burnout were investigated, followed by burnout’s association with certain school demographics, as well as the role that burnout plays in the workplace. Burnout’s interactions with other key individual level factors were also considered.

- **Professional characteristics**: a range of professional characteristics was reviewed in this section. The length of time teaching as well as the experience of the teacher was explored. Exposure to training and coaching was reviewed in detail. In particular, the role that coaching can play in the successful implementation of evidence-based programmes was discussed. The instructional media (e.g. email, video call) as well as the frequency of coaching was investigated.

- **Perceptions and attitudes towards an intervention**: teachers’ perceptions and attitudes towards an intervention were divided into three distinct components. First, teachers’ comfort with the delivery of evidence-based programmes. This was followed by an exploration of teachers’ commitment to SEL. Finally, the notion of whether the school culture supported the development of SEL was reviewed.
2.8 Research Questions

In light of the preceding literature review, the research questions of this thesis are as follows:

1. Does implementation (specifically, fidelity, dosage and quality) of the PATHS curriculum vary as a function of individual differences in implementers’:
   a. Professional characteristics (e.g. number of years teaching)?
   b. Psychological characteristics (e.g. emotional self-efficacy)?
   c. Perceptions of and attitudes towards SEL (e.g. comfort)?
   d. How do implementers’ professional characteristics, psychological characteristics and perceptions/attitudes to SEL relate to one another?
   e. Do these characteristics interact (e.g. high burnout, high efficacy vs. high burnout, low efficacy) to influence implementation?

2. What are implementers’ perspectives regarding the individual level barriers and facilitators associated with implementation variability in the PATHS curriculum?
Chapter 3: Method

3.1 Introduction

The intention of this chapter is to describe how the study was conducted, and to account for the choice of methodology in context of the research questions. Research is one way of discovering information and understanding it. How research is defined depends on the researchers’ guiding theoretical framework and how they choose to gather their information. Conventional understanding of the research process suggests that methodological choice is underpinned by theoretical or philosophical beliefs (e.g. Mertens, 2014). Thus, an understanding of epistemology, the study of knowledge, is essential in order to inform the type of research questions that are asked, as well as the samples that are selected and the methods used to generate and analyse data. Researchers often do not agree on the way in which knowledge, or the ‘truth’, is interpreted and therefore have diverging viewpoints on how research should be conducted. A pragmatic approach for this study was adopted, arguing that applied psychological and educational research methodologies should be guided by their functionality in answering questions rather than be bound by paradigmatic concerns.

The next section includes a discourse and justification for this approach, accompanied by an evaluation of the potential limitations and how to ensure both quality and rigour. A brief overview of the evaluation of the PATHS to Success trial is included from which the data for this study was obtained. Included within this section is a summary of how the present study is distinct from the main PATHS evaluation (e.g. in terms of aims, design, variables).

The design of the study is justified in detail, including sections on both quantitative and qualitative elements, participants, sample attributes, tools, and procedures. In the context of mixed methods research the analytical strategy for the quantitative strain is reported first, followed by the strategy used to analyse the qualitative data. The final section discusses the ethical considerations of the research in detail.
3.2 Epistemology and pragmatism

3.2.1 Paradigms and epistemological considerations
Paradigms are a set of beliefs that deal with ‘first principles’, or act as a template for scientific discovery. They represent, fundamentally, a worldview that defines for the individual, the nature of the ‘world’ or reality, and the interconnected relationships to that world and its constituents (Guba & Lincoln, 2005). Epistemology nestles within the wider context of paradigms. The debate surrounding paradigms is vast (for more information see Guba & Lincoln, 1994, 2005). Four main paradigms dominate the psychological and educational research landscape: post positivism, constructivist, transformative and pragmatic (Mertens, 2014). These paradigms begin with an ontological perspective that flows into the epistemology, the methodology and finally the method as demonstrated in Figure 5.

Figure 5: Diagram of epistemology in relation to study design

Paradigms have a substantial influence over study design and therefore must be carefully considered by the researcher (Errante, 2001). With this influence in mind, different paradigms will support certain methodologies and reject others. For example, the postpositivism paradigm traditionally supports quantitative methodologies, whereas
the constructivist paradigm favours those that are qualitative. From this standpoint the hierarchy of the worldview exerts influence over the methodology that then informs the methods used (Lather, 1992). As methodologies are informed by epistemologies it would be difficult, for example, for a researcher to utilise qualitative data analysis without first acknowledging the suppositions that are intrinsic to a constructivist paradigm, and in the same regard, utilise quantitative methodologies without acknowledging the assumptions implicit to a postpositivist paradigm. Fierce debate continues to rage amongst traditionalists regarding the superiority of their favoured method (Johnson & Onwuegbuzie, 2004); so much so, Howe (1988) writes against an ‘incompatibility thesis’ and suggests that there are no valid reasons for making headway with what works and is most appropriate. It is arguable that both quantitative and qualitative approaches offer something that the other cannot with flaws inherent to both paradigms and, therefore, both should be considered when determining the suitable method of data analysis. Johnson and Onwuegbuzie (2004) support the emergence of ‘the third way’ which embraces a pragmatic framework; Teddlie and Tashakkori (2009) suggest the use of pragmatism as one philosophical position that acts as a blueprint for mixed methods research. In simple terms, pragmatic researchers regard the research question to be more important than the method they use or the world-view that is intended to underpin the method. This is the perspective adopted by the present study and the following section will explain and justify the rationale for its use.

3.2.2 Pragmatism

Pragmatism allows for a synergy of approaches that are traditionally opposed by constructivist and postpositivist paradigms; pragmatism is not bound to a singular philosophy or reality. Creswell (2003) states that pragmatic researchers focus on the ‘what’ and the ‘how’ of a given research problem. In the early stages, pragmatic researchers “rejected the scientific notion that social science inquiry was able to access the ‘truth’ about the real world solely by virtue of a single scientific method” (Mertens, 2010, p.35). However, whilst pragmatism is viewed as the paradigm that underpins mixed-methods research (MMR) (Teddlie & Tashakkori, 2009), some mixed-methods researchers are aligned philosophically to the transformative paradigm instead (Mertens, 2014). The pragmatic approach is flexible and allows researchers to take a ‘what works’ strategy, addressing questions that do not easily fit within a fully qualitative or quantitative approach to methodology and study design. In support of this, Creswell and
Plano Clark (2011) note that in real-world research, more often than not, decisions regarding quantitative or qualitative research approaches are not made based on philosophical allegiances but on a conviction that the design and methodology must be fit for *purpose*. The ‘paradigm wars’ gave birth to the pragmatic paradigm; a single paradigm response to the debate that raged between conflicting paradigms, allowing for the emergence of mixed methods and mixed models approaches (Armitage, 2007). Whilst single methods can be used within pragmatic research, it is pluralistic founded on a refusal of post positivism and constructivism’s ‘forced choice’ (Creswell, 2003).

Despite its potential to offer both a practical and flexible approach to answering research questions, pragmatism is not without its own criticism. Johnson and Onwuegbuzie (2004) in their analysis of pragmatic research outline some of the potential weaknesses (Box 2).

**Box 2: Weaknesses of pragmatism**

- Basic research has the potential to receive less attention than applied research, as applied research can produce immediate and workable results.
- Pragmatism brings about gradual, rather than large-scale change in society.
- Pragmatic researchers can sometimes fail to provide an appropriate rationale for whom their approach is best suited (Mertens, 2014).
- ‘Practical’ or ‘flexible’ approaches can be vague unless explicitly addressed by the researcher.
- Pragmatic theories of ‘truth’ struggle to handle more complex cases (e.g. non-useful but true propositions).
- Pragmatism can sometimes be seen as a shortcut past traditional philosophies or ethical disputes. Some philosophers have rejected pragmatism due to its logical failing as a solution to several philosophical debates.
- Neo-pragmatists and postmodernists reject entirely the notion of correspondence truth (the claim that true beliefs and true statements correspond to the actual state of affairs).

Adapted from Johnson and Onwuegbuzie (2004)
Nevertheless, some of the addressed weaknesses can also be viewed as strengths, as abstract debate is not always useful when researchers are attempting to conduct applied research that informs practice. Fortunately, as Johnson and Onwuebuzie (2004) note, many strategies are recognised and regularly used in pragmatic research to ensure high quality and rigour, which shall be addressed in subsequent sections.

3.2.3 Pragmatic mixed-methods research

In view of the preceding section, Tashakkori and Teddlie (2010) note that pragmatism provides an underlying philosophical framework for mixed-methods research (MMR). Morgan (2007) observes that MMR has increased dramatically in popularity over the last century and has, accordingly, spawned numerous definitions. It may be said, however, that mixed methods could be used with any paradigm. The research ‘problem’ is the centrepiece of the pragmatic paradigm; multiple approaches are applied accordingly to understand the problem (Creswell, 2003). Collected data and methods of analysis are chosen based on the likelihood that they are able to understand and discern the central research questions with no philosophical allegiance to a given paradigm. Mertens (2014) defines mixed methods as investigation, in which the researcher gathers, enquires, analyses, and draws conclusions from both quantitative and qualitative strains of data in a given study. A more extensive definition by Creswell and Plano Clarke (2007) states that:

“Mixed methods research is a research design with philosophical assumptions as well as methods of inquiry. As a methodology, it involves philosophical assumptions that guide the direction of the collection and analysis of data and the mixture of qualitative and quantitative data in a single study or series of studies. Its central premise is that the use of quantitative and qualitative approaches in combination provides a better understanding of research problems that either approach alone.” (p. 5)

There are many advantages in choosing to analyse data in this way, with many proponents of MMR providing their own descriptions of how this might work. For example, Bryman (2006) suggests a detailed list of reasons based on practices of researchers. This list of 16 different reasons offers a fuller, more comprehensive inspection of researchers’ practices and rationales for using MMR, augmenting the earlier work of Greene, Caracelli and Graham (1989), as illustrated in Table 3.
Table 3: A typology of reasons for mixing methods

<table>
<thead>
<tr>
<th>Reasons</th>
<th>Functionality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Triangulation or greater validity</td>
<td>This refers to the traditional view that quantitative and qualitative research might be combined to triangulate findings in order that they may be mutually corroborated.</td>
</tr>
<tr>
<td>Offset</td>
<td>Refers to the suggestion that the research methods associated with both quantitative and qualitative research have their own strengths and weaknesses so that combining them allows the researcher to offset their weaknesses to draw on the strengths of both.</td>
</tr>
<tr>
<td>Completeness</td>
<td>Refers to the notion that the researcher can bring together a more comprehensive account of the area of inquiry in which he or she is interested if both quantitative and qualitative research are employed.</td>
</tr>
<tr>
<td>Process</td>
<td>Refers to when quantitative research provides an account of structures in social life but qualitative research provides sense of process.</td>
</tr>
<tr>
<td>Different research questions</td>
<td>Refers to the argument that quantitative and qualitative research can each answer different research questions.</td>
</tr>
<tr>
<td>Explanation</td>
<td>Refers to when one is used to help explain findings generated by the other.</td>
</tr>
<tr>
<td>Unexpected results</td>
<td>Refers to the suggestion that quantitative and qualitative research can be fruitfully combined when one generates surprising results that can be understood by employing the other.</td>
</tr>
<tr>
<td>Instrument development</td>
<td>Refers to contexts in which qualitative research is employed to develop questionnaire and scale items— for example, so that better wording or more comprehensive closed answers can be generated.</td>
</tr>
<tr>
<td>Sampling</td>
<td>Refers to situations in which one approach is used to facilitate the sampling of respondents or cases.</td>
</tr>
<tr>
<td>Credibility</td>
<td>Refers to suggestions that employing both approaches enhances the integrity of findings.</td>
</tr>
<tr>
<td>Context</td>
<td>Refers to cases in which the combination is rationalised in terms of qualitative research providing contextual understanding coupled with either generalizable, externally valid findings or broad relationships among variables uncovered through a survey.</td>
</tr>
<tr>
<td>Illustration</td>
<td>Refers to the use of qualitative data to illustrate quantitative findings, often referred to as putting “meat on the bones” of ‘dry’ quantitative findings.</td>
</tr>
<tr>
<td>Utility of improving the usefulness of findings</td>
<td>Refers to a suggestion, which is more likely to be prominent among articles with an applied focus that combining the two approaches will be more useful to practitioners and others.</td>
</tr>
<tr>
<td>Confirm and discover</td>
<td>Refers to using qualitative data to generate hypotheses and using quantitative research to test them within a single project.</td>
</tr>
<tr>
<td>Diversity of views</td>
<td>Includes two slightly different rationales— namely, combining researchers’ and participants’ perspectives through quantitative and qualitative research respectively and uncovering relationships between variables through quantitative research while also revealing meanings among research participants through qualitative research.</td>
</tr>
<tr>
<td>Enhancement or building upon quantitative and qualitative findings</td>
<td>Entails a reference to making more of or augmenting either quantitative or qualitative findings by gathering data using a qualitative or quantitative research approach.</td>
</tr>
</tbody>
</table>

Adapted from Bryman (2006, p. 105 -107)
Thus, there is an expansive rationale for marrying different methods. Bryman (2006) notes that the weaknesses of one method are often compensated by the strengths of the other, with a reduction in researcher bias (Mertens, 2014). In order for MMR to be effective Teddlie and Tashakkori (2003) state that a truly MMR approach incorporates multiple approaches in all stages of the research design (e.g. identification of the problem, data collection, data analysis, and evaluation). Further, the data must be transformed through multiple approaches (e.g. thematic analysis of the qualitative data followed by a quantitative analysis of the same data after it had been quantified). Newman, Ridenour, Newman and DeMarco (2003) consider MMR to be complex, time-consuming and expensive, with greater researcher skill required to master both qualitative and quantitative methodologies. Nevertheless, none of these assertions are unassailable and are worth confronting in the context of producing high-quality research.

In the current study, pragmatism and pragmatic mixed methods were favoured as the guiding framework to answer questions that are concerned with exploring the affect of teachers’ individual characteristics on implementation variability, whilst gaining a richer insight and appreciation of the factors involved. Focusing wholly on either quantitative or qualitative methodologies would not have allowed for a thorough exploration of the questions presented. Thus, it is the researcher’s judgement that in the present study a MMR approach is the most extensive and appropriate method to scrutinise the research questions posed.

3.2.4 Quality and rigour in mixed-methods research

MMR studies in education and health services are fairly common. They are derived from two separate components of data collection and analysis within a single study: at least one quantitative method with organised data collection and statistical analysis, and at least one qualitative method with a less structured data collection and thematic analysis (O’Cathain, Murphy & Nicholl, 2008). Advocates of mixed methods research venture for an integration of quantitative and qualitative research strategies and thus, this strategy does not rest comfortably within the worldview of the respective paradigms detailed above. Consequently, many researchers have attempted to create an alternative framework that contains suitable housing for such diverse research (Creswell & Plano Clark, 2007). However, there appears to be little consensus among mixed methods
researchers on the exact specification of this framework, or how to ensure quality and rigour. Thus, Greene, Benjamin, and Goodyear (2001) list four different frameworks for MMR, whereas Creswell and Plano Clark (2007) list three. Finally, Teddlie and Tashakkori (2003) discuss at length frameworks for two different approaches. As MMR requires techniques from traditionally different approaches, assuring overall quality is a complex, yet crucial issue to address.

A great deal of effort has been made in traditionally quantitative and qualitative approaches to ensure quality of research; Teddlie and Tashakkori (2009) propose, however, that MMR has a unique quality that goes beyond a simple merging of different methods. The term ‘inference quality’ is used to refer to issues that would be characterised as ‘internal validity’ in quantitative terminology, or ‘trustworthiness’ in qualitative terms. Mertens (2014) provides a clear framework for considering quality in MMR (Table 4).

Table 4: Rigour: Criteria for judging quality in quantitative, qualitative and MMR

<table>
<thead>
<tr>
<th>Quantitative</th>
<th>Qualitative</th>
<th>Mixed Method Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internal Validity</td>
<td>Credibility</td>
<td>Purpose and justification</td>
</tr>
<tr>
<td>External Validity</td>
<td>Transferability</td>
<td>Matching of purpose to appropriate method</td>
</tr>
<tr>
<td>Reliability</td>
<td>Dependability</td>
<td>Adherence criteria</td>
</tr>
<tr>
<td>Objectivity</td>
<td>Confirmability</td>
<td>Addressing of tension between conflicting demands</td>
</tr>
<tr>
<td>-</td>
<td>Authenticity</td>
<td>Acknowledgment of limitations associated with data collected</td>
</tr>
<tr>
<td>-</td>
<td>Transformative</td>
<td>Method of integration</td>
</tr>
<tr>
<td>-</td>
<td>-</td>
<td>Evidence of practicality</td>
</tr>
</tbody>
</table>

In the current study, these issues are addressed in the sections on Design, Methods, Procedure and Analytical Strategy. Mertens (2014) notes that a MMR approach should be assessed in its own right for quality, not just to consider the quality of other
approaches, such as the quantitative or qualitative strands. Morse (2003) states that when evaluating the conclusions of a mixed methods design, it is possible that results from both methods will agree with each other and, therefore, validate the conclusions reached. In the same respect, it is plausible that they will not agree with each other; the researcher must assess the possible reasons for such a disagreement. It may be accountable to the differences in approach or due to the changes in context over time that could influence the dependent measures (Mertens, 2014).

In an effort to unite what little research exists in the quality criteria of MMR, Onwuegbuzie and Johnson (2006) propose a series of ‘legitimation criteria’ to direct researchers and help ensure high quality MMR. In what they consider an extensive preparatory framework, they propose nine legitimation criteria that should be addressed when ensuring quality of MMR; the following points are drawn from Collins, Onwuegbuzie and Johnson (2012):

- **Sample integration**
  The extent to which the relationship between the quantitative and qualitative sampling designs yields quality meta-inferences.

- **Inside – outside**
  The extent to which the researcher details and utilises the participant’s and observer’s views for purposes such as explanation or description.

- **Weakness minimization:**
  The degree to which the weaknesses of one approach are augmented by the strengths of the other.

- **Sequential:**
  The extent to which the researcher has minimised the potential problem wherein the meta-inferences could be affected by reversing the sequence of the quantitative and qualitative phases.
• **Conversion:**
  The extent to which the quantitising or qualitising yields quality meta-inferences.

• **Paradigmatic mixing:**
  The extent to which the researcher’s epistemological, ontological, axiological, methodological, and rhetorical beliefs that underlie the quantitative and qualitative approaches are successfully (a) combined or (b) blended into a usable package.

• **Commensurability:**
  The extent to which the meta-inferences made reflect a mixed worldview based on the cognitive process of Gestalt switching and integration.

• **Multiple validities:**
  The extent to which addressing legitimation of the quantitative and qualitative components of the study result from the use of quantitative, qualitative, and mixed validity types, yielding high quality meta-inferences.

• **Political:**
  The extent to which the consumers of mixed methods research value the meta-inferences stemming from both the quantitative and qualitative components of a study.

Each of these legitimation criteria are explained in a great level of detail, which means that despite its complexity it presents a useful means of assessing quality in MMR, particularly when addressed in sequence whilst traversing the research process. For this reason, Collins et al. (2012) and Onwuegbuzie and Johnson’s (2006) framework of legitimation criteria is appropriated for this study and the degree to which vulnerabilities are assessed. The overarching criteria for assessing quality in MMR are detailed in Table 4.
3.3 Context of the study: PATHS to Success

The data used in this study was drawn from the evaluation of a funded efficacy trial called PATHS (Promoting Alternative THinking Strategies) to Success. The University of Manchester was commissioned by the National Institute for Health Research (NIHR) and the Educational Endowment Foundation (EEF), to evaluate the overall effectiveness of the programme. It is therefore important to understand how the data gathered for the PATHS to Success trial was used in the present study, as well as demonstrating how the current research varies substantially from the PATHS to Success evaluation project.

3.3.1 PATHS to Success

The initial PATHS to Success trial ran from September 2012 until August 2014 and had a budget of £1.3 million. The follow-up phase runs from September 2014 until July 2016. Schools that were eligible to participate consisted of mainstream primary schools providing education for children aged 4-11 in the 10 Local Authorities (LAs) that combine to form the Greater Manchester region. The Greater Manchester area provides a wide demographic spread in terms of socio-economic status, urbanicity, as well as many other characteristics. Children in Years 3, 4, and 5 on a given school’s full-time roll at the onset of the 2012/2013 academic year were the intended population for the study. The evaluation team was responsible for the recruitment process. From an initial pool of 58 schools, 45 eventually met the criteria outlined in the Memorandum of Agreement (MoA) and were randomly allocated to either the intervention or control (usual practice) arm of the trial (for further information see section 3.5.1).

3.3.2 Evaluation of the PATHS to Success trial

The evaluation of the Paths to Success trial ran alongside the implementation of the KS2 PATHS programme. The aim of the study was to explore the impact of PATHS on a number of outcomes for children and young people in a universal mainstream setting. There were six research questions, of which four were largely quantitative in nature, whilst the remaining two were predominantly qualitative. A detailed account of the individual research questions is presented below in Table 5.
<table>
<thead>
<tr>
<th>Research Question</th>
<th>Hypothesis</th>
</tr>
</thead>
<tbody>
<tr>
<td>RQ1</td>
<td>H1: Children in primary schools implementing PATHS over a two-year period will demonstrate significant improvements in social and emotional competence (1a), health-related quality of life (1b), exclusions (reduction) (1c), attendance (1d) and academic attainment (1e), when compared to those children attending control schools</td>
</tr>
<tr>
<td>RQ2</td>
<td>H2: The effects outlined in H1 will be sustained at two-year post-intervention follow-up</td>
</tr>
<tr>
<td>RQ3</td>
<td>H3: Children in primary schools implementing PATHS over a two-year period will demonstrate significantly better psychosocial adjustment upon transfer to secondary school, when compared to those attending control schools</td>
</tr>
<tr>
<td>RQ4</td>
<td>H4: Quality of implementation will be associated with improved outcomes in school implementing PATHS</td>
</tr>
<tr>
<td>RQ5</td>
<td>H5: Proximal changes in social and emotional competence and the learning environment will be associated with distal improvements in motivation to learn, psychological wellbeing and (reduced) internalising and externalising difficulties, which in turn will impact upon attendance, academic attainment and exclusions</td>
</tr>
<tr>
<td>RQ6</td>
<td>H6: The PATHS curriculum will demonstrate cost-effectiveness</td>
</tr>
</tbody>
</table>

From the PATHS to Success trial, online protocol (2012)

The data for RQ1 - 6 came from surveys (teacher, parent and pupil), school-level surveys and academic, attendance and contextual sociodemographic data obtained from the Department for Education (DfE) and schools. Data for RQ1 and RQ4 were supplemented by semi-structured interviews conducted by the research team; RQ4 also used direct observations of teachers implementing the PATHS programme.

Data were collected at three time-points (May-July 2012, 2013, and 2014). For RQ1 and RQ4 there were interviews with teaching professionals and teaching assistants. In
addition, the evaluation included interviews with head teachers, pupil focus groups and parents. Data were obtained via recorded interviews with teachers, parents and pupils, and transcribed document analysis. Additional information regarding quantitative and qualitative data collection that is applicable to the present study is addressed in subsequent sections of this chapter.

Once analysed, the results were presented to the EEF in a final report for academic outcomes (Humphrey et al., 2015). The author of this study worked as an Assistant Psychologist / Doctoral Researcher (APDR) on the PATHS to Success trial and was involved in the data collection, analysis, writing of the reports, and implementation support.

3.3.3 Independence of the current study

It is important to note that all of the data collected for the present doctoral study were collected from the data obtained in the PATHS to Success trial. Nonetheless, the present study differs significantly from the research questions posed in the main trial, as well as adding a distinctive contribution to the field of implementation and the influence of individual level characteristics. The differences between the main trial and the present study are emphasised in Table 6.

Table 6: Independence of the doctoral study from the PATHS to Success trial

<table>
<thead>
<tr>
<th>Component</th>
<th>Doctoral Study</th>
<th>PATHS to Success trial</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outline</td>
<td>Independent doctoral study, spanning three years, requiring thesis and viva</td>
<td>Evaluation lasting five years with final report to the EEF and NIHR</td>
</tr>
<tr>
<td>Personnel</td>
<td>Author of the thesis</td>
<td>Large research team</td>
</tr>
<tr>
<td>Aim (1)</td>
<td>To investigate the influence of individual level characteristics on implementation variability</td>
<td>To assess the effectiveness of the KS2 PATHS curriculum by considering a large number of outcomes</td>
</tr>
<tr>
<td>Aim (2)</td>
<td>To contribute to theory on individual level characteristics</td>
<td>To advance theory in prevention science</td>
</tr>
<tr>
<td>Design (1)</td>
<td>Cross-sectional</td>
<td>Longitudinal</td>
</tr>
<tr>
<td>Design (2)</td>
<td>Concurrent embedded mixed-methods (QUANT → Qual)</td>
<td>Cluster randomised controlled trial (RCT)</td>
</tr>
<tr>
<td>Typology</td>
<td>Basic / applied research</td>
<td>Evaluative research</td>
</tr>
<tr>
<td>Sample</td>
<td>Teachers</td>
<td>All children, universal sample, from KS2</td>
</tr>
<tr>
<td>Main statistical analysis</td>
<td>Multiple regression</td>
<td>Multi-level modelling</td>
</tr>
<tr>
<td>Variables</td>
<td>Assesses variables of interest in implementation, specifically focusing on teachers (e.g. teaching self-efficacy, emotional self-efficacy, teacher burnout)</td>
<td>Variables used were specific to the PATHS curriculum, e.g. social and emotional competence - the Social Skills Improvement System (SSIS)/Strengths and Difficulties Questionnaire (SDQ)/ Kid-Screen 27 (KS-27)</td>
</tr>
<tr>
<td>Quantitative analysis (1)</td>
<td>In-depth analysis of teacher characteristics and their association with implementation variability</td>
<td>Analysis across all groups of children</td>
</tr>
<tr>
<td>Quantitative analysis (2)</td>
<td>Analysis of interactions of individual level factors on implementation variability</td>
<td>Addressed in the subgroups of the PATHS to Success trial</td>
</tr>
<tr>
<td>Qualitative phase</td>
<td>Implementers (teachers, teaching assistants) of the PATHS curriculum</td>
<td>All stakeholders (teachers, TAs, parents, pupils, HT, PATHS coordinators)</td>
</tr>
<tr>
<td>Data used (qualitative phase)</td>
<td>Interviews</td>
<td>Interviews, pupil focus groups, parent interviews, document analysis</td>
</tr>
<tr>
<td>Primary target audience</td>
<td>Academic community, policy makers in the education system</td>
<td>EEF, NIHR, schools, policy makers, academics</td>
</tr>
</tbody>
</table>
3.4 Design

3.4.1 Overall study design

The design of the current study is a ‘concurrent embedded mixed methods design’ (Creswell & Plano Clark, 2011). MMR allows for a degree of flexibility, in this instance an embedded design is one that allows (in the current study) for a quantitative design to contain an additional qualitative element to augment, and enhance, the overall study (Creswell et al. 2003, Mertens, 2014). To simplify, this definition pertains to a study where one particular methodology claims dominance over the research and the other a supporting, ancillary role based upon the discoveries of the first. Researchers writing about mixed methods often prefer to limit the definition of mixed methods to refer to only the ‘mixing’ of quantitative and qualitative data management. Pelto (2015) argues that there is no valid reason for this restriction and supports the position of Morse (2010), who states:

“While some researchers are uncertain if (QUAN)-qual designs are mixed methods, in this article, I argue that they may be a mixed method design and deserve attention as such. When qualitative data types, levels of analysis, or participant perspectives are different enough that it is necessary for the two methods to be handled differently and to be kept apart, we have the rationale for using mixed method design.” (p. 491)

With this in mind, in the present study the quantitative elements were given the greatest influence (QUANT → qual), as illustrated in Figure 6.
The *PATHS to Success* trial was longitudinal in nature, spanning a course of five years, whereas the present study is cross-sectional for a number of reasons. The first research question (RQ1) was focused on investigating implementers’ individual level characteristics and their affect on implementation variability at a given point in time, rather than looking for a change mechanism as a result of an intervention being delivered. In a similar vein, RQ2 explored the perspectives of implementers regarding the barriers and facilitators associated with the implementation of the PATHS programme, rather than examining a measurable change over a period of time. Although longitudinal research can aid the inference of causal relationships (Arjas & Parner, 2004), the feasibility of conducting multiple observations for implementers delivering PATHS across three year groups, within a two year time frame, was not possible. Furthermore, attrition is also a concern for longitudinal research (Arjas & Parner, 2004; Mertens, 2014); teachers have high levels of professional mobility (Barbieri, Rossetti and Sestito, 2013) that can greatly impact on the ability to discern findings. Cross-sectional research does not struggle with this limitation.

The advantage of such a design is that precedence can be given to one particular element of data collection, in the present study quantitative implementer surveys and observations (as illustrated in Figure 6). Supplemental qualitative data in the form of implementer semi-structured interviews was chosen to augment the quantitative findings and deepen the level of analysis provided, adding a level of detail and thoroughness that the quantitative findings alone could not provide. Nevertheless, there are some challenges that should be noted when using this type of research design. Creswell and Plano Clark (2003, 2011) state that the researcher must have a level of expertise in order to handle both quantitative and qualitative methods effectively as well
as having a clear rationale for collecting additional, supplementary data. Thus, being aware of these challenges in advance allows for ease of planning and management.

3.4.2 Quantitative approach
The quantitative aspect of the research is designed to address RQ1, which focuses on measuring implementation variability. This aspect of the study is designed on the principles of natural variation. Multiple regression is able to explore the influence of a myriad of predictor variables with a high degree of precision. A detailed account of the quantitative approaches used in the current study is presented later in this chapter.

3.4.3 Qualitative approach
A qualitative approach was chosen to answer RQ2 on the perspectives of implementers regarding the barriers and facilitators in administering the PATHS programme. Semi-structured interviews were used to generate data that could be analysed thematically. The purpose of the qualitative aspect of the design is to add ‘meat on the bones’ (Bryman, 2006, p.106) of the quantitative results through the inclusion of implementer data from those directly involved in delivering PATHS; this approach is recommended by Creswell and Plano Clark (2011) and Onwuegbuzie and Johnson (2006) to produce high-quality MMR. Research has suggested, however, that an absence of quantitative impact is not always reflected in the qualitative discourse of those involved (Humphrey et al., 2008; Humphrey, 2013). To further this point, Tashakkori and Teddlie (2010) note that a confluence of data sets may not always arise as anticipated. This disparity in data set convergence may allow for further examination of an unanticipated element in the research topic resulting from the use of MMR.

3.4.4 Confluence of quantitative and qualitative approaches
An inherent difficulty of an embedded MMR design is striking the appropriate balance between quantitative and qualitative approaches and integrating them successfully. Rigorous MMR depends on making sure that each and every method utilised is done so reliably and that inferences are appropriately validated (Greene, 2007). The embedded approach used in the current study means that discourse of the results will be driven by the findings of the quantitative analysis; qualitative findings will be used to enrich this analysis by illustrating how some of the statistical findings came to be, whether significant or not. Whilst a small sample cannot be used in isolation to generalise
findings due to the danger of ‘anecdotalism’, as detailed by Silverman (2000) in his discussion on validity and reliability in qualitative research, in the context of the present embedded study, maximum variation sampling of the qualitative data can allow for a greater appreciation of the quantitative findings.

3.5 Participants

3.5.1 Initial participant selection
PATHS schools’ willingness to participate in the current study was initially identified by their attendance at the PATHS to Success launch conference held at the University of Manchester in March 2012. School addresses of the (approximately 35) attending representatives were obtained followed by a brief questionnaire inquiring to the usual practice of SEL programme implementation as well as several other questions regarding the school climate and ethos. Included in this questionnaire was the option to participate in the study, stating that schools would need to sign a memorandum of agreement (see Appendix 1) detailing what was expected of them, as well as the possibility that they would be assigned to either the intervention or control group of the study. Questionnaires were returned to the research team in a freepost envelope, which then provided a possible pool of schools to include. The research team then obtained an additional large list of schools within the Greater Manchester area from the DfE and proceeded to letter, email and telephone each school individually to enquire whether the schools would be interested in taking part in the study. A level of bias exists in the fact that schools who were already more favourable to SEL curricula would be more likely to want to take part. Selection of schools using an entirely random selection procedure would have proven to be greatly problematic.

Between January and April 2012, 58 schools were recruited with a final number of 45 schools being eligible for randomisation. 13 schools failed to complete the baseline measures for the main NIHR trial, because of: lack of time (n=7), lack of IT facilities (n=2), change in staff (n=2), other priorities (n=1), and lack of response (n=1). Schools were randomly allocated to the intervention and control wings of the trial independently of the evaluation team by the Manchester Academic Health Science Centre Trials Co-ordination Unit (MAHSC-CTU).
3.5.2 Quantitative strand

Before examining the datasets some preliminary information is required regarding the nature of the implementer sample used, the variables included in analysis, and the survey method used to collect the data (presented in Table 8).

Data were collected via web and paper-based surveys in the autumn of 2012 and 2013 from KS2 teachers across 23 urban and suburban primary schools. In total, 183 teachers were engaged through various time points in the PATHS to Success trial; 149 teachers completed the surveys, which included measures of emotional self-efficacy, burnout, efficacy, and views on SEL as well as their perception of the implementation process and their own implementation of the PATHS curriculum. Analysis of missing data by means of multiple imputation is discussed in subsequent sections. The overall response rate for these schools was close to 81%. Teachers in this sample were 82% female and 19% male, and they had worked in schools, on average, for 8.2 years. 51.4% of the sample had both an undergraduate and postgraduate (PGCE) degree, with just over 5% having obtained either a masters or doctoral degree. In terms of experience in implementing SEL, 16.7% had no experience, 20.1% had less than 1 year, 34% had 2 to 5 years, and 29.2% had over 5 years of experience. Further information is included in Appendix 2. Data for RQ1 was cross-sectional in nature and related to implementer's characteristics (derived from the Implementer Characteristics Survey) and their influence on implementation variability (derived from lesson observations). As expressed below, the most suitable method of analysis for the quantitative analysis is multiple regression as it is the optimal analytical technique for datasets where the focus is on the relationship between a response variable and multiple explanatory/predictor variables. Specifically, multiple regression allows us to understand how the typical value of the response variable can change when any of the given explanatory/predictor variables are varied while the other explanatory/predictor variables are held fixed (Field, 2009). There are, however, clearly a multitude of factors that can affect implementation variability which are not included in the regression model.
3.5.2 Qualitative strand

There were 12 implementers selected for the analysis of RQ2 in the qualitative strand of this study. They were selected from the overall qualitative sample for the *PATHS to Success* trial through maximum variation sampling. This sampling approach allows for the selection of a small number of participants that maximise the diversity relevant to the research question. According to Patton (2015) a maximum variation sample incorporates cases that are purposefully as varied from each other as possible, which is useful when examining range in large evidence-based programme evaluations. Key factors considered when purposefully sampling implementers for maximum variation, based on evidence from the preceding literature review, were as follows:

- Number of years teaching
- Gender
- Level of qualification
- Observed implementation scores of fidelity, dosage and quality (low, moderate, high)
- Experience of implementing SEL

A brief overview of each implementer is detailed in Table 7.

**Table 7: Implementers and sampling characteristics**

<table>
<thead>
<tr>
<th>Participant</th>
<th>Sampling characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Low implementation profile (low/low/low) Year 5 – Undergraduate degree, SEL more than 5 years, male, 20 years qualified</td>
</tr>
<tr>
<td>2</td>
<td>Low implementation profile (low/low/low) Year 6 – Postgraduate degree, SEL less than one year, female, 11 years qualified</td>
</tr>
<tr>
<td>3</td>
<td>Low implementation profile (high/low/low) Year 4 – Undergraduate degree, SEL 2-5 years, female, 4 years qualified</td>
</tr>
<tr>
<td>4</td>
<td>Low implementation profile (moderate/low/low) Year 3 – Undergraduate degree, SEL less than 1 year, female, NQT</td>
</tr>
<tr>
<td>5</td>
<td>Moderate Implementation profile (moderate/moderate/moderate) Year 6 – Postgraduate degree, SEL no experience, female, 14 years qualified</td>
</tr>
<tr>
<td>6</td>
<td>Moderate Implementation profile (moderate/moderate/moderate) Year 5 – Postgraduate degree, No SEL experience, female, NQT</td>
</tr>
<tr>
<td>7</td>
<td>Moderate Implementation profile (moderate/moderate/moderate) Year 4 – Postgraduate degree, SEL moderate, female, 10 years qualified</td>
</tr>
</tbody>
</table>
degree, SEL 2-5 years, male, 24 years qualified

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>Moderate Implementation profile (moderate/moderate/moderate) Year 6 – Masters Degree, SEL 2-5 years, male, 5 years qualified</td>
</tr>
<tr>
<td>9</td>
<td>High Implementation profile (high/high/high) Year 6 – Masters degree, SEL more than 5 years, female, 7 years qualified</td>
</tr>
<tr>
<td>10</td>
<td>High Implementation profile (high/high/high) Year 5 – Postgraduate degree, SEL more than 5 years, female, 3 years qualified</td>
</tr>
<tr>
<td>11</td>
<td>High implementation profile (moderate/high/high) Year 6 – Undergraduate degree, SEL more than 5 years, female, 24 years qualified</td>
</tr>
<tr>
<td>12</td>
<td>High implementation profile (moderate/high/high) Year 3 - Undergraduate degree, SEL 2-5 years, female, 5 years qualified</td>
</tr>
</tbody>
</table>

Note: The implementation profile is presented in order of fidelity, dosage, and quality.

3.6 Materials

3.6.1 Quantitative strand

A multitude of variables were used to examine RQ1 (a – e); for clarification of these variables, details are presented in Table 8, below. Some of these variables (e.g. additional role) are not included in the regression models, but are treated as descriptive variables to give a clearer sense of the sample. Source materials for these variables were collected from implementers’ self-report surveys, a number of which were designed specifically for the PATHS to Success trial. Full details of all the measures are outlined in Table 9.

Table 8: Variables from surveys, with description and source (RQ1)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Description</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Years qualified</td>
<td>The length of time an implementer has been qualified in the teaching profession</td>
<td>ICS</td>
</tr>
<tr>
<td>Gender</td>
<td>The sex of the implementer</td>
<td>ICS</td>
</tr>
<tr>
<td>Age</td>
<td>The age of the implementer</td>
<td>ICS</td>
</tr>
<tr>
<td>Experience of implementing SEL</td>
<td>Number of years experience implementing SEL programmes</td>
<td>ICS</td>
</tr>
<tr>
<td>Role</td>
<td>Implementer’s role at the school</td>
<td>ICS</td>
</tr>
<tr>
<td>----------------------</td>
<td>---------------------------------------------------------------------------------------------------</td>
<td>----------------------------</td>
</tr>
<tr>
<td>Training</td>
<td>Whether an implementer had received SEL training in their initial teacher training</td>
<td>ICS</td>
</tr>
<tr>
<td>Additional responsibility</td>
<td>Whether the implementer has any other responsibilities in the school (e.g. Senior Leader Team)</td>
<td>ICS</td>
</tr>
<tr>
<td>Qualifications</td>
<td>The highest level of qualification (e.g. undergraduate, masters)</td>
<td>ICS</td>
</tr>
<tr>
<td>Mean Emotional Self-Efficacy Score (ESES)</td>
<td>The mean ESES score, with increased scores indicating higher levels of emotional self-efficacy</td>
<td>Emotional Self-Efficacy Scale</td>
</tr>
<tr>
<td>Self-efficacy</td>
<td>Implementer’s sense of self efficacy, measuring three aspects: student engagement, instructional strategies, and classroom management</td>
<td>Teachers’ Sense of Efficacy Scale</td>
</tr>
<tr>
<td>Perceptions and attitudes</td>
<td>Implementer’s perceptions and attitudes towards SEL programmes, measuring three aspects: comfort, commitment, and culture</td>
<td>Beliefs about social and emotional learning</td>
</tr>
<tr>
<td>Burnout</td>
<td>Implementer’s sense of burnout, measuring three aspects: depersonalisation, reduced personal accomplishment, and emotional exhaustion</td>
<td>Maslach Burnout Inventory</td>
</tr>
</tbody>
</table>

**Implementer Characteristics Survey (ICS)**

The University of Manchester’s research team designed a bespoke survey to gather a range of information on basic characteristics of the implementers involved in the study. The ICS included information on the following:

- Nature of implementer’s role at the school (e.g. class teacher, teaching assistant, learning mentor)
- Number of years that the implementer has been qualified
- Whether their initial training included coverage of SEL
- Implementer’s gender
- Implementer’s age in years
- The highest level of qualification (e.g. undergraduate, masters)
- Level of experience in implementing SEL
- Additional responsibilities of the implementer (e.g. SEN coordinator, deputy head)

**The Emotional Self-Efficacy Scale**

The ESES (Kirk, Schutte, & Hine, 2008) is a survey for implementers that measures their own emotional self-efficacy, building on research in the areas of emotional intelligence and self-efficacy. The survey measures implementer’s emotional self-efficacy in four areas, which are, identifying and understanding your own emotions, dealing with emotions in others, using and managing your own emotions, and perceiving emotion through facial expressions and body language (See Appendix 3 for the full survey). The identifying and understanding your own emotions subscale had six items, which asked respondents about how they understood their own emotional states (e.g. know what causes you to feel a negative emotion). The dealing with emotions in others subscale had eight items which asked respondents about their level and skill in handling the emotions of others (e.g. help another person calm down when he or she is feeling angry). The using and managing your own emotions subscale had ten items, which examines how respondents use emotions as a tool (e.g. generate the right emotion so that creative ideas can unfold). Finally, the perceiving emotion through facial expressions and body language subscale had three items and measured the physical aspect of emotional recognition (e.g. notice the emotion that another's body language is portraying). All subscales were scored on a five-point Likert scale (‘1’ indicated ‘not at all’ and a ‘5’ indicated ‘very’).

The ESES offers many advantages in light of the current study. The ESES has strong psychometric properties (see Table 9), it correlates strongly with a measure of trait emotional intelligence and significantly, to a lesser degree, with a measure of ability emotional intelligence (Kirk et al., 2008). The ESES displays strong correlations with other well-established emotional intelligence screening tools such as Mayer, Salovey and Caruso’s (2004) emotional intelligence scale. This scale is useful due to its ability to successfully measure both trait and ability emotional intelligence, for example: “using cognitive intelligence as an analogy, functions such as memory and word fluency
can be both an ability, generally assessed through performance tests, and can be typically manifested in daily living.” (Kirk et al., 2008, p.432). According to Petrides and Furnham (2003), trait and ability emotional intelligence are separate constructs in their own right. Therefore, the ESES is as suitable as other well established measures of both trait and ability emotional intelligence with added benefit of being quicker and easier to deliver. Higher scores indicate a higher overall level of emotional self-efficacy.

**Teachers’ Sense of Efficacy Scale**

The *Teachers’ Sense of Efficacy Scale* (Tschannen-Moran & Hoy, 2001) is a survey designed to assess how implementers rate their own sense of teaching efficacy in the school environment, related to significant educational outcomes such as enthusiasm and commitment, as well as numerous student outcomes. The self-efficacy scale has three sub divisions; efficacy in student engagement, instructional strategies, and classroom management. Student engagement has four items and pertains to how well implementers feel they can engage students (e.g. How much can you do to motivate pupils who show little interest in school work?). Efficacy in instructional strategies has four items and asks respondents how well equipped implementers feel in using a range of strategies and tools to improve student performance (e.g. How much can you use a variety of assessment strategies?). The final sub division, classroom management, asks respondents over four items how well they feel they can manage the varying climate of the classroom and control student behaviour (e.g. How much can you do to calm a student who is disruptive or noisy?). All subscales are scored on a nine-point scale, with anchors at 1 - nothing, 3 - very little, 5 - some influence, 7 - quite a bit, and 9 - a great deal.

The teacher’s sense of efficacy scale has a number of benefits. The scale demonstrates strong psychometric properties, including factorial validity (established using factor analysis), and internal consistency. The teacher’s sense of efficacy scale also displays a strong correlation with other well-established measures of self-efficacy such as the Bandura (1997) self-efficacy scale, whilst delivering a greater degree of depth and rigour. Higher scores on the sense of efficacy scale indicate greater self-efficacy in classroom management, instructional strategies and student engagement.
Beliefs about social and emotional learning
Brackett et al’s (2010) *Beliefs about social and emotional learning* survey is devised to assess an implementer’s beliefs about SEL. The belief about social and emotional learning scale has three sub divisions: implementer comfort with teaching SEL, commitment to learning about SEL, and whether their school culture supports the development of SEL. The comfort branch of the survey has four items and asks respondents how at ease they feel with SEL skills (e.g. Taking care of my pupils' social and emotional needs comes naturally to me). The commitment branch has four items and asks respondents about their willingness to take on SEL training (e.g. I would like to attend a workshop to learn how to develop my pupils' social and emotional skills). Finally, the culture branch of the survey examines respondent’s thoughts and feelings regarding the school’s SEL culture through a series of five items, with the fifth item being reversed scored (e.g. The school leadership creates an environment that promotes social and emotional learning to its pupils). All subscales are scored on a five-point Likert scale (‘1’ indicated ‘strongly disagree’ and a ‘5’ indicated ‘strongly agree’). Higher scores indicate greater comfort with SEL, greater commitment to SEL, and positive attitudes towards the school culture supporting the development of SEL.

Brackett et al’s (2010) *beliefs about social and emotional learning* is an advantageous tool for the present study. It is a parsimonious measure of assessing teachers’ beliefs about SEL. The scale has been tested with both exploratory and confirmatory factor analysis, consequently producing three reliable scales concerning teachers’ comfort with teaching SEL, commitment to learning about SEL, and perceptions about whether their school culture supports SEL. Evidence has also been provided for the concurrent and predictive validity of the scales with a subsample of implementers delivering an SEL programme as part of an RCT (Table 9).

The Maslach Burnout Inventory
The burnout inventory (Maslach & Jackson, 1986) is formulated to assess an individual’s level of burnout, separated into three separate components; depersonalisation, reduced personal accomplishment, and emotional exhaustion. The Maslach burnout inventory is widely used in a variety of occupational fields including business, education and healthcare. The depersonalisation branch of the burnout inventory has five items and asks respondents questions regarding how connected they
feel to their students (e.g. I feel I treat some students as impersonal objects). The (reduced) personal accomplishment branch asks respondents how capable they feel in performing their job, over a series of eight items (e.g. I feel I'm positively influencing other’s lives through the work that I do). Finally the emotional exhaustion strand of the inventory measures a respondent’s perception of how emotionally tired they feel through a series of nine items (e.g. I feel fatigued when I get up in the morning and have to face another day in the job). A high degree of burnout is reflected in high scores on the emotional exhaustion and depersonalisation subscales with low scores on the personal accomplishment subscale. Conversely, low scores in emotional exhaustion and depersonalisation subscales, and high scores in personal accomplishment reflect a low degree of burnout. All subscales are scored on a seven-point scale (‘0’ indicated ‘never’ and ‘6’ indicated ‘every day’).

The Maslach burnout inventory (Maslach & Jackson, 1986) is a useful tool in the context of the present study given its usage to assess burnout in individuals across numerous professions. It is, therefore, well validated and demonstrates high levels of reliability. Whilst the Maslach burnout inventory is not designed as a clinical-diagnostic tool to categorise teachers as burned out, it nevertheless may play a part in an educator’s self-assessment. Full details regarding the characteristics of the burnout inventory are detailed in Table 9.
### Table 9: Characteristics of selected instruments

<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>Assess teacher’s emotional self-efficacy</td>
<td></td>
<td>Assess teacher’s sense of efficacy in implementing</td>
<td>Assess teacher’s perceptions and attitudes towards an intervention</td>
<td>Assess level of professional burnout in individual implementers</td>
</tr>
<tr>
<td>Domains (Number of items in brackets)</td>
<td>Identifying and understanding your own emotions (6), Dealing with emotions in others (8), Using and managing your own emotions (10), Perceiving emotion through facial expressions and body language (3)</td>
<td>Efficacy in student engagement (4), Instructional strategies (4), Classroom management (4)</td>
<td>Comfort with teaching SEL (4), Commitment to learning about SEL (4), Does school culture supports the development of SEL (5)</td>
<td>Depersonalisation (5), Reduced personal accomplishment (8), Emotional exhaustion (9)</td>
</tr>
<tr>
<td>Response scale</td>
<td>Not confident at all = 1</td>
<td>Nothing = 1, (2)</td>
<td>Strongly disagree = 1</td>
<td>Never = 0, A few times a year or less = 1, Once a month or less = 2, A few times a month = 3, Once a week = 4, A few times a week = 5, Every day =6</td>
</tr>
<tr>
<td></td>
<td>Slightly confident = 2</td>
<td>Very little = 3, (4)</td>
<td>Disagree = 2</td>
<td>Depersonalisation (0.89), Reduced personal accomplishment (0.80), Emotional exhaustion (0.76)</td>
</tr>
<tr>
<td></td>
<td>Unsure = 3</td>
<td>Some influence = 5, (6)</td>
<td>Unsure = 3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Confident = 4</td>
<td>Quite a bit = 7, (8)</td>
<td>Agree = 4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Very confident = 5</td>
<td>A great deal = 9</td>
<td>Strongly agree = 5</td>
<td></td>
</tr>
<tr>
<td>Internal Consistency (α)</td>
<td>Total ESES (0.96)</td>
<td>SE (0.86), IS (0.86), CM (0.81), Total (0.90)</td>
<td>Comfort (0.76), Commitment (0.82), Culture (0.74), Total (0.79)</td>
<td></td>
</tr>
<tr>
<td>Interpretation of scoring</td>
<td>Low (27) to Very High (135)</td>
<td>Below Average (9) to Above Average (36)</td>
<td>Low (5/6) to High (20/25)</td>
<td></td>
</tr>
</tbody>
</table>
Observation schedule
Implementation data was created through an observational method. Three research assistants assessed, by means of structured observations, implementation fidelity, dosage, quality, reach, and participant responsiveness. Documents and schedules that had been utilised in previous studies of PATHS were used to develop the observation schedule created by the research team. Advice was sought from the programme developer and researchers at the Evidence-based Prevention and Intervention Support Centre at Pennsylvania State University to develop this schedule, as well drawing on the existing literature on the assessment of implementation. Observers were required to rate fidelity, quality and participant responsiveness on a 0-10 scale, based on several different indicators. For example, fidelity was assessed via ratings of the teacher’s coverage of the lesson objectives, adherence to lesson structure and sequence, and core components. Reach was assessed based on the proportion of students that were present for the delivery of a given PATHS lesson. Finally, dosage was assessed by extrapolating the difference between actual and expected lesson delivery at the time of the lesson observation. The dosage delivery schedule was part of the implementation manual that each school received.

The observation schedule (Appendix 5) and accompanying documentation were developed and refined by using filmed footage of PATHS lessons taking place in another trial in England. Inter-rater reliability data was generated using the intra-class correlation coefficient (ICC). This was due to the large number of raters, and the ordinal response format of the coding schedule. Overall, the gross ICC was 0.91; ICC values fluctuate between 1 and -1, with greater scores being indicative of less variation between raters. Given that an ICC of 0.91 is deemed to be excellent (Thompson, 2003), a satisfactory consistency between raters was considered to have been achieved. Furthermore, a senior member of the research team accompanied each of the research assistants for 10% of the live observations, to help moderate ratings and guard against ICC erosion over time.

3.6.2 Qualitative strand
Data for the qualitative strand were taken from the interviews conducted as part of the PATHS to Success trial. There were 12 teachers who were chosen as focus implementers in this study. Data were collected by means of semi-structured interviews.
with implementers (teachers, teaching assistants) during the course of observational visits.

**Interview design**

Semi-structured interviews, according to Bernard (1988) and Robson (2002), are utilised most effectively when there is only one opportunity to interview a participant and when there are several interviewers conducting fieldwork to collect data. Semi-structured interviews provide a clear guideline for interviewers, helping to provide corresponding, reliable qualitative data. Semi-structured interviews are often preceded by an observation that allows the researcher to develop an understanding of the topic under investigation, essential for generating pertinent semi-structured questions. Open-ended questions are often included to allow the opportunity for viewing and understanding the topic at hand (Smith & Osborn, 2008). Three members of the PATHS to Success research team, including the author of this thesis, conducted interviews. This has the added benefit of diminishing interviewer bias that can arise from having a single researcher performing interviews.

The decision to use semi-structured interviews was discussed at the research team level. There is an inherent degree of flexibility in semi-structured interviews that is not as prominent in structured interviews (Oates, 2015). Semi-structured interviews still allow for questions to be prepared ahead of time, allowing the interviewer to be well equipped and give the impression of competence during the interview. Although semi-structured interviews generate greater amounts of data than their structured counterparts, semi-structured interviews permit a greater degree of flexibility that allows participants the freedom to express their perspectives in their own terms.

**Interview components**

A specially designed interviewed schedule was created for implementers of the PATHS curriculum (see Appendix 4 for the full implementer interview schedule). The interview schedule for the PATHS to Success trial went through several drafts, devised through a series of research team meetings. The questions asked to participants mirrored the overall research aims of the PATHS to Success trial, and these included questions on teachers’ perceptions of barriers and facilitators to delivering high levels of implementation quality. Additionally, certain questions put forward in the interview
schedule overlap with variables in the quantitative strand. Each teacher participating in the study was interviewed once with an aim to explore, understand and explain the processes of implementation of PATHS in English educational contexts (KS2), as well as triangulating with and supporting the interpretation of observational data. The interview schedule (20-40 minutes) aimed to elicit responses regarding specific aspects of implementation (fidelity, dosage, quality, participant responsiveness, programme reach, monitoring of control conditions, and adaptation) as well as identifying a context for specific factors affecting implementation. Finally, the schedule also aimed to evaluate the feasibility of the future implementation of PATHS in English educational environments. Not every participant was available for interview straight after his or her observation and therefore additional visits were, on occasion, required.

3.7 Procedure

The following discourse on the procedure is separated into the quantitative and qualitative strands. A timeline elucidating the progression of data collection (differing from the PATHS to Success evaluation) is presented below in Figure 7.

Figure 7: Timeline of data collection for teachers’ in the PATHS to Success trial

3.7.1 Quantitative strand

In August 2012, all schools that had chosen to participate in the PATHS to Success trial were sent the appropriate materials about the evaluation that the University of Manchester research team would be conducting (see Appendix 1 for all information regarding the surveys). Additionally, consent packs were sent out to individual schools
in preparation for the first wave of data collection that would commence in November 2013 with Year 3 teachers. Teachers were requested to sign a consent form regarding their willingness to participate in the study: to complete surveys, agree to an observation, and participate in a 20 – 40 minute recorded interview. Out of the total cohort of 183 teachers 3 chose to opt out of the interview process. Teachers were requested to complete the implementer characteristics survey whilst attending the initial PATHS training at the University of Manchester. Additional surveys were given to teachers when the research team visited their classrooms to conduct observations. Teachers were given the opportunity to submit either an encrypted, electronic version of the surveys through the PATHS to Success website or complete a paper copy that was then collected by the designated researcher for their school. The survey window for individual teachers was left open throughout the duration of the trial in order to give as much time as possible for completion with the desired result being reduced attrition. Upon completion, the surveys were matched and integrated with information in the master database using unique teacher identification numbers. All of the information teachers were asked to provide is provided in Table 8. Once all the data collection was concluded, the dataset containing all the information for RQ1 (a-e) was collated with all identifying teacher information replaced with a unique ID number for each individual.

3.7.2 Qualitative strand

The qualitative strand of data collection ran in parallel with the quantitative strand. As discussed in section 3.6.2 PATHS intervention schools were selected from those that volunteered to participate in the project and were informed of their selection by letter after a clinical trials unit assigned them to either intervention or control group. An explanation of when they would be contacted was included, so that preparations for the first observation visit could be made. A preliminary visit to schools was arranged to answer their questions about the programme and they were provided with a copy of the guidelines for data collection (Appendix 1), as well as their PATHS packs for years 3, 4 and 5. Year 6 PATHS packs were delivered in the summer of 2013.

In the winter term of 2012 the first phase of data collection was collected, followed by the second phase in the spring of 2013. The final phases of data collection were executed in the winter of 2013 and the spring of 2014. Teachers participated in semi-structured interviews that were recorded either in person, or on the telephone, and then
transcribed. Names and specific details in the recordings were removed in order to maintain appropriate ethical standards (which are addressed in a subsequent section). Once the data was collected the interviews were analysed using NVivo.

3.8 Analytical strategy

3.8.1 Quantitative strand

Scrutiny of the data
Before the analysis could be conducted it was important to undertake an initial exploration of the data to ensure that it fulfilled certain criteria required to perform multiple regression. When these criteria are disregarded, the extrapolation of the results is undermined and the analysis may not impart adequate conclusions to the research questions. The following subsections follow the standard recommend by both Pallant (2013) and Field (2013) in presenting screening of data and descriptive statistics.

Screening and cleaning of the data
Prior to conducting the analysis it was vital that the data set was checked for errors. Multiple regression is very sensitive to outliers; that is, values that are considerably higher or lower than the other scores in the data set. This was done for all of the variables used in the quantitative data set (RQ1). Continuous variables were checked for minimum and maximum values using the mean and standard deviation. Categorical variables were checking for minimum and maximum values as well as checking for the number of valid and missing cases.

Missing data and multiple imputation
The nature of ‘real-world’ research means that it is rare to obtain complete data from every participant. Missing data is described as ‘endemic’ in much educational and psychological research (Pampaka, Hutcheson, & Williams, 2016). Field (2013) notes that the pattern of data that is missing is more important that the quantity of missing data. There are three acknowledged categories of missing data: missing completely at random (MCAR), missing at random (MAR), and missing not at random (MNAR). There is little consensus as to the level of missing data that is acceptable. However, as generally recommended by statisticians, the present study makes use of multiple
imputation to alleviate some of the problems inherent to missing data. Multiple imputation is a statistical technique for analysing incomplete datasets, with its application requiring three important phases: imputation, analysis, and pooling.

- **Imputation:** Impute (= fill in) entries that are missing from the data set, not once, but \( m \) (\( m \) = number of imputations) times. The imputed values are extrapolated for a distribution (that is different for each missing data entry). This step results in \( m \) completed datasets.
- **Analysis:** Each \( m \) dataset is then analysed using SPSS. This step results in \( m \) analyses.
- **Pooling:** All of the \( m \) analyses are then pooled together for a final result.

Van Buuren (2012) demonstrates in a series of examples using multiple imputation that if appropriate steps are taken to create the imputations then the resulting results will be statistically valid. Rubin (1987, 1996) notes that the most demanding step in multiple imputation is the assembly of the \( m \) completed data sets. This is the step that accounts for the procedure that generated the missing data. Rubin (1987) notes that some of the more significant problems with this phase are:

- The nature of why something is absent could be related to its value (e.g. people who are older tend to skip age related questions more often).
- Entries that are missing can occur anywhere in the data set.
- The procedure that is used in the imputation phase must anticipate the intended completed data analyses.

Subsequent to this phase the pooling step consists of calculating the mean over the repeated \( m \) analysis, its variance, and the confidence intervals (p value). Thus, the primary reason for imputing is to reduce bias due to missingness rather than “removing cases that are subject to item nonresponse, the sample size is maintained resulting in a potentially higher efficiency than for case deletion” (Durant, 2009, p. 295). Early research suggested that between 5-10 iterations of the dataset were sufficient; however, recent research by Graham Olchowski and Gilreath (2007) has indicated that increasing the number of iterations to 40 can improve power. As such, the present study follows the recommendations of Graham et al. (2007) and uses 40 iterations.
Assumptions

Assumptions related to the final statistical analyses were carefully inspected. Pallant (2013) notes that any violations of assumptions should be carefully noted with foresight regarding the potential consequences. As these assumptions are specific to the multiple regression analyses used in RQ1 a thorough examination of these are explored in the following sections.

Descriptive statistics

Descriptive statistics were obtained for both the imputed and unimputed data sets. For categorical variables frequencies were used to examine how many people gave a response (e.g. how many males, how many females). For continuous variables, the mean, standard deviation and range were explored. For both the original, unimputed data set and the imputed set of data, skewness and kurtosis were explored, including an assessment of normality. Variables were examined for any potential outliers and consideration was given to their removal if they were thought to have an exceptional impact on the results.

3.8.2 Research Question 1

This RQ relates to implementation (specifically, fidelity, dosage and quality) of the PATHS curriculum and the role that implementers’ individual characteristics (professional, psychological, perceptions and attitudes) play in implementation variability. Whilst the main focus was on how these characteristics influence implementation variability, consideration was also given to how these individual level factors relate to each other and interact. Acknowledgement of the interaction between individual level variables is important, as certain interactions (e.g. low burnout, high self efficacy) have been demonstrated in the literature to have positive contributions to implementation variability (e.g. Ransford et al., 2009).

Multiple regression was chosen as the most suitable strategy for analysing RQ1 on individual level characteristics and implementation variability. Some of the main types of research question that multiple regression can be used to attend to are as follows (Pallant, 2013):
How effectively a set (or block) of variables is able to predict a specific outcome.

Which variable, in a given set of variables is the best predictor of an outcome.

Whether certain predictor variables are capable of still predicting an outcome when the effects of other variables are controlled for.

As explained previously, regression is used frequently in this field (e.g. Cappella et al., 2012; Ransford et al., 2009; Shachar & Shmuelevitz, 1997) and investigates how suitably a combined group of independent variables predict a dependent variable (variability in implementation), and how well each predictor variable associates to the dependent variable after controlling for the predictive influence of the others (Field, 2013). This allows the researcher to clarify that other associations found for implemen ter variables are not mediated by the other variables in the predictive model. In simple terms, one association is not directly a reflection of another, for example, with length of time teaching or experience of implementing SEL. It is important to note that there are too many other factors to include in the regression model; variables that have been included were chosen on the basis of the evidence extrapolated from the preceding literature review.

Multiple regression requires a number of assumptions to be made regarding the data, and is “not all that forgiving if they are violated” (Pallant, 2013, p.156). That being said, violation of assumptions is something that is considered relatively common in psychological research (Tabachnick & Fidell, 2013). Field (2013) notes that whilst a certain degree of violation is inevitable it is still of vital importance to firstly identify the violations made, and then investigate the possible reasons for them occurring, as well as reflecting on how the overall results may be altered as a result. Violations of assumptions do not render the model invalid, but they do have the capacity to reduce the model’s veracity (Field, 2013; Tabachnick & Fidell, 2013). With this in mind the following sections explore in greater detail the assumptions required to perform multiple regression, following the framework detailed in both Field (2013) and Pallant (2013):
• **Variable types and non-zero variance**
  All predictor variables must be categorical (with two categories), and the outcome variable must be quantitative, continuous and unbounded (no constraints on the variability of the outcome). The predictors need to have a level of variance in their value.

• **Multicollinearity**
  This alludes to the relationships that exist between the independent variables. Multicollinearity occurs when the independent variables are correlated highly with one another ($r = .9$ and above). Multiple regression does not respond well to multicollinearity, which adversely effects the regression model (Field, 2013; Pallant, 2013). Any correlation above ($r =$) .7 is regarded as a cause for concern and investigation is recommended (Pallant, 2013).

• **Normality**
  Referring to the distribution of scores, the residuals (the difference between the actual values of the model and of those predicted) should be normally distributed (with a mean of 0) around the predicted scores of the dependent variable. This is presented in both the histogram of residuals and the standard deviation of the residuals statistics.

• **Linearity**
  A linear relationship should occur in the residuals, with each independent variable situated across a straight line. It assumes that the relationship modelled is that of a linear one (two quantities that are directly proportional to each other).

• **Homoscedasticity**
  The variance, or spread, of the residuals about the predicted dependent variables should be the same, or similar, for all values. The interpretation of the residuals can be interpreted by examining the scatterplots produced.
• **Independence of errors**
  For any two observations the residuals should not correlate with each other. The Durbin-Watson test (which tests for serial correlations between errors) can be used to scrutinise this. The test statistics produce a value between 0 and 4; a value of 2 indicates that the residuals are uncorrelated.

• **Normally distributed errors**
  The residuals in the model are assumed to be normally distributed variables with a mean of 0. The difference between the model and observed data should be 0, or at least close to 0. The mean and standard deviation of the residuals statistics should demonstrate this, as well as graphically in the form of a histogram.

• **Independence**
  There is an assumption that all of the values for the outcome variables are independent of each other (each data point should have no influence over another).

**Outliers**
Multiple regression analysis is sensitive to outliers – very high or very low scores. As part of the data screening process the dataset was checked for extreme scores for all variables that were to be included in the regression analysis. Although outliers are not included as a required assumption per se, it may be sensible to remove them given their ability to affect the general model. Outliers on the dependent variable can be identified from the standardised residual scatterplot. Tabachnick and Fidell’s (2013) explanation states that any standardised residual above (3.3) or below (-3.3) can be considered an outlier.

**Sample size**
As Pallant (2013) notes, the key issue with generating an appropriate sample size is generalisability. With sample sizes that are smaller in nature the primary concern is that they cannot be repeated (generalised) in different research. The accepted number of participants required to perform multiple regression varies throughout the literature, however, both Field (2013) and Pallant (2013) agree that a sample size of N > 50 + 8k
(where \(k\) = the number of predictor variables) is sufficient. Thus, if you have 14 predictor variables you will require 162 participants. Tabachnick and Fidell (2013) suggest that rather than deferring to overall sample size requirements, it is advisable to break this number down into observable effect sizes (small, medium and large) instead. Soper’s (2015) a-priori sample size calculator for multiple regression (from Cohen, 1992), details the participant requirements for assorted effect sizes in the present study (Table 10). Cohen's (1992) \(f^2\) method measures the effect size when a method, such as multiple regression, is used. The Cohen's (1992) \(f^2\) measure effect size for multiple regression is determined by the following (where \(R^2\) is the squared multiple correlation):

\[
f^2 = \frac{R^2}{1 - R^2}
\]

**Table 10: Sample size calculations**

<table>
<thead>
<tr>
<th>Dataset</th>
<th>Sample size</th>
<th>Predictors</th>
<th>Desired statistical power level (= 0.8)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Small effect (0.02)</td>
</tr>
<tr>
<td>Alpha criterion</td>
<td></td>
<td></td>
<td>0.01</td>
</tr>
<tr>
<td>Implementers</td>
<td>183</td>
<td>14</td>
<td>1254</td>
</tr>
</tbody>
</table>

From Cohen (1992) and Soper (2015)

As demonstrated in Table 10, the present study (with an imputed dataset) is able to detect both medium and large effect sizes at both the 0.01 and 0.05 alpha criterion levels.

### 3.8.3 Interpretation of multiple regression

A great deal of data is generated from multiple regression (Pallant, 2013). Whilst much of this output is useful in assessing certain aspects of the model, there are some key components that are the most salient in effectively making sense of the data. A comprehensive framework detailed in Field (2013) provides an explanation:
• **$R^2$ and adjusted $R^2$**

$R^2$, the coefficient of determination, is a value that indicates how much variance in the dependent variable can be explained by the model. It is computed as a value between 0 (0%) and 1 (100%); the higher the value, the better the fit. The adjusted $R^2$ value is used for smaller sample sizes and generally regarded as a more conservative estimate. Thus, using the adjusted $R^2$ value in the present study is appropriate due to the nature of the smaller sample.

• **$R^2$ change**

The $R^2$ change is a statistical value, which allows for the identification of the change in the original $R^2$ based on the linear contribution of predictor variables entered into the regression model when the additional variables are held constant. It is used when there is more that one level in the hierarchy (e.g. as is the case for the assessment of interaction terms in section 4.3).

• **ANOVA**

The ANOVA is the value that indicates that the model as a whole (including both blocks of variables) is statistically significant. Specifically, the F-ratio represents the proportion of improvement in prediction that occurs from fitting the model, comparative to the level of inaccuracy that remains in the model. In simple terms, a larger F value indicates a better model fit.

• **Part and partial correlations**

Part and partial correlations produce a zero-order correlation (the Pearson correlation) between each predictor and outcome variable entered in the model. Further, it produces a partial correlation between a predictor and the outcome variables whilst controlling for all other predictors in the model. It also produces a part correlation between each predictor and the outcome variable.

• **Coefficients**

There are two coefficients values given, the unstandardised and standardised $\beta$. The size of the coefficient for each predictor variable pertains to the size of the effect that variable is having on the dependent. In multiple regression the
coefficient refers to how much the dependent variable is presumed to increase when a particular independent variable increases by one unit of measurement on the given scale (whilst holding all other variables constant). The unstandardised $\beta$ does not allow for comparison between the independent variables, whereas the standardised $\beta$ allows for the comparison of the relative effects of predictors measured on different scales. Standardised beta represents standard deviations, rather than single units of measurement. Thus, the standardised beta may be used to compare predictors measured with different scales.

Hierarchical multiple regression (also referred to as sequential regression) was used for RQ1. In this instance variables were entered in steps (or blocks); in the first block, all of the predictor variables are ‘forced’ into the model. This has the effect of statistically controlling the first wave of predictors. In the second step all of the predictor variable interactions (chosen a-priori) were entered into the model. This has the effect of ‘removing’ the original block of individual predictors, which allows for us to see whether the interaction terms are able to explain some of the remaining variance in the dependent variable. A statistical test of the change in $R^2$ from the first step is used to evaluate the importance of the interaction variables entered in the second step.

3.8.4 Qualitative strand & Research Question 2

Thematic analysis was chosen as the most suitable strategy to analyse the interview data of RQ2, as it allows for a degree of flexibility in the researcher’s chosen theoretical framework. Braun and Clarke (2006) define thematic analysis as: “A method for identifying, analyzing and reporting patterns within data.” (p. 79). Guest, MacQueen and Namey (2012) provide a clear overview of thematic analysis, illustrated in Table 11, distinguishing it as a phenomenological method. In contrast, Braun and Clarke (2013) prefer to refer to thematic analysis as an analytical method rather than an actual methodology. Nevertheless, its usefulness and appropriateness are explored below.
Table 11: Overview of Thematic Analysis

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Thematic Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Defining features</td>
<td>• Identifies keys themes in text (themes are transformed into codes)</td>
</tr>
<tr>
<td></td>
<td>• Uses techniques in addition to theme identification (e.g. word searches)</td>
</tr>
<tr>
<td></td>
<td>• Can be used to build theoretical models</td>
</tr>
<tr>
<td>Epistemological leaning</td>
<td>• Positivist/ interpretive/ pragmatic</td>
</tr>
<tr>
<td></td>
<td>• Assertions must be supported with evidence (text)</td>
</tr>
<tr>
<td></td>
<td>• Processes are systematic (quantification can be utilised)</td>
</tr>
<tr>
<td></td>
<td>• Methods and processes in thematic analysis can also be used in an interpretive analysis.</td>
</tr>
<tr>
<td>Strengths</td>
<td>• Well suited to large data sets</td>
</tr>
<tr>
<td></td>
<td>• Good for team-based research</td>
</tr>
<tr>
<td></td>
<td>• Interpretation is supported by the data</td>
</tr>
<tr>
<td></td>
<td>• Can be used to study topics other than individual experience</td>
</tr>
<tr>
<td>Limitations</td>
<td>• May miss some of the more ‘subtle’ data</td>
</tr>
</tbody>
</table>

Adapted from Guest, MacQueen and Namey (2012)

Aronson (1994) observes that thematic analysis is an excellent companion to a pragmatic research perspective, due to its intrinsic practicality and flexibility; this mode of functional enquiry is not constrained by some of the assumptions required by other theoretical perspectives. Despite its inherent flexibility, thematic analysis is not a novel approach to qualitative data analysis. It is suitable to use with a range of theoretical perspectives, owing to the fact that it can align to a wide variety of research questions regarding individual perspectives, experience, and their own specific contexts. Thematic analysis can be used to analyse different types of data and works well with both large and small datasets. It can also be employed to yield data-driven or theory-driven analyses (Braun & Clarke, 2006, 2013). Given that the present study adopts a pragmatic perspective, thematic analysis was chosen as the most suitable approach for analysing the interview data in the qualitative strand as the intrinsic flexibility of the approach is emphasised over the more unyielding requirements of some other perspectives.
Criticisms of thematic analysis are centralised around the lack of practical frameworks to conduct it effectively (Agar, 2006; Banks, 2008). Thus, to address this criticism Braun and Clarke (2013) note that there are some clear and concise guidelines that should be adhered to in order to ensure both quality and rigour in qualitative analysis. This is the framework that is utilised by the present study. Split into six separate phases, these guidelines are as follows:

- **Familiarisation with the data**: The researchers must fully absorb themselves with their collected data. Data must be read and then re-read (as well as listening to audio-recorded data again), with analytical observations recorded.
- **Coding**: As is common to many qualitative approaches, the researcher must generate a series of vigorously expressive labels for important features of the data that are pertinent to the research questions. Coding is not merely a reductive process, but rather one that focuses on analytical enquiry. The codes capture both a sematic and conceptual reading of the data. Every data item is coded, with all codes and data extracts then collated together.
- **Searching for themes**: A theme is described as a “coherent and meaningful pattern in the data” (Braun and Clarke, 2013, p.4) that is relevant to the research question. Codes are the building blocks, or foundation, of the dataset; themes add an extra level of detail. Searching for themes is an active process, that is, the researcher constructs the themes themselves – they are not simply waiting to be discovered. The researcher concludes this phase by carrying out a full collation of the data, which is relevant to each individual theme.
- **Reviewing themes**: This phase requires the checking of themes and that they are appropriate in the context of the coded extracts and the dataset as a whole. The researcher must reflect on the themes, decide whether they tell an absorbing, convincing narrative about the data and then begin to define the essence of each individual theme, and the connections between the themes. Themes may need to be collapsed or, conversely, separated into two or more themes. There is also the possibility that some themes may need to be dispensed with and start the process of theme development once more.
- **Defining and naming themes**: The researcher is required to execute a detailed, written analysis of each individual theme. Each theme should tell its own story
and position itself suitably into the overall story that the data is telling. The ‘essence’ of the theme must be captured to create a succinct and compelling title for each one.

- **Writing up**: One of the most important phases in thematic analysis, the writing-up process involves interlacing the analytical narrative and the detailed data extracts to inform the reader with a convincing, systematic story regarding the data, and contextualising it securely in relation to the extant literature.

### 3.9 Ethical considerations

The University of Manchester ethics committee approved the data collection for all phases (ref 11470) of the *PATHS to Success* trial, but there are further considerations that must be acknowledged in relation to the present study. As a member of the British Psychological Society the researcher was aware of the guidelines and principles detailed in the Code of Ethics and Conduct (BPS, 2009) as well as the more recent guidelines on the Code of Human Research Ethics (BPS, 2014) and adheres to their moral values. A synthesis of these principles and guidelines is detailed below:

**Respect for the autonomy, privacy and dignity of individuals and communities**

“Psychologists value the dignity and worth of all persons equally, with sensitivity to the dynamics of perceived authority or influence over others and with particular regard to people’s rights including those of privacy and self-determination” (BPS, 2014, p.8).

This principle of respect was of particular importance in light of the present study as there were a number of participants that the researcher did not meet in person. Thus, information and consent packs were sent out to all teachers taking part in the study to ensure that they were able to make a full and independent decision to participate, with a willingness to be observed and interviewed by different members of the research team. The researcher accepted that individuals might have chosen not to be involved in the research and that if they did show initial willingness but subsequently changed their mind, their data would be destroyed upon request. The researcher complied with any requests that were made to ensure that related data was destroyed and their data removed from the datasets. As the interviews were recorded, every effort was made to
ensure that teachers understood this as well as signing a declaration of willingness for this to occur. All surveys, interviews and transcripts were fully anonymised to make certain individual privacy was protected.

**Competence**

“Psychologists value the continuing development and maintenance of high standards of competence in their professional work, and the importance of preserving their ability to function optimally within the recognised limits of their knowledge, skill, training, education, and experience” (BPS, 2009, p.15).

An emphasis on competence whilst conducting the research was crucial as the researcher was working in many different schools with numerous professionals. As such, it was acknowledged that ethical dilemmas could arise during the two-year implementation of the trial. Where issues arose, great lengths were taken to ensure that an appropriate degree of reflection, supervision and consultation were taken with other members of the research team. Clear discourse was initiated with teachers to make sure that no judgements were being made regarding their teaching practice when conducting PATHS observations. Furthermore, every attempt was made not to ‘advise’ teachers beyond the limits of implementing the PATHS curriculum. Where sensitive or difficult topics arose the researcher made efforts to remain both supportive and empathetic.

**Social responsibility**

“The discipline of psychology, both as a science and a profession, exists within the context of human society. Accordingly, a shared collective duty for the welfare of human and non-human beings, both within the societies in which psychology researchers live and work, and beyond them, must be acknowledged by those conducting the research” (BPS, 2014, p.10).

The well being of the participants in the study was of the utmost concern to the researcher and the research team. Participants were made aware that they were not obligated to talk about any issues that might be distressing to them or make them feel uncomfortable. It was made clear that interviews could be stopped at any time with no explanation to the researcher required. Participants were informed that any criticisms
(e.g. of the school) made during the course of the interview would remain strictly confidential. All participants were made to feel valued by participating in the research process by thanking them for their involvement.

**Integrity**

“Psychologists value honesty, accuracy, clarity, and fairness in their interactions with all persons, and seek to promote integrity in all facets of their scientific and professional endeavours” (BPS, 2009, p.21).

Efforts were taken to ensure that all communications with participants reflected a high degree of honesty and transparency throughout the trial. All possible measures were taken to make certain that data collected was accurately portrayed with feedback given to participants and schools (where appropriate) regarding the results of the *PATHS to Success* trial. The researcher was also mindful of maintaining a level of impartiality with both teachers and schools, so as not to influence to outcomes of the research.
3.10 Summary statements

This summary provides an overview of the nine main sections detailed in this chapter.

- **Epistemology and pragmatism:** the choice of epistemological perspective was covered in depth with a rationale and justification for using both pragmatism and MMR.

- **Quality and rigour in mixed-methods research:** the complex issue of how to ensure both quality and rigour in MMR was discussed, with an investigation into how traditionally opposed paradigms can come together as a suitable choice of method.

- **Context of the study:** the context of the present study and a detailed account of its independence from the main *PATHS to Success* trial, operating at the University of Manchester, was given.

- **Design:** the design of the current study was described as a ‘concurrent embedded mixed methods design’ with a QUAN(qual) focus. This refers to the fact that a larger portion of the analysis is dedicated to a larger quantitative strand, with a qualitative strand augmenting the overall study.

- **Participants:** an overview of the participants involved in the current study were presented with a insight into participant selection and recruitment, sample characteristics, and the type of sampling used for both quantitative and qualitative strands.

- **Materials:** details were given regarding the ICS, the ESES, the Teacher’s Sense of Efficacy Scale, the Beliefs about SEL survey, and the Maslach Burnout Inventory.

- **Procedure:** this section details the separate quantitative and qualitative strands involved in the data collection. A timeline elucidating the progression of data collection was also included

- **Analytical strategy:** a detailed account of the quantitative (multiple regression) analyses that were utilised was given, followed by a description of the qualitative (thematic analysis) analyses used for the interviews.

- **Ethical considerations:** an overview of the ethical considerations as detailed by the BPS, are explored in the final section as well as how the present study has respected these essential conditions.
Chapter 4: Quantitative Results

4.1 Introduction

In this chapter the quantitative results are presented and explored. For clarity, the chapter is organised into several different sections. Following the guidelines illustrated in the previous chapter by both Field (2013) and Pallant (2013), initial data screening and descriptive statistics are reported with reference made to multiple imputation and missing data. Details on the various assumptions required for multiple regression are included.

The quantitative findings are contained within the first research question, pertaining to whether implementation (specifically, fidelity, dosage and quality) of the PATHS curriculum varies as a function of individual differences in implementers’ characteristics. Findings from the different regression analyses and corresponding commentary are presented in relation to RQ1 (a-e).

The chapter concludes with a summary of the quantitative findings before exploring the findings of the qualitative data in the following chapter.
4.2 Research Question 1: Implementation and individual level factors

4.2.1 Introduction

The aim of this section is to answer RQ1 in relation to how variance in individual level factors influence the implementation of the PATHS curriculum. As discussed in the literature review, there is a very large range of predictive factors that could influence the implementation of evidence-based programmes. The IQ model (Figure 1) suggests that factors affecting implementation can occur on multiple levels. The purpose of this thesis, however, is to ascertain whether the individual level factors included in the first level of the IQ model have the ability to influence the overall implementation quality. According to this conceptual model (Domitrovich et al., 2008), factors closest to the centre of the model should have the greatest level of influence. For this question, data is taken from the whole PATHS to Success teacher-data set. To allow for a fuller exploration of the influence of these factors on implementation, how these factors relate to each other, and how they interact, there are sub levels (a-e) to the first research question, which are addressed inclusively in the sections below:

RQ1: Does implementation (specifically, fidelity, dosage and quality) of the PATHS curriculum vary as a function of individual differences in implementers’:

a. Professional characteristics (e.g. number of years teaching)?
b. Psychological characteristics (e.g. emotional self-efficacy)?
c. Perceptions of and attitudes towards SEL (e.g. comfort)?
d. How do implementers’ professional characteristics, psychological characteristics and perceptions/attitudes to SEL relate to one another?
e. Do these characteristics interact (e.g. high burnout, high efficacy vs. high burnout, low efficacy) to influence implementation?
4.2.2 Descriptive statistics

Once the data had been examined and a multiple imputation analysis performed using Rubin’s (1996) guidelines for pooling, descriptive statistics were obtained for the 14 predictor variables and the 3 dependent variables. Frequencies were also performed for categorical variables, presented in Appendix 2. Descriptive statistics are presented in Table 12. These are z-scores, produced in order to enable the creation of standardised beta for each predictor, given that multiple imputation does not normally produce one.

Table 12: Descriptive statistics for the DVs

<table>
<thead>
<tr>
<th>Descriptive Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>DV</td>
</tr>
<tr>
<td>Fidelity</td>
</tr>
<tr>
<td>Dosage</td>
</tr>
<tr>
<td>Quality</td>
</tr>
</tbody>
</table>

It can be seen that the fidelity and quality teacher scores are negatively skewed. A body of evidence in the literature suggests that non-normal distribution of scores is common in psychological research (e.g. Von-Hippel, 2012; Humphrey et al., 2011). With larger sample sizes the problems related to non-normal distribution are thought to be relatively minor (Pallant, 2013). Zero-order, partial and part correlations were obtained prior to conducting the multiple regression analyses to ascertain the strength of relationship between the predictor variables and the dependent variables. Bivariate correlations are not possible when using imputed data in SPSS; therefore, zero-order, partial and part correlations were obtained as part of the larger regression analysis. The results of the three separate correlation analyses are detailed in Tables 13, 14 and 15. To determine the strength of the relationships between the predictor variables and the DVs, Cohen (1988) suggests the following guidelines.

- Small $r = .10$ to $.29$
- Medium $r = .30$ to $.49$
- Large $r = .50$ to $1.0$
This value indicates the strength of the relationship between two variables (0 equals no relationship, 1 = a perfect positive correlation).

**Table 13: Correlations for predictor variables and fidelity**

<table>
<thead>
<tr>
<th>Predictors</th>
<th>Observed fidelity scores</th>
<th>Correlations</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Zero-order</td>
<td>Partial</td>
</tr>
<tr>
<td>Years Qualified</td>
<td>-.002</td>
<td>.078</td>
</tr>
<tr>
<td>Gender</td>
<td>-.098</td>
<td>-.110</td>
</tr>
<tr>
<td>Age</td>
<td>-.017</td>
<td>-.036</td>
</tr>
<tr>
<td>SEL Experience</td>
<td>-.045</td>
<td>-.062</td>
</tr>
<tr>
<td>ESES</td>
<td>.030</td>
<td>.062</td>
</tr>
<tr>
<td>Student Engagement</td>
<td>-.021</td>
<td>-.079</td>
</tr>
<tr>
<td>Instructional Strategies</td>
<td>-.007</td>
<td>.026</td>
</tr>
<tr>
<td>Class Management</td>
<td>.079</td>
<td>.114</td>
</tr>
<tr>
<td>Comfort</td>
<td>.005</td>
<td>-.009</td>
</tr>
<tr>
<td>Commitment</td>
<td>.141</td>
<td>.149</td>
</tr>
<tr>
<td>Culture</td>
<td>.014</td>
<td>-.029</td>
</tr>
<tr>
<td>Depersonalisation</td>
<td>-.067</td>
<td>-.095</td>
</tr>
<tr>
<td>Accomplishment</td>
<td>-.009</td>
<td>-.085</td>
</tr>
<tr>
<td>Exhaustion</td>
<td>-.090</td>
<td>-.043</td>
</tr>
</tbody>
</table>

The strongest relationship was found between the observed fidelity scores and the commitment subscale, with a small strength correlation. A number of variables did not have a significant correlation with the DV (years qualified, gender, age, SEL experience, ESES, Student engagement, instructional strategies, classroom management, comfort, culture, depersonalisation, reduced personal accomplishment, and exhaustion). However, as detailed in the literature review, there was a theoretical justification for the inclusion of these variables in the regression model.
### Table 14: Correlations for predictor variables and dosage

<table>
<thead>
<tr>
<th>Predictors</th>
<th>Dosage scores</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Zero-order</td>
<td>Partial</td>
<td>Part</td>
</tr>
<tr>
<td>Years Qualified</td>
<td>-.046</td>
<td>-.024</td>
<td>-.019</td>
</tr>
<tr>
<td>Gender</td>
<td>.193</td>
<td>.225</td>
<td>.196</td>
</tr>
<tr>
<td>Age</td>
<td>-.092</td>
<td>-.012</td>
<td>-.011</td>
</tr>
<tr>
<td>SEL Experience</td>
<td>-.122</td>
<td>-.011</td>
<td>-.012</td>
</tr>
<tr>
<td>ESES</td>
<td>-.142</td>
<td>-.148</td>
<td>-.126</td>
</tr>
<tr>
<td>Student Engagement</td>
<td>-.042</td>
<td>.041</td>
<td>.036</td>
</tr>
<tr>
<td>Instructional Strategies</td>
<td>-.107</td>
<td>-.084</td>
<td>-.072</td>
</tr>
<tr>
<td>Class Management</td>
<td>-.058</td>
<td>.034</td>
<td>.028</td>
</tr>
<tr>
<td>Comfort</td>
<td>-.112</td>
<td>-.029</td>
<td>-.023</td>
</tr>
<tr>
<td>Commitment</td>
<td>.057</td>
<td>-.005</td>
<td>-.004</td>
</tr>
<tr>
<td>Culture</td>
<td>-.066</td>
<td>-.027</td>
<td>-.023</td>
</tr>
<tr>
<td>Depersonalisation</td>
<td>-.243</td>
<td>-.199</td>
<td>-.173</td>
</tr>
<tr>
<td>Accomplishment</td>
<td>.097</td>
<td>-.065</td>
<td>-.057</td>
</tr>
<tr>
<td>Exhaustion</td>
<td>-.226</td>
<td>-.221</td>
<td>-.193</td>
</tr>
</tbody>
</table>

In this table there were a number of predictor variables that had small strength correlations with the DV. The strongest relationship was found between the dosage scores and the depersonalisation subscale, which demonstrated a negative relationship. This was followed by emotional exhaustion, ESES, experience of SEL, comfort, and instructional strategies. Gender demonstrated a small positive correlation with the DV.
Table 15: Correlations for predictor variables and quality

<table>
<thead>
<tr>
<th>Predictors</th>
<th>Observed quality scores</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Zero-order</td>
</tr>
<tr>
<td>Years Qualified</td>
<td>-.102</td>
</tr>
<tr>
<td>Gender</td>
<td>.040</td>
</tr>
<tr>
<td>Age</td>
<td>-.202</td>
</tr>
<tr>
<td>SEL Experience</td>
<td>-.074</td>
</tr>
<tr>
<td>ESES</td>
<td>.052</td>
</tr>
<tr>
<td>Student Engagement</td>
<td>.122</td>
</tr>
<tr>
<td>Instructional Strategies</td>
<td>.175</td>
</tr>
<tr>
<td>Class Management</td>
<td>.162</td>
</tr>
<tr>
<td>Comfort</td>
<td>.084</td>
</tr>
<tr>
<td>Commitment</td>
<td>.205</td>
</tr>
<tr>
<td>Culture</td>
<td>.161</td>
</tr>
<tr>
<td>Depersonalisation</td>
<td>-.070</td>
</tr>
<tr>
<td>Accomplishment</td>
<td>.053</td>
</tr>
<tr>
<td>Exhaustion</td>
<td>-.052</td>
</tr>
</tbody>
</table>

In this final set of correlations the strongest relationship was found between the observed quality scores and the commitment subscale, followed by instructional strategies, classroom management, culture, and student engagement. A small, negative correlation was also found between observed quality scores and age, followed by number of years qualified.

4.3 Fidelity analysis

4.3.1 Assumptions for multiple regression: fidelity

The dataset for teachers was scrutinised for the assumptions of multiple regression (as discussed in section 3.8.2) and the results are presented respectively for the different DVs in Tables 16, 18 and 20.
Table 16: Requirements of analysis for DV: Fidelity

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Met?</th>
<th>Value</th>
<th>Observation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Categorical or continuous variables</td>
<td>✔</td>
<td>See table 8</td>
<td>All of the predictor variables and the DV are either categorical or continuous</td>
</tr>
<tr>
<td>Non zero variance in predictors</td>
<td>✔</td>
<td>See table 8</td>
<td>All continuous predictor variables demonstrate non zero variance</td>
</tr>
<tr>
<td>Multicollinearity (not perfect)</td>
<td>✔</td>
<td>VIF range = 1.060-4.471</td>
<td>Tolerance and variance inflation factor (VIF) are within acceptable range</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Tolerance range = .224-.949</td>
<td>(Rogerson, 2001; Tabachnick &amp; Fidell, 2013).</td>
</tr>
<tr>
<td>Homoscedasticity</td>
<td>✗</td>
<td>See residuals scatterplots for</td>
<td>Residuals scatterplots are not normally distributed.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>imputation files (Appendix 6)</td>
<td></td>
</tr>
<tr>
<td>Independent errors</td>
<td>✔</td>
<td>Durbin Watson value = 1.957</td>
<td>Durbin Watson range should lie between 0 – 4. The optimum value is considered to be 2. Thus a value that is very close to 2 is satisfactory.</td>
</tr>
<tr>
<td>Normally distributed errors</td>
<td>✔</td>
<td>Std. Residual mean = 0, Std.</td>
<td>Std. residual should be as close to 0 as possible. A sample of histograms is presented in Appendix (6)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>deviation = .961</td>
<td></td>
</tr>
<tr>
<td>Linearity</td>
<td>✔</td>
<td>See Appendix 6</td>
<td>Sample of normal P-P plots of regression-standardised residuals demonstrates a linear trend.</td>
</tr>
</tbody>
</table>

Outliers
The presence of outliers was explored by firstly examining the unimputed dataset’s
scatterplots and then of the regression standardised residuals and standardised predicted values. There were no extreme outliers present in the dataset. This was verified by inspecting the Mahalanobis distances in the data file.

4.3.2 Multiple regression analysis of fidelity

In order to assess the influence of key variables identified in the literature review (detailed in section 3.6), on implementation variability of the PATHS curriculum, a series of multiple regression analyses were conducted in SPSS on 14 predictor variables. This was conducted using a two-step entry, where specific interaction variables were entered in the second block based on the justifications presented in the literature review.

Hierarchical multiple regression was used to assess the ability of two control measures (in the first block: years qualified, gender, age, SEL experience, ESES, student engagement, instructional strategies, classroom management, comfort, commitment, culture, depersonalisation, reduced personal accomplishment and emotional exhaustion) to predict variability in implementation fidelity. In the second block a series of interaction terms were added (Table 17) to assess the additional influence of predictor variable interactions whilst controlling for those in the first block. The first block of predictors was marginally non-significant F(14, 168) = 2.154, p > .05, but explained 9% of the variance (Adjusted R^2 = 0.09) in implementation fidelity. Marginally non-significant trends are considered to be p < .10. From the 14 predictors entered simultaneously into the model, no individual predictors were statistically significant. After the entry of the interaction terms in block 2 the total variance explained by the model decreased to 7% (adjusted R^2 = 0.07), which suggests that the interaction terms in block 2 did not significantly contribute to the model (R Square change = 0.03). Coefficients are presented in Table 17 below.
### Table 17: Regression analysis for fidelity

<table>
<thead>
<tr>
<th>DV: Fidelity</th>
<th>Step 1: Control Variables</th>
<th>Step 2: Interactions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Standardised β</td>
<td>SE (B)</td>
</tr>
<tr>
<td>Constant</td>
<td></td>
<td>-0.007</td>
</tr>
<tr>
<td>Years Qualified</td>
<td></td>
<td>0.136</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td>-0.108</td>
</tr>
<tr>
<td>Age in years</td>
<td></td>
<td>-0.057</td>
</tr>
<tr>
<td>Experience of implementing SEL</td>
<td></td>
<td>-0.074</td>
</tr>
<tr>
<td>ESES</td>
<td></td>
<td>0.083</td>
</tr>
<tr>
<td>SE: Student Engagement</td>
<td></td>
<td>-0.124</td>
</tr>
<tr>
<td>SE: Instructional Strategies</td>
<td></td>
<td>0.041</td>
</tr>
<tr>
<td>SE: Classroom Management</td>
<td></td>
<td>0.123</td>
</tr>
<tr>
<td>P/A: Comfort</td>
<td></td>
<td>-0.009</td>
</tr>
<tr>
<td>P/A: Commitment</td>
<td></td>
<td>0.190</td>
</tr>
<tr>
<td>P/A: Culture</td>
<td></td>
<td>-0.054</td>
</tr>
<tr>
<td>BO: Depersonalisation</td>
<td></td>
<td>-0.119</td>
</tr>
<tr>
<td>BO: Reduced Personal Accomplishment</td>
<td></td>
<td>-0.104</td>
</tr>
<tr>
<td>BO: Emotional Exhaustion</td>
<td></td>
<td>-0.048</td>
</tr>
<tr>
<td>Classroom Management x Depersonalisation</td>
<td></td>
<td>0.029</td>
</tr>
<tr>
<td>Classroom Management x Reduced Personal Accomplishment</td>
<td></td>
<td>0.100</td>
</tr>
<tr>
<td>Classroom Management x Emotional Exhaustion</td>
<td></td>
<td>0.057</td>
</tr>
<tr>
<td>Classroom Management x ESES</td>
<td></td>
<td>0.024</td>
</tr>
<tr>
<td>Student Engagement x Depersonalisation</td>
<td></td>
<td>-0.012</td>
</tr>
<tr>
<td>Student Engagement x Reduced Personal Accomplishment</td>
<td></td>
<td>-0.033</td>
</tr>
<tr>
<td>Student Engagement x Emotional Exhaustion</td>
<td></td>
<td>-0.011</td>
</tr>
<tr>
<td>Student Engagement x ESES</td>
<td></td>
<td>-0.077</td>
</tr>
<tr>
<td>Instructional Strategies x Depersonalisation</td>
<td></td>
<td>-0.064</td>
</tr>
<tr>
<td>Instructional Strategies x Reduced Personal Accomplishment</td>
<td></td>
<td>0.014</td>
</tr>
<tr>
<td>Instructional Strategies x Emotional Exhaustion</td>
<td></td>
<td>0.069</td>
</tr>
<tr>
<td>Instructional Strategies x ESES</td>
<td></td>
<td>0.049</td>
</tr>
<tr>
<td>ESES x Depersonalisation</td>
<td></td>
<td>0.082</td>
</tr>
<tr>
<td>ESES x Emotional Exhaustion</td>
<td></td>
<td>-0.004</td>
</tr>
<tr>
<td>ESES x Emotional Exhaustion</td>
<td></td>
<td>0.032</td>
</tr>
</tbody>
</table>

**F Value for Model: 2.154**  
**Adjusted R²: 0.09**
4.4 Dosage analysis

4.4.1 Assumptions for multiple regression: dosage

The next set of assumptions, presented in Table 18, relate to the dosage DV.

Table 18: Requirements of analysis for DV: Dosage

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Met?</th>
<th>Value</th>
<th>Observation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Categorical or continuous variables</td>
<td>✓</td>
<td>See table 8</td>
<td>All of the predictor variables and the DV are either categorical or continuous</td>
</tr>
<tr>
<td>Non zero variance in predictors</td>
<td>✓</td>
<td>See table 8</td>
<td>All continuous predictor variables demonstrate non zero variance</td>
</tr>
<tr>
<td>Multicollinearity (not perfect)</td>
<td>✓</td>
<td>VIF range = 1.060-4.471 Tolerance range = .224-.943</td>
<td>Tolerance and variance inflation factor (VIF) are within acceptable range (Rogerson, 2001; Tabachnick &amp; Fidell, 2013).</td>
</tr>
<tr>
<td>Homoscedasticity</td>
<td>✓</td>
<td>See residuals scatterplots for imputation files (Appendix 7)</td>
<td>Residuals scatterplots are normally distributed.</td>
</tr>
<tr>
<td>Independent errors</td>
<td>✓</td>
<td>Durbin Watson value = 2.086</td>
<td>Durbin Watson range should lie between 0 – 4. The optimum value is considered to be 2. Thus a value that is very close to 2 is satisfactory.</td>
</tr>
<tr>
<td>Normally distributed errors</td>
<td>✓</td>
<td>Std. Residual mean = 0, Std. deviation = .961</td>
<td>Std. residual should be as close to 0 as possible. A sample of histograms is presented in Appendix (7)</td>
</tr>
<tr>
<td>Linearity</td>
<td>✓</td>
<td>See Appendix 7</td>
<td>Sample of normal P-P plots of regression-standardised residuals demonstrates a linear trend.</td>
</tr>
</tbody>
</table>
Outliers
The presence of outliers was explored by primarily examining the unimputed dataset’s scatterplots and then of the regression standardised residuals and standardised predicted values. There were no cases present in the dataset exceeding plus or minus 3.29 standard deviations. This was the corroborated by inspecting the Mahalanobis distances in the data file. There were also no extreme outliers.

4.4.2 Multiple regression analysis of dosage
Hierarchical multiple regression was used to assess the ability of two control measures (in the first block: years qualified, gender, age, SEL experience, ESES, student engagement, instructional strategies, classroom management, comfort, commitment, culture, depersonalisation, reduced personal accomplishment and emotional exhaustion) to predict variability in implementation dosage. In the second block a series of interaction variables were added (Table 19) to assess the additional influence of predictor variable interactions whilst controlling for those in the first block. The model was statistically significant, $F(14, 168) = 4.843$ p < .01, explaining 21.7% of the variance (Adjusted $R^2 = .217$). From the 14 predictors entered simultaneously into the model, no individual predictors were statistically significant. However, a marginally non-significant trend was identified in relation to gender (std. beta = .215); females are more likely to implement at higher dosage. After the entry of the interaction terms in block 2 the total variance explained by the model remains at 21% (adjusted $R^2 = 0.211$), which suggests that the interaction terms in block 2 did not significantly contribute to the model (R Square change = 0.02). Coefficients and significance values for individual predictors are presented in Table 19.
### Table 19: Regression analysis for dosage

<table>
<thead>
<tr>
<th>DV: Dosage</th>
<th>Step 1: Control Variables</th>
<th>Step 2: Interactions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Standardised β</td>
<td>SE (B)</td>
</tr>
<tr>
<td>Constant</td>
<td>-.029</td>
<td>.091</td>
</tr>
<tr>
<td>Years Qualified</td>
<td>-.037</td>
<td>.190</td>
</tr>
<tr>
<td>Gender</td>
<td>.215</td>
<td>.113</td>
</tr>
<tr>
<td>Age in years</td>
<td>.080</td>
<td>.197</td>
</tr>
<tr>
<td>Experience of implementing SEL</td>
<td>.014</td>
<td>.133</td>
</tr>
<tr>
<td>SE: Student Engagement</td>
<td>-.187</td>
<td>.153</td>
</tr>
<tr>
<td>SE: Instructional Strategies</td>
<td>-.134</td>
<td>.175</td>
</tr>
<tr>
<td>SE: Classroom Management</td>
<td>.034</td>
<td>.089</td>
</tr>
<tr>
<td>P/A: Comfort</td>
<td>-.033</td>
<td>.151</td>
</tr>
<tr>
<td>P/A: Commitment</td>
<td>-.004</td>
<td>.139</td>
</tr>
<tr>
<td>P/A: Culture</td>
<td>-.032</td>
<td>.119</td>
</tr>
<tr>
<td>BO: Depersonalisation</td>
<td>-.228</td>
<td>.156</td>
</tr>
<tr>
<td>BO: Reduced Personal Accomplishment</td>
<td>-.078</td>
<td>.177</td>
</tr>
<tr>
<td>BO: Emotional Exhaustion</td>
<td>-.241</td>
<td>.183</td>
</tr>
<tr>
<td>Classroom Management x Depersonalisation</td>
<td>.095</td>
<td>.229</td>
</tr>
<tr>
<td>Classroom Management x Reduced Personal Accomplishment</td>
<td>.036</td>
<td>.246</td>
</tr>
<tr>
<td>Classroom Management x Emotional Exhaustion</td>
<td>.041</td>
<td>.250</td>
</tr>
<tr>
<td>Student Engagement x Depersonalisation</td>
<td>-.110</td>
<td>.186</td>
</tr>
<tr>
<td>Student Engagement x Reduced Personal Accomplishment</td>
<td>-.011</td>
<td>.215</td>
</tr>
<tr>
<td>Student Engagement x Emotional Exhaustion</td>
<td>-.041</td>
<td>.171</td>
</tr>
<tr>
<td>Student Engagement x ESES</td>
<td>.059</td>
<td>.171</td>
</tr>
<tr>
<td>Instructional Strategies x Depersonalisation</td>
<td>-.037</td>
<td>.216</td>
</tr>
<tr>
<td>Instructional Strategies x Reduced Personal Accomplishment</td>
<td>-.013</td>
<td>.228</td>
</tr>
<tr>
<td>Instructional Strategies x Emotional Exhaustion</td>
<td>.092</td>
<td>.184</td>
</tr>
<tr>
<td>Instructional Strategies x ESES</td>
<td>.110</td>
<td>.151</td>
</tr>
<tr>
<td>ESES x Depersonalisation</td>
<td>-.004</td>
<td>.148</td>
</tr>
<tr>
<td>ESES x Reduced Personal Accomplishment</td>
<td>.050</td>
<td>.167</td>
</tr>
<tr>
<td>ESES x Emotional Exhaustion</td>
<td>.099</td>
<td>.129</td>
</tr>
</tbody>
</table>

**F Value for Model**: 4.843

**Adjusted $R^2$**: 0.21
4.5 Quality analysis

4.5.1 Assumptions for multiple regression: quality

The final set of assumptions required for multiple regression, presented in Table 20, relate to the quality DV.

Table 20: Requirements of analysis for DV: Quality

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Met?</th>
<th>Value</th>
<th>Observation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Categorical or continuous variables</td>
<td>✓</td>
<td>See table 8</td>
<td>All of the predictor variables and the DV are either categorical or continuous</td>
</tr>
<tr>
<td>Non zero variance in predictors</td>
<td>✓</td>
<td>See table 8</td>
<td>All continuous predictor variables demonstrate non zero variance</td>
</tr>
<tr>
<td>Multicollinearity (not perfect)</td>
<td>✓</td>
<td>VIF range = 1.060-4.471</td>
<td>Tolerance and variance inflation factor (VIF) are within acceptable range</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Tolerance range = 224-.943</td>
<td>(Rogerson, 2001; Tabachnick &amp; Fidell, 2013).</td>
</tr>
<tr>
<td>Homoscedasticity</td>
<td>X</td>
<td>See residuals scatterplots for imputation files (Appendix 8)</td>
<td>Residuals scatterplots are not normally distributed.</td>
</tr>
<tr>
<td>Independent errors</td>
<td>✓</td>
<td>Durbin Watson value = 2.142</td>
<td>Durbin Watson range should lie between 0 – 4. The optimum value is considered to be 2. Thus a value that is very close to 2 is satisfactory.</td>
</tr>
<tr>
<td>Normally distributed errors</td>
<td>✓</td>
<td>Std. Residual mean = 0, Std. deviation = .639</td>
<td>Std. residual should be as close to 0 as possible. A sample of histograms is presented in Appendix (8)</td>
</tr>
<tr>
<td>Linearity</td>
<td>✓</td>
<td>See Appendix 8</td>
<td>Sample of normal P-P plots of regression-standardised residuals</td>
</tr>
</tbody>
</table>
Outliers
The presence of outliers was explored by primarily examining the unimputed dataset’s scatterplots and then of the regression standardised residuals and standardised predicted values. There were no cases present in the dataset exceeding plus or minus 3.29 standard deviations. This was corroborated by inspecting the Mahalanobis distances in the data file. There were also no extreme outliers.

4.5.2 Multiple regression analysis of quality
Hierarchical multiple regression was used to assess the ability of two control measures (in the first block: years qualified, gender, age, SEL experience, ESES, student engagement, instructional strategies, classroom management, comfort, commitment, culture, depersonalisation, reduced personal accomplishment and emotional exhaustion) to predict variability in implementation quality. In the second block a series of interaction variables were added (Table 21) to assess the additional influence of predictor variable interactions whilst controlling for those in the first block. The model was statistically significant, $F(14, 168) = 3.487 \ p < .01$, explaining 15.3% of the variance (Adjusted $R^2 = .153$). From the 14 predictors entered simultaneously into the model, no individual predictors were statistically significant. However, a marginally non-significant trend was identified in relation to classroom management (std. beta = .176); greater classroom management is associated with higher delivery quality. After the entry of the interaction terms in block 2 the total variance explained by the model decreased to 14% (adjusted $R^2 = 0.143$), which, as with the other DVs, suggests that the interaction terms in block 2 did not significantly contribute to the model (R Square change = 0.03). Coefficients and significant values for individual predictors are presented in Table 21.
### Table 21: Regression analysis for quality

<table>
<thead>
<tr>
<th>DV: Quality</th>
<th>Step 1: Control Variables</th>
<th>Step 2: Interactions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Standardised β</td>
<td>SE (B)</td>
</tr>
<tr>
<td>Constant</td>
<td>-0.05</td>
<td>0.09</td>
</tr>
<tr>
<td>Years Qualified</td>
<td>0.23</td>
<td>0.31</td>
</tr>
<tr>
<td>Gender</td>
<td>0.04</td>
<td>0.11</td>
</tr>
<tr>
<td>Age in years</td>
<td>-0.84</td>
<td>0.33</td>
</tr>
<tr>
<td>Experience of implementing SEL</td>
<td>-0.06</td>
<td>0.13</td>
</tr>
<tr>
<td>ESES</td>
<td>-0.06</td>
<td>0.16</td>
</tr>
<tr>
<td>SE: Student Engagement</td>
<td>-0.02</td>
<td>0.11</td>
</tr>
<tr>
<td>SE: Instructional Strategies</td>
<td>0.76</td>
<td>0.13</td>
</tr>
<tr>
<td>SE: Classroom Management</td>
<td>0.76</td>
<td>0.08</td>
</tr>
<tr>
<td>P/A: Commitment</td>
<td>0.09</td>
<td>0.34</td>
</tr>
<tr>
<td>P/A: Culture</td>
<td>0.06</td>
<td>0.13</td>
</tr>
<tr>
<td>BO: Depersonalisation</td>
<td>-0.06</td>
<td>0.14</td>
</tr>
<tr>
<td>BO: Reduced Personal Accomplishment</td>
<td>0.04</td>
<td>0.17</td>
</tr>
<tr>
<td>BO: Emotional Exhaustion</td>
<td>-0.03</td>
<td>0.11</td>
</tr>
<tr>
<td>Classroom Management x Depersonalisation</td>
<td>0.03</td>
<td>0.228</td>
</tr>
<tr>
<td>Classroom Management x Reduced Personal Accomplishment</td>
<td>0.047</td>
<td>0.299</td>
</tr>
<tr>
<td>Classroom Management x Emotional Exhaustion</td>
<td>-0.02</td>
<td>0.233</td>
</tr>
<tr>
<td>Classroom Management x ESES</td>
<td>0.006</td>
<td>0.235</td>
</tr>
<tr>
<td>Student Engagement x Depersonalisation</td>
<td>-0.039</td>
<td>0.211</td>
</tr>
<tr>
<td>Student Engagement x Reduced Personal Accomplishment</td>
<td>-0.029</td>
<td>0.216</td>
</tr>
<tr>
<td>Student Engagement x Emotional Exhaustion</td>
<td>-0.054</td>
<td>0.162</td>
</tr>
<tr>
<td>Student Engagement x ESES</td>
<td>0.002</td>
<td>0.172</td>
</tr>
<tr>
<td>Instructional Strategies x Depersonalisation</td>
<td>-0.073</td>
<td>0.216</td>
</tr>
<tr>
<td>Instructional Strategies x Reduced Personal Accomplishment</td>
<td>0.037</td>
<td>0.233</td>
</tr>
<tr>
<td>Instructional Strategies x Emotional Exhaustion</td>
<td>0.051</td>
<td>0.186</td>
</tr>
<tr>
<td>Instructional Strategies x ESES</td>
<td>-0.053</td>
<td>0.147</td>
</tr>
<tr>
<td>ESES x Depersonalisation</td>
<td>0.045</td>
<td>0.148</td>
</tr>
<tr>
<td>ESES x Reduced Personal Accomplishment</td>
<td>-0.030</td>
<td>0.135</td>
</tr>
<tr>
<td>ESES x Emotional Exhaustion</td>
<td>0.040</td>
<td>0.135</td>
</tr>
<tr>
<td><strong>F Value for Model</strong></td>
<td><strong>3.487</strong></td>
<td></td>
</tr>
<tr>
<td><strong>R2</strong></td>
<td><strong>0.15</strong></td>
<td></td>
</tr>
<tr>
<td><strong>p</strong></td>
<td><strong>0.14</strong></td>
<td></td>
</tr>
</tbody>
</table>
4.6 Summary statements

This summary provides an overview of the quantitative results detailed in this chapter. Predictor variables may be viewed as indicating influence on implementation variability for the respective DVs.

Fidelity:
- 14 predictor variables were entered into the model using hierarchical multiple regression, with fidelity mean score as the outcome variable.
- The model was marginally non-significant and explained 9% of the variance, with no individual predictors contributing significantly to the model.

Dosage:
- 14 predictor variables were entered into the model using hierarchical multiple regression, with predicted dosage score as the outcome variable.
- The model was statistically significant and explained 21% of the variance, with a marginally non-significant trend identified in relation to gender; females are more likely to implement at higher dosage.

Quality:
- 14 predictor variables were entered into the model using hierarchical multiple regression, with quality mean score as the outcome variable.
- The model was statistically significant and explained 15% of the variance, with a marginally non-significant trend identified in relation to classroom management; greater classroom management is associated with higher delivery quality.

Interactions:
- A series of 15 interaction terms were added to the second blocks of all hierarchical regression analyses with fidelity mean score, predicted dosage score, and quality mean score as the respective outcome variables.
- None of the models were identified as having any increase in variance explained as a result of the added interaction terms.
Chapter 5: Qualitative Results

5.1 Introduction to Research Question 2

In this chapter the qualitative results are presented and explored. The main qualitative research question is as follows:

RQ2: What are the implementers’ perspectives regarding the individual level barriers and facilitators associated with implementation variability in the PATHS Social and Emotional Learning programme?

Interviews conducted during the evaluation of the PATHS to Success trial with implementers were explored. Interviews with twelve implementers were analysed for use in this study, using maximum variation sampling. These implementers were chosen based on their range of characteristics that maximise the diversity relevant to the research question, allowing for a distinctive insight and a well-rounded perspective (for further section details see section 3.5.2). As detailed in section 3.8.4, the chosen analytical method for this study was thematic analysis. Following Braun and Clarke’s (2013) model, the interview transcripts were analysed in six discrete stages. Further to scrutinising the data, five main themes were identified, each containing a series of sub-themes. A map of the main themes is detailed in Figure 8 with a full thematic sub map detailed descriptively in the sections that follow. Each of these themes are explored in sub-sections detailing implementers perspectives on the various barriers and facilitators they perceived to have had an influence on implementation variability.

Each of the primary themes is explored in the following sections, detailing implementers’ perspectives on individual level factors that affect variability in implementation quality. An overview of the participants used in the qualitative strand is detailed in section 3.5.2; the coded school number and year group also differentiates the participants. To ensure that the findings are as lucid as possible, dialogue from the implementers is presented in italics.
**Figure 8:** Thematic map
5.2 Programme experiences

This initial theme relates to the experience and perceptions that implementers had in delivering SEL programmes, as well as their experience of implementing PATHS. There were five subthemes, which in the interests of readability are not presented as discrete subsections, but rather attended to in turn in the running text. These subthemes were as follows:

- SEL programme experience
- Teaching experience
- Perceptions of coaching
- Training
- Resources

What was immediately apparent was that teachers’ experience with SEL varied greatly with some teachers having a great deal of experience with other interventions:

...I suppose because of being at the school for quite a long time and we've been doing circle time activities for probably over ten years so there's a lot not necessarily written down and not on any plans but they're in my head so when I read something in PATHS I can use this at circle time in slightly different but it’s going to have a better impact for the children and it’s on the same theme (Participant 1, School 1, Year 5).

This identifies the issue that prior experience of implementing SEL interventions created variability in the way in which teachers felt towards the newer PATHS programme. Experience with a prior intervention could potentially undermine the teacher’s will to implement the programme or to make adaptations that are not necessarily helpful. Conversely, teachers who had little to no experience of SEL regarded the introduction of a new programme with a certain level of optimism “we didn’t have curriculum in any way, shape or form. So it was just sort of going on what you’d done in previous years and stuff so it was really, really ad hoc. It’s nice to have a programme in place now that we can get our teeth into” (Participant 9, School 18, Year 6).
The length of time that teachers’ had spent teaching and developing their skills within their profession impacted on their confidence to implement effectively:

_‘I’d say I’m quite confident with it and it wasn’t too much of an issue I think maybe just with being a bit and maybe if I was a newer teacher I’d have panicked at the thought they’ve said this and I wasn’t expecting that and there’s nothing that says that, but I think if you know your children erm sort of give it a go and make sure they understand y’know be open, I call it PATHS lessons. I’m more confident in dealing with it, as I’ve got the experience to kind of, erm, back it up’_ (Participant 12, School 14, Year 3).

Teachers that were new to the profession expressed a degree of trepidation regarding the level of success that they would have delivering the programme. Teachers within the first couple of years of teaching, in particular, expressed fear in implementing the programme incorrectly: e.g., “it may look a bit scary at first and I’ve got to admit I was thinking, ‘oh my word’ what is this? I’m an NQT, erm, but I think once you implement it for a while and you see the difference in your children I think you realise how important it is and how good it is so I’d say just stick with it” (Participant 3, School 26, Year 4).

The inclusion of a coaching model with programme influenced the way that teacher’s felt about overcoming some of the challenges, highlighted above, to the programme in a number of different ways:

_‘Yes, definitely, because I think it is good to have somewhere to go if you are a bit worried and good to have someone to come in to make sure you are not doing it wrong, because that was the big thing with me because I was thinking if Amanda came in and I was doing it all wrong she would have been like “err you are not doing it right”, so it was nice to have that back up support’_ (Participant 7, School 1, Year 4).

In a similar vein, teachers like to know that support was available to aid the implementation of the intervention, whenever it was needed “It’s nice to know that you can contact Sarah if you need to […] she’s been in a few times to see us and it’s lovely to know that there’s somebody there if you need to […] it’s nice to know the support is there if you need it” (Participant 5, School 17, Year 6). Thus, the confidence that
support was on hand when required was readily welcomed. Coaches with a positive attitude towards the programme appeared to influence implementation quality, with attribution also given to the principle leadership’s perception towards the value of the coach:

Brilliant, yes really, really good. Because I know Dan (Head Teacher, PATHS Coordinator) and Margaret think Adam is great. As do all the teachers because I think initially there was fear a little bit about “oh it’s someone else coming in and observing us”. And yet now I think what has happened is people have realised you’re not actually really judging us as individuals you’re here to see the programme. And all the inset and stuff he’s done, you can see from when we saw you at training and him you are really passionate about it and you can really tell you believe in what you’re doing. And so that rubs off on us I think and makes us more enthusiastic and stuff (Participant 9, School 18, Year 6).

Other teachers viewed the role of the coach as more of a custodian of the programme, seemingly exerting an influence on programme dosage “I think the fact he comes in on a regular basis keeps it, erm, to the front of my mind. I try to keep up with it more often as I know he’ll be coming in to check up on me” (Participant 10, School 36, Year 5). Teacher’s engagement with the coaching model seemed to be regulated by the level of teacher skill and comfort in delivering SEL, “to be honest I have not needed to use her that often, but she has come in and modelled a lesson for me, which was nice and it was nice to know that I wasn’t doing things wrong, you know when she comes in and gives you feedback, it has been nice” (Participant 5, School 17, Year 6), and their perception of being able to call on the coaches for additional resources and email support “She has been getting our resources that we didn't have, any that we kind of request she tries to get it and she gives us a little bit extra, I know I have got her phone number in my bag, if I am thinking I am not too sure about that, my questions will be answered” (Participant 11, School 43, Year 6).

In addition to the support provided by the coaching model, the level of training received, both at the University of Manchester and in-house was generally very well received and appeared to have the effect of raising teacher’s awareness to deliver with high-quality implementation:
Yeah, really useful because I mean you can open a folder but you probably wouldn't have had a clue really. Just things like as a teacher my tendency is to y’know reward say so things like PATHS pupil of the day, that’s something I would be wanting to give for good behaviour, so things like that just having it explained how it’s not necessarily a reward for good behaviour, it sort of boosts self-esteem and things so just things that perhaps you wouldn't have picked up from the folder. It was really helpful (Participant 6, School 14, Year 3).

The above quotation demonstrates how training received explicited the core components of the programme and how to deliver in a way consistent with the developer’s intentions (e.g. how to deliver PATHS pupil of the day). Similarly, teachers’ felt that training at the University helped to clarify some of the details that they were unsure of, as well as reducing teacher stress and anxiety with how to deliver the programme:

...Even though we had heard it through other members of staff and you hear it in conversations in the staff room, there are some really things that actually seem a bit, “what do you mean, comfortable and uncomfortable feelings? And, why do we do this fingers linked time to think and stuff?” So it was really useful to see that. And it was really useful for year six teachers [...] you have got different pressures on you and stuff and so that was really useful. And also it was also really good when you model the lesson in training as well it just made me and Kiera (year 6 teacher) think, “actually, it’s not that difficult”. It’s pretty simple to do and I think that was reassuring as well (Participant 9, School 18, Year 6).

Experiences that teachers had engaging with the programme resources seemed to have a sizeable influence over teachers’ perceptions towards the ease of delivery and whether they would adhere to the programme materials and lessons: e.g., “they're easy to follow, which is good because you know time wise again if we’re having to plan and they're effective in that the children now know in a PATHS lesson what's probably going to happen” (Participant 12, School 14, Year 3). The suggestion that the materials were easy to use and follow is also reflected by the following: “I’m delighted that they’re so well organised because when you’ve got so many other things to do that’s a real bonus.
To be able to you know you couldn’t pick them and just run with them, you’d need to have picked them up before. But they’re manageable in that sense. You can pick them up the night before and read them through and you’re fine and good to go. And the resources are easy to photocopy if you need them” (Participant 5, School 17, Year 6), as well as, “I don’t have to think about it, I can just pick it up and get the resources ready and then I am off.”

Not all teachers supported this notion, however, going so far to suggest that the materials were actually a hindrance to effective implementation: “Yeah I don’t like the Americanism sometimes that really drives me mad. Sometimes it’s a little bit confused as to what I’m supposed to be doing next. You know you’re following you’re thing because last year I had to jump in with the jumpstart lessons” (Participant 10, School 36, Year 5). Comparably, some felt the materials were overly complicated and frustrating to use: “it’s just too wordy and you can’t just look at it at a glance it’s very the sheet’s just full of writing so you and it’s really not bulleted no it’s not bulleted I found it easier better in small sections that I can read y’know all boxes so it just it just feels like it’s a sheet full of things” (Participant 4, School 13, Year 3). Thus, those who felt the materials needed to be more succinct balanced some teachers’ level of contentment in delivering the lessons with ease. Overall, teachers’ experience with SEL both currently and in the past was heavily moderated by variability in programme resources, training and coaching. There was no clear conclusion to be made as to how these factors affected implementation of the PATHS curriculum, although the body of evidence leaned towards the need to have succinct resources, effective training at the University and engagement with the coach once or twice throughout the school terms. Teachers that had greater experience in delivering SEL programmes and greater teaching experience appeared to report higher levels of implementation quality.

5.3 Relationships

Teachers’ relationships with others are a common correlate in the literature in developing high-quality implementation (e.g. Roorda et al., 2011), and so it was anticipated that these would emerge as influential factors in interviews conducted with implementers. There are four sub-themes in this section:

- Relationships with peers
Leadership support
Parents
Participants

Variation in the level of support that teachers received from their peers varied greatly from school to school. Schools in which teachers’ felt they had received effective support from their colleagues refer to a higher level of comfort in delivering with higher implementation quality:

*Actually now I would say that there’s key individuals that are really supportive so Mia (year 5 teacher) in year five and Hazel (year 3/4 teacher) in year three/four they have been really helpful to me, Kiera (year 6 teacher) and Emma (year 3 teacher) sort of the newbies on it. So we just go to them if we’ve got any questions and stuff about how to do it effectively. So really we wouldn’t go to Dan (Head Teacher, PATHS Coordinator) now because he’s never actually done PATHS so we would go to the people who have had a year’s experience of doing it.* (Participant 9, School 18, Year 6)

Teachers also reflected on the importance of having their peers deliver the generalisation activities throughout the school day to maximise on the programme’s effectiveness. As reflected in the literature, generalisation activities (e.g. using the three steps for calming down in the school yard/lunchtime) improve implementation quality and allow students to continuously use the PATHS strategies they have learnt in the prescribed lessons: “[… ] our TAs year three and year four TAs again are pushing it, ‘oh you're pupil of the day’, you know, and making a really big fuss of them. What we started doing with the compliment list is I was copying them and keeping a book so when it comes around they can have a look at them as well” (Participant 3, School 26, Year 4). Conversely, when certain teachers felt that when their peers had a negative view of PATHS it was harder for them to stay positive about the programme: “the teachers who I was sat with had a bit of a negative view towards PATHS and I felt like they were ramming this negative view down my neck and you know, the type of person I am, I am not confrontational, which isn’t necessarily good for you, I didn't stick up for
PATHS, but in my head I was thinking, I don’t agree with you but that was kind of a bit of a negative for me because I was surprised” (Participant 1, School 1, Year 5).

Almost universally, teachers felt that the relationship and quality of communication they had with members of the leadership team had a sizeable impact on how well they felt they could deliver the PATHS curriculum; adequate support appeared to be a key driver of whether the programme could be implemented with appropriate dosage, with barriers and facilitators regarding school leadership reflected in the following:

I think because when we first found out about it I think staff were sceptical, and you know all the tests and stuff we had to do, I think that, ‘I don’t know’, I think it started off on the back foot a little bit. Because were like ‘oh we’ve got to do this, how are we going to find time to do this’. However, I think because there was a few key people that got on board quickly they have really promoted it and because they are so positive about it and it’s quite infectious so I think getting a few of like the key people on board is really important. And I think even though Rob (Head Teacher, PATHS Coordinator) isn’t administering it or doing anything like that, having him as someone who is saying “right I’m coming around to check what is happening in PATHS” or “I just want to speak to a couple of children from each class about PATHS”. I think knowing that he is there as well that has been really, really useful. Because otherwise I think if you are not getting, if it’s not coming down from the top, I don’t know, they need to put it on a higher profile for everyone else to realise how important it is (Participant 8, School 25, Year 4).

These reflections on leadership are also evaluated in the section on school culture (attitudes to SEL, section 5.6). As well as the need for effective ‘top-down’ leadership, the role of the PATHS coordinator in driving effective implementation was also discussed: “Lorraine (PATHS coordinator/Year 4 teacher) is our co-ordinator and she’s been really, really forceful with it, erm, in terms of you know we will do it and to be honest that’s been really good because she’s been all excited about it and that’s made us want to do it more” (Participant 3, School 26, Year 4) and, comparably: “they are very, very interested in it, our Head Teacher thinks it is marvellous and she chooses certain members of staff to do it, who are confident that it can be used in everyday learning”
The notion of enthusiasm for the programme, also reflected in school leadership’s relationship with the coach, is highlighted as an important factor for programme success. However, where there was a lack of consultation between the leadership team and the rest of the teaching staff in taking on the programme teachers’ apathetic attitudes were revealed: “There wasn’t a consultation. I was informed that I was going to be the contact as the PATHS psychologist was at the front door. We had obviously one meeting with the PATHS psychologist which sort of introduced the whole thing and that was all very enthusiastic, but yeah, there wasn’t consultation beforehand that the school was going to do this and what it would involve...” (Participant 10, School 36, Year 5). If teachers of the PATHS curriculum are not given enough time to implement the programme effectively, and in keeping with the developer’s intentions, then logically this will have a large, cascading impact on implementation fidelity, dosage and quality:

I: So presumably somebody else, you don’t do your own timetable?

R: The Head Teacher does the timetable.

I: Ok right. And it’s not scheduled....

R: It’s not negotiable (Participant 10, School 36, Year 5).

Teachers’ relationships with parents are typically problematic in universal SEL interventions; schools often find it challenging to have parents engage with the programme or to effectively communicate the programme intention (see section 6.4). Parental attitudes to the programme took some time to get used to; in some schools parents perceived contact from the school to be negative, and thus was a barrier to overcome:

It is getting better I think at first it’s a case of normally if a teacher was to talk to a parent I think they get the initial idea of my child’s done something wrong, and a lot of them are taken aback by that, and I don’t think it’s intentional I just think it’s what's happened in the past (Participant 3, School 26, Year 4).

It was also found that parental attitudes to the programme and its content could be potentially problematic if parents did not agree with the nature of the content: “I’ll have
to really tread carefully with that. If it mentions drugs you can forget, I won’t ever be able to mention that” (Participant 2, School 36, Year 6). The issue of intrusion by the school was also raised: “Would I like to do it? Not in this area, no. I am not being rude when I say that, but some people might think it is a bit intrusive” (Participant 11, School 43, Year 6). Consequently, these attitudes have an impact on the level of programme generalisation and, potentially, programme quality. However, in schools where parents were receptive to the programme content a generally positive influence could be seen in the classroom environment: “I think what has been nice for involving the parents has been the compliment slips going home. A lot of parents at the parents evening said how lovely they thought that that was [...] it’s made it better in the class” (Participant 12, School 14, Year 3).

A body of evidence in the literature suggests that participants’ attitudes towards an intervention can influence the desire of a teacher to implement; if pupils are receptive to the programme then, in some cases, teachers may feel that the programme is working and have an increased desire to implement it more rigourously and in greater depth:

I think it depends what the content is because they do enjoy discussing things they do enjoy being in a class discussion because I think really it’s one of those lessons where you can really talk about things and you can get a response from them and then it depends on the response obviously how far you want to take it but I think about an hour is long enough for our children, but I can imagine with other classes I could imagine you would get a bit longer out of it and it would go on and on and on. I know one of the other teachers actually said that she spent a whole afternoon doing it and it was all because of the responses that they came out, you know, you wanted to carry on doing it you wanted to talk more which I think is good because that’s showing that they are interested and involved in it (Participant 3, School 26, Year 4).

In classes where teachers concluded that participants were not enjoying the programme, however, seemed to lead to a reduction in the length of time that teachers were willing to implement the PATHS curriculum:
I was really looking forward to this lesson but they didn’t seem to like. Do you know the breathing techniques? When I did that lesson they found it so funny but they find it really alien. I felt that one was a bit of a waste of time. Even though I’ve been trying to say, “take a deep breath” I don’t know how successful that one has been […] so, we haven’t done it as much (Participant 9, School 18, Year 6).

It is evident, therefore, even if teachers are content with the programme content and how it should be delivered, the relationships that they have with others (peers, leadership, parents, and participants) exert an important influence on programme delivery. These relationships could understandably contribute to variability in implementation.

5.4 Self-efficacy
The topic of implementers’ self-efficacy was another strong area to emerge in the context of implementation variability. The ability to believe in oneself as a teacher and to understand one’s emotional state (and the emotional state of others) was likely to have a profound effect on how teachers implemented the PATHS curriculum. There are two sub-themes in this section:

- Teaching self-efficacy
- Emotional self-efficacy

In the interviews there was an immediate disparity in the level of confidence that teachers had in delivering the PATHS programme. Teachers that had been teaching longer seemed to have a greater sense of self-efficacy in handling the demands of the programme and delivering it effectively:

I’d say I’m quite confident with it and it wasn’t too much of an issue. I think maybe just with being a bit more experienced, and maybe if I was a newer teacher I’d have panicked at the thought, “they’ve said this” and “I wasn’t expecting that” and there's nothing that says that, but I think if you know your
children, erm, sort of give it a go and make sure they understand... (Participant 12, School 14, Year 3)

Whereas with a newer teacher:

_Last time he came in modelled a lesson for me, and Kiera (NQT teachers). And I think just knowing that was really good because we didn’t necessarily feel as confident at that point, and the fact that he just got up and did it was great for us because we could see how it is supposed to be done._ (Participant 9, School 18, Year 6)

With experience comes the ability or desire to make adaptations to the programme, which can either be surface (small changes, or flourishes) or deep (large, extensive content and delivery changes) level adaptations. In the preceding literature review, adaptations are something of a quandary for programme developers; small, surface level adaptations can improve the overall implementation quality of an intervention whereas large, deep level adaptations may have an adverse, detrimental effect. The nature of teachers’ self-efficacy seemed to clarify, in part, the rationale as to why they chose to adapt the programme:

_I just don’t feel I can implement it as it is with the wording, and I read I'd just feel like I was reading off it and then they’d get mine switch off after two minutes and then if I'm just reading off something they’d all be everywhere and it has to be short and snappy so we do a lot of right talk to your partner one minute timed and then come back have a little feedback then do it again because they can’t sit for long just listening to something or me talking for too long. I feel like in teaching the lessons the teacher’s talking for too long and the children aren't doing enough so and that's what they say about teaching that the teachers shouldn't be talking for as long as they need to have more talk, so I think that’s something what's lacking._ (Participant 4, School 13, Year 3)

This is a clear indication that teacher’s self-efficacy plays a significant role in how and why programme adaptations are made. Adaptations can be made out of a desire to
maintain classroom management, effectively engage students, and utilise a range of instructional strategies. Another classroom teacher reiterated this:

*I think, erm, some of them are quite prescriptive and I feel like I need to adapt, I have to usually; this one was a bit more difficult. I usually do slides for the feelings and I don’t read through it, and I put it into slides on the interactive white boards because I feel the sheet’s just full of words and it’s just reading it, and the stories it would be better with pictures and books because when you’re reading it, and they just ‘switch off’, because it’s just really long and gets really boring. They just get fed up, and even though you’re asking questions and things it’s difficult to read, I feel the first one I did I felt like I read mainly off it and it just didn’t work for them so I’ve put it into slides and making it a bit like my own.* (Participant 8, School 25, Year 6)

There was also a sense in the interviews that teachers’ reported abilities to handle their own emotional states, and the emotional states of others, played a part in their desire to implement the programme. In essence, greater importance was placed on the delivery of the programme when teachers themselves felt that SEL skills were an important facet of life:

*I always do it. That’s why I think they’re very good at expressing themselves. I mean I do, that is the one thing I do, do. In anything I’m doing I will go deeper, because it’s my nature. Not because I think I should but because naturally it’s a way I respond and therefore I mean you know I think I must do because of the way they respond. I bring that out of them as well, encourage that in them. So they’re not at all worried about talking about feelings, it’s not an alien concept to them basically. And because you saw one child brought in the values, tolerance, you know we’re very well aware the values and concepts around PATHS do have a kind of you know, not similarity, but they do compliment one another really.* (Participant 10, School 36, Year 5)

This is a powerful illustration of how teachers with greater (reported) emotional self-efficacy view the world, and how they feel towards the teaching of emotional skills. It also clearly expresses that the teacher feels that by being more emotionally literate
themselves their pupils benefit from this as a result. This was also well understood by other teachers with higher emotional self-efficacy, who viewed SEL skills as an important stabilising factor in a child’s development: (e.g. “I think it’s just my own emotional experience, helping children to deal with things in the more appropriate way, so to sort of help with behaviour, and also just to sort of create a bit more stability for children who perhaps don’t have the normal home life” (Participant 12, School 14, Year 3).

Teachers, who enjoyed delivering SEL, perhaps in part due to their own emotional competence, reported higher levels of implementation quality:

Yeah, I mean I love it, because I like talking about feelings and you know even going that bit further than PATHS do in many ways, with getting them to express themselves. Yeah so for me I’ve very comfortable teaching that sort of thing. If I was a secondary school teacher I’d love to teach PSHE because I think there’s so many things, that’s just my area I love it, I just love it. I keep it going, erm, whenever I can (Participant 10, School 36, Year 5).

Why teaching and emotional self-efficacy are strong predictors for variability in implementation is likely to stem from the fact that if teachers are able to understand their own emotions and wish to teach these to others (skill), whilst believing in their ability to deliver them (will), creates a potentially potent mix for successful programme implementation. Furthermore, teachers who believe in the importance of delivering SEL programmes will try and find the time to deliver them, even if other ecological factors (e.g. leadership support) do not support them.

5.5 Teacher state

Teacher ‘state’, or, the particular condition that a teacher is in at a specific time, was another area to emerge strongly in the context of implementation variability. It stands to reason that if teachers are feeling under pressure, overloaded, or simply emotionally exhausted then they will be unable to deliver preventative programmes to the best of their ability. There are three subthemes in this section:
- Feeling under pressure
- Feeling overloaded
- Feeling emotionally exhausted

Many of the teachers interviewed felt individually pressured to deliver the PATHS curriculum effectively whilst finding the time, or ‘juggling’ the rest of their responsibilities. In some cases teachers even expressed a sense of guilt if they hadn’t found the time to implement the programme, (e.g. “Well I’ll be honest I feel a lot more comfortable doing it this year because I think last year there was a certain amount of guilt came along with it because I knew I wasn’t able to do as many sessions as I really wanted to” (Participant 5, School 17, Year 6). Similarly, teachers expressed a sense of pressure towards programme implementation even if, seemingly, the school administration supported the programme’s adoption: “So the pressures are that that you don’t unless somebody said ‘right you can have a free day and go and learn more about PATHS’ […] nobody’s going to do that. A supply teacher is a few hundred quid isn’t it?” (Participant 1, School 1, Year 5). The pressures of delivering a programme when there are many other competing priorities did not go unmentioned, particularly for teachers who had exam classes: “If you were doing SATS, and you were all SATS, SATS, SATS, SATS, to try and justify 40 minutes or 30 minutes on something, if you don’t believe in it, I don’t know whether necessarily you would allocate the time […] But what would happen I suppose in the lead up to SATS how much is implemented, that will be the thing” (Participant 9, School 18, Year 6). This is a poignant example of how competing priorities within a school (e.g. examination pressures, festivities) exert pressure on teachers, therefore leading to a reduction in the number of sessions that can be delivered in a given timeframe.

Alike, yet distinctive, is the sense of overload that teachers may experience. Feeling overloaded is an experience that many teachers shared as a collective group in the present study and relates to excessive work, responsibilities, and professional burden. Teachers expressed, to a high degree, an awareness of simply not having enough time: “Well I’ll be honest, the intention was twice a week but the reality of it was very different. Twice a week is nigh on impossible with everything else. I’m sure you’ve heard that from everybody” (Participant 5, School 17, Year 6) and “There isn’t any
room for it, this class is quite a poor ability class and they need as much teaching as possible to get them up to the required standard” (Participant 2, School 36, Year 6). Thus, with a competing priority like literacy or numeracy it is apparent that SEL work is often deferred in favour of other activities. Furthermore, the nature of the activities undertaken in certain types of school (e.g. religious festivals) needs to be taken into consideration. Teachers’ perspectives implied that there wasn’t enough time to take part in these activities and find the time to implement the programme effectively:

For example, one week I was out on a course so that was just ruined, and then one week there was a whole school Diwali festival so that was ruined, and then one week the other teacher who’s got them now was off, so that went to pot so in a ‘normal’ week it’s fine but I’m sure you know, in schools your ‘normal’ weeks don’t come as often as ‘regular’ weeks do. (Participant 12, School 14, Year 3)

Teacher overload seemed to be mitigated in certain cases by the support of the principle leadership in implementing PATHS: “It is tough I think in year six we get, Dan (Head Teacher, PATHS Coordinator) gives us quite a few allowances because we’ve got SATS and stuff so we’re often allowed to do our own thing” (Participant 9, School 18, Year 6). This point is reiterated and explored further in the section on relationships (5.3), and also in teacher’s attitudes to SEL (5.6).

Linked to overload is emotional exhaustion: some teachers simply reported feeling extremely tired and thus not having the energy or emotional resources to invest in delivering the PATHS programme. Some of the teachers noted that when there are so many other things to do in a school day having the energy to prepare the additional resources required for some of the lessons was frustrating: (e.g. “I do find a few constraints when you go to the photocopier you need to do sixty as I say photocopies for one or two lessons and then somebody else is using it and you have to come back by that time you're fed up [...] finding the energy is difficult” and “That is the only issue, it is trying to find a time to fit it in when you have got so much, so many other things going on [...] only so much you can handle” (Participant 1, School 1, Year 5).

Teacher state played a substantial role in the delivery of the PATHS programme, particularly in finding the time to deliver it in line with the developer’s intentions
(dosage). It is evident that teacher burden, as well as finding the energy to deliver it, could understandably contribute to implementation variability.

5.6 Teacher attitudes to SEL

Whilst many of the themes explored in this chapter interlace, it is appropriate to address in this last theme the attitudes and perceptions towards SEL that teachers have and, to what extent, these attitudes influence implementation variability. There are three sub-themes in this section:

- Comfort
- Commitment
- Culture

The first factor that seemed to have the greatest influence on teachers’ comfort in delivering SEL related to the materials and resources that were provided with the PATHS programme:

*I read through it before I teach the lesson, so I have got an idea of what the objectives are and what the aim is, and what they are expecting the kids to give and that is usually the direction I take. But there are times when I don't follow it word for word. The materials are pretty easy to follow* (Participant 7, School 1, Year 4).

Another teacher mirrored this comment; the materials presented (e.g. scripted dialogue, prepared objectives) made it easier to follow and deliver: “*Obviously it is nice that they are kind of set out for you, you don't have to do the thinking kind of thing, but then there is also the thing of you have got to adapt it for your class, but that's fine, I do think they are set out quite well*” (Participant 1, School 1, Year 5). A caveat to this, however, was noted: “*But on the other hand you've got the read the lesson plans so you know it's any good for your class so it is quite time consuming and even getting the folds right turning the page for photocopying and things like that*” (Participant 4, School 13, Year 3). Thus, a degree of preparation is still required to deliver the programme effectively.
A secondary factor that influenced teacher comfort corresponded with the amount of experience that teachers had delivering SEL programmes and the length of time they had spent delivering the materials:

Yeah with me it was pretty comfortable, not with all the teachers, because some don’t have as much experience of circle time (another SEL programme) whereas I've done quite a lot over the years, erm, and I think in this school it’s really left up to the teacher’s own devices (Participant 1, School 1, Year 5).

Teachers that were receptive to the PATHS programme and what it aimed to achieve demonstrated attitudes that showed greater commitment to its implementation. If teachers could see a change occurring within their classes they appeared to be more committed to its delivery:

I suppose as well it’s about the responsibility and commitment on the teacher to make sure they are doing what they’re doing and what they’re saying what they’re doing as well. Because this class, they are so different they really are with regards to their PATHS. In most things as well, but in their PATHS it’s really noticeable how different they are. (Participant 9, School 18, Year 6)

This was reiterated by other teachers, who emphasised that the more time spent doing the programme the greater the perceived gains in their pupils:

I: And you've managed to stick to that kind of because you're quite far on?

R: Yes, religiously, we think what we've seen so far of it we really do think it’s working we think it’s having quite an effect on them so yeah (Participant 3, School 26, Year 4).

On the other hand, certain teachers wanted to see if PATHS was working before fully committing to it as a favoured SEL programme:

I think it’s okay, I think you need social and emotional but I don’t know whether it’s a favourite over PSHE or SEAL, y’know it’s important, but I don’t know
whether I favour PATHS yet or not I’ll probably know when I've seen if there’s any change (Participant 4, School 13, Year 3).

This is a clear indication that if teachers believed the programme was working then they were more likely to implement it with greater frequency. Teachers also noted that coaching (also addressed in section 5.2) had an effect on their level of commitment to the programme; regular visits by a PATHS psychologist prompted them to deliver it consistently:

So it lasts the year, because what we didn’t want was doing a bit, stopping a bit, doing a bit and stopping a bit. Because I know Adam (PATHS Psychologist) was saying about the importance of generalisation and keeping it always sort of at the forefront. That’s what we’re trying to do. (Participant 9, School 18, Year 6)

As well as:

I definitely think it would have taken a real back burner if I didn’t have someone looking over me, not ‘looking over me’, but reminding me (Participant 7, School 1, Year 4).

The final factor to address was whether teachers felt that their school culture nurtured the development of the PATHS programme. There was an immediate disparity in the interviews regarding the level of importance that teachers felt their schools had placed on implementing the intervention. School regulatory bodies, such as Ofsted or RE inspections, seemed to have a sizeable impact on whether schools placed PATHS a priority: “We have had OFSTED and things like that, so it has unfortunately taken, not a back seat but it is not been as forward as literacy and maths and things like that, but we are starting to pick it up” and “No not in a Catholic school […] we’re supposed to be inspected for RE, it sounds silly but we try to get all the we have to do assessments in RE, for example so you have an assessment file for each child, things like that are really onerous activities, so at the moment while the pressure’s on for this coming inspection it’s not being done” (Participant 7, School 1, Year 4). Thus, when other priorities present themselves SEL activities are often the first to be postponed.
Undeniably, school leadership had the greatest influence on the delivery of the PATHS programme. Head Teachers who saw value in the programme inspired their staff, at a whole school level, to implement with frequency and rigour:

*I think we’ve been quite careful to make sure everyone is singing from the same hymn sheet. So you know when we talk about the golden rule in class it’s something that all the juniors will be familiar with and that Mr Timmons (PATHS coordinator and Head Teacher) might talk about in assembly as well. So it’s something we make sure we’re all saying the same thing really. So whereas it might not be something that’s mentioned every day around school it’s visible and it’s audible around school. Especially with things like pupil of the day, everybody is aware of it. And other adults when they come across the pupil of the day will give them a compliment or you know [...] it’s been embedded well* (Participant 5, School 17, Year 6).

This was reiterated in another school:

*I would say in all of the classes [...] it’s happening frequently and very, very well. And the children really, really enjoy it. It usually does happen for two sessions a week half an hour each time. But what we find is actually it goes on longer than that. So normally we’re looking at two 40-minute sessions. The children love it. Because we didn’t do it last but we always saw the pupil of the day walking around and stuff so that was quite visible and all the posters and stuff that were put up on the corridors. And then I know now our lunchtime supervisors have started to have training. So even just at lunchtime today I heard one of the pupils say, “right you need to use your problem solving chart and just calm down a bit”. So I do think it’s gradually starting to broaden the amount of staff that are using it as well. The Head has really driven it* (Participant 11, School 43, Year 6).

Conversely, in schools where the school leadership did not support the implementation of the programme, or placed little value on its importance, the teacher attitudes towards the school culture were dramatically different:
Very low I’m afraid. Very low. I don’t think year four are teaching at the moment because they haven’t got a teacher and haven’t had a teacher for a while. So I know that the teaching assistant has not been trained. She’s an HL TA. Year three, she’s not doing it at the moment because the time that is given it on the timetable is minimal; it’s 15 minutes twice a week at the end of the day. My part if I’ve got spare I will fit it in, I’ll just do it or I’ll do a double session on it but it is not regular […] You’re class is with you for two minutes at the beginning and (clicks fingers) gone. You don’t get that class time. So it does impact on the whole deal. We are failing our school I’m afraid (Participant 10, School 36, Year 5).

It is apparent from the teachers that while many were comfortable and committed to the implementation of the PATHS programme, there remained the substantial issue of whether the school culture supported it. The culture towards SEL in a school, combined with teachers’ comfort and commitment, could logically contribute to implementation variability in preventative interventions.

5.7 Conclusion

The thematic map (figure 9) suggests how the themes covered in this chapter combine to influence implementation variability of the PATHS programme. It is important, therefore, to consider and reflect on how some of these themes might relate to one another and interact. For example, it is clear from the thematic analysis that self-efficacy related strongly to programme experiences and teachers’ attitudes towards SEL. Several of these subthemes were heavily interwoven; teachers that felt comfortable with the programme may have felt that way due to coaching support, with principal leadership affecting coaching support in turn. It is apparent that these individual themes and subthemes do not affect implementation in isolation of each other, but rather exist in ecosystemic synergy.

It is also clear from the analysis that certain aspects are more or less influenced by individual level factors. For example, some teachers implicitly refer to ‘dosage’ when they discuss not having enough time to deliver it effectively. Similarly, many of the teachers refer to ‘quality’ when they talk about how enthusiastic they were about the
programme delivery, or how well they felt they could differentiate their responses based on the emotional resonance exhibited by their pupils in a given lesson. Thus, it is evident from the implementers that much of what they discuss in the interviews inherently refers to the barriers and facilitators that affect specific aspects of implementation at the individual level.
5.8 Summary statements

This summary provides an overview of the qualitative results detailed in this chapter. Five main themes emerged after thematic analysis of the teacher interview data concerning implementation variability.

- Teachers felt that prior experience of implementing SEL programmes, and the length of time teaching in the profession, had an influence on how easily they found PATHS to implement. Training at the University and receiving coaching support seemed to improve implementation quality.

- Relationships with others demonstrated an important influence on implementation; relationships with school leadership, in particular, affected how teachers felt about implementing the programme. Teachers that felt their classes were enjoying the programme appeared to be more enthusiastic towards the implementation of it.

- Teachers’ self-efficacy and emotional self-efficacy had an important role to play in the implementation of the PATHS programme. Teachers with higher self-efficacy were more at ease delivering the programme due to increased confidence, classroom management, and using a range of instructional strategies. They were, however, more likely to make adaptations to the programme. Teachers with higher emotional self-efficacy appeared to enjoy delivering the PATHS curriculum more, perhaps due to the fact that they were more at ease with the modelling of emotional skills.

- Teachers generally felt that there was not enough time to deliver the programme effectively, with multifarious competing priorities and pressures. Teachers with exam classes (e.g. Year 6) felt that PATHS was certainly not a curriculum priority.

- Teacher attitudes to SEL arguably had the largest influence on implementation variability. Whilst comfort and commitment to the programme were important, their attitudes towards school culture was shown to hold the most sway with how well teachers delivered the intervention.
Chapter 6: Discussion

6.1 Introduction

The aim of this study was to investigate the influence of teachers’ characteristics on implementation variability in a universal SEL programme. The impetus was to gain a better understanding of these factors in order to inform theory, research and practical application in the nascent evidence base on factors affecting implementation at the individual level in evidence-based programmes.

This chapter is divided into four broad sections. The first section provides a brief overview of the findings for each of the research questions. In the second section the two research questions are considered in light of the extant literature, with a comprehensive analysis of whether findings differ or concur with other studies. As the study utilises a concurrent embedded mixed methods design, the latter part of this section will detail whether the quantitative findings concur with the qualitative ones.

The third section of the chapter reflects on the implications of the study and directions for future research. Limitations of the study, considering conceptual, theoretical and methodological flaws are also examined. The final part of the chapter provides a conclusion, as well as a summary of the findings and how the study contributes to knowledge in the field of implementation science and individual level factors in evidence-based programmes.
6.2 Restatement of results

RQ1 addressed whether implementation (specifically fidelity, dosage and quality) of the PATHS curriculum varied as a function of individual differences in implementers’ professional characteristics, psychological characteristics, and perceptions and attitudes towards SEL. The way in which these factors related to each other was also explored, as well as whether the factors in questions interact to influence implementation variability.

14 predictor variables were used to predict implementation variability in three separate models. These variables were: years qualified, gender, age, SEL experience, ESES, student engagement, instructional strategies, classroom management, comfort, commitment, culture, depersonalisation, reduced personal accomplishment and emotional exhaustion. The fidelity model was marginally non-significant, but explained 9% of the variance. No individual predictors were statistically significant. The dosage model was significant and explained 21.7% of the variance. From the 14 predictors entered simultaneously into the model, no individual predictors were statistically significant. However, a marginal non-significant trend was found in respect of gender: being female was associated with higher dosage. The quality model was statistically significant and explained 15.3% of the variance. No individual predictors were statistically significant. However, a marginal non-significant trend was found in respect of classroom management: better classroom management was associated with higher delivery quality.

In terms of how these factors relate to each other, the strongest relationship for fidelity was found between the observed fidelity scores and the commitment subscale, with a small correlation (r = .14). The strongest relationship for dosage was found between the dosage scores and the depersonalisation subscale, which demonstrated a negative correlation (r = -.24). This was followed by emotional exhaustion, ESES, experience of SEL, comfort, and instructional strategies. Gender demonstrated a small positive correlation with the DV. In the final set of correlations the strongest relationship for quality was found between the observed quality scores and the commitment subscale (r = .21), followed by instructional strategies, classroom management, culture, and student engagement. A small, negative correlation was also found between observed quality scores and age (r = -.20), followed by number of years qualified.
A series of 15 interaction terms were added to the second blocks of all hierarchical regression analyses with *fidelity mean score*, *predicted dosage score*, and *quality mean score* as the respective outcome variables. None of the models reported any increase in variance accounted for as a result of the added interaction terms.

**RQ2** explored the perspectives of implementers regarding the individual level barriers and facilitators associated with implementation variability in the *PATHS to Success* trial. By means of semi-structured interviews, a total of five main themes emerged from the analysis of the data.

Experience in both teaching and in delivering SEL programmes had a positive influence on the ease of implementation. Both training and coaching support seemed to improve implementation quality. Relationships with others (peers, students, parents) affected how teachers felt about implementing the programme; the more positively that others received the programme, the higher the reported implementation quality. Teachers’ self-efficacy and emotional self-efficacy had an important role to play in the implementation of the PATHS programme. Teachers with high self-efficacy were at greater ease in delivering the programme due to increased confidence in their abilities to deliver it well. They were, however, more likely to make adaptations to the programme. Similarly, teachers with higher reported emotional self-efficacy appeared to enjoy delivering the PATHS programme more, perhaps due to the fact they placed higher importance on the teaching of emotional skills.

Almost all teachers felt that not enough time was given to deliver the programme, particularly for teachers with exam classes. The exception to this was in schools where the school leadership heavily supported the programme and consistently drove its implementation. Although teachers’ comfort and commitment were important aspects in successful implementation, teachers’ attitudes towards school culture by far was shown to hold the greatest impact on implementation variability.
6.3 Research question 1: Implementation variability

6.3.1 Research question 1

Does implementation (specifically, fidelity, dosage and quality) of the PATHS curriculum vary as a function of individual differences in implementers’:

a. Professional characteristics (e.g. number of years teaching)?
b. Psychological characteristics (e.g. emotional self-efficacy)?
c. Perceptions of and attitudes towards SEL (e.g. comfort)?
d. How do implementers’ professional characteristics, psychological characteristics and perceptions/attitudes to SEL relate to one another?
e. Do these characteristics interact (e.g. high burnout, high efficacy vs. high burnout, low efficacy) to influence implementation?

In this section, findings on implementation variability are discussed in relation to the literature. To present these findings in a clear, concise manner, they are addressed with an overarching section on each model, including information on the following:

- Level of variability in each model: fidelity, dosage, and quality
- Relation of implementers’ characteristics to DVs (significant correlations)
- Significant or marginally significant predictors unique to each model

After the discussion on each of the respective models, the subsequent issues are addressed:

- Overall effects of interaction terms in all models
- Possible latent effects

6.3.2 Fidelity model

Level of variance and correlations

Individual level characteristics had by far the weakest effect on implementation variability out of the three models, explaining a small amount of the variance in the fidelity model. The $f^2$ value (Cohen, 1992) indicated a small effect size at .1. Initial correlations indicated a positive relationship between fidelity and commitment; whilst
directionality cannot be ascertained here, it suggests that implementers who were more committed to the programme delivered with higher fidelity. This is not surprising and parallels other findings that commitment to SEL is related to higher rates of fidelity (e.g. Elias et al., 2003).

In this context, some of the findings here differ from the general literature relating to fidelity, which recognises implementers as one of the most significant factors in preventative programme success (e.g. Little et al., 2013) and whether interventions are delivered in keeping with the developer’s intentions (e.g. Schultes et al., 2014) - although much of the literature relating to these factors is based on conjecture. There is in fact very little empirical data in this field from which to draw, and the findings to date are far from straightforward. Frequently authors’ findings are not concordant with previous research, even up to date studies published within a year of each other are often not consistent. For example, teacher characteristics and attitudes predicted implementation fidelity, dosage, and quality in one recent study (Williford, Wolcott, Whittaker, & Locasale-Crouch, 2015), but not in another (Wanless, Rimm-kaufman, Abry, Larsen, & Patton, 2015). In the same vein, the difficult question arises in the current study as to why individual level factors should emerge as a weaker predictor of implementation fidelity. It is important to note that methodological variability may be an issue here, as there are many different approaches to assessing both implementation and teacher characteristics.

It is acknowledged that if teachers are not well trained, supported, and engaged with evidence-based programmes then the level of implementation fidelity will be lower (Webster-Stratton & Reinke, 2011). Thus, there is a growing body of evidence that suggests that in order for implementation fidelity to be higher, and for implementer’s own individual differences to have less of a pervasive impact on programme success, then an appropriate support system must be in place (Chen, 2003). Implementation support systems are designed to promote effective implementation by training implementers and giving them a solid foundation on which to draw and deliver the programme (Chen, 2005; O’Donnell, 2008). A reduction in the variability of implementation is a natural consequence of this. Support systems in previous studies are designed to primarily improve programme fidelity and to ensure that implementers are adhering to the required content (Domitrovich & Greenberg, 2000). It is likely that
support systems have a greater influence over fidelity than dosage as they address the more didactic aspects of programme delivery. Irrespective of a programme’s specific content or mode of delivery, most evidence-based programmes require a support system in order for them to be implemented effectively (Domitrovich et al., 2008; Hansen & Dusenbury, 2004). The PATHS programme of the present study utilises such a support system, in the form of both training at a universal level, followed by bespoke in-house coaching. As noted by Rusk et al. (2013), training and modelling support helps teachers to understand that negative experiences and oversights are opportunities for development and relationship building, aiding teachers to deliver in line with the programme developer’s intentions. Hattie (2009) found that teachers given effective feedback, after initially delivering an intervention with globally low implementation quality, were subsequently able to implement with greater fidelity.

On a related note, a wealth of studies have found positive effects related to the use of coaching, for example, in the Incredible Years programme (Reinke et al., 2013) and in the Good Behaviour Game (Becker, et al., 2013). Becker et al.’s (2013) study pertains specifically to the PATHS programme and thus is useful for comparison; a long, seven-year pilot of a two-phase coaching model (for further information see section 1.3.2) demonstrated higher levels of implementer fidelity. For implementers demonstrating high implementation, minimal coaching is necessary to fortify their skills and perpetuate their implementation. Conversely, a data-driven framework guides coaches to aid implementers who require additional support. As the present study has utilised the same two-phase coaching model it stands to reason that teachers’ individual influence on implementation fidelity could be tempered by the training and coaching provided by the support system.

An alternative reason for the lack of variance attributed to individual level factors in implementation fidelity is the availability and quality of programme resources. Recent advances in implementation science have led to a higher appreciation of the contextual supports required for successful implementation and to ensure that the delivery of an intervention is both appropriate and relevant (e.g. Forman et al., 2013; Stormont, Reinke, Newcomer, Marchese, & Lewis, 2015). Intervention development, therefore, should include an awareness of the resources required, organisation resources, and essential supports required to effectively implement the programme. Thus, as the
PATHS programme utilises a developmentally sequenced series of scripted lessons, extension activities, generalisation tasks, and coaching supports, it is possible that implementation fidelity could remain high without the necessity for individual intervention provided at the implementer level.

### 6.3.3 Dosage model

#### Level of variance

Individual level factors emerged as having the largest influence on implementation variability out of the three models, with the dosage model explaining 21.7% of the variance. The \( f^2 \) value (Cohen, 1992) indicated a medium effect size at .27. Dosage refers to amount of intervention that is delivered and is an important factor in understanding how interventions are delivered. Of the various elements of implementation, dosage has typically been one of the most reported aspects. Yet, dosage research in the field of prevention science is still in its relative infancy with only a modest understanding as to why dosage is important in reliable implementation of an intervention, and to the achievement of programme developers’ outcomes. A lack of consensus, in many instances around the definition and measurement of dosage between studies has led to uncertainty regarding its importance. However, as Schultes et al. (2014) note, in order to replicate and ‘scale-up’ interventions, an understanding of the dosage level required to achieve the desired outcomes is critical.

#### Significant correlation: Burnout

The strongest initial correlations indicated a negative relationship between dosage, depersonalisation, and emotional exhaustion, suggesting that implementers who were more depersonalised and emotionally exhausted in the work place (e.g. caring less about students, apathetic towards work, feeling too tired) delivered PATHS lessons less frequently. As part of the burnout inventory (Schaufeli et al., 2009), depersonalisation and emotional exhaustion are subscales that relate to cumulative responses to chronic stressors, differing from short-term ‘acute’ stress, as it relates to situations in the workplace where stress is inescapable and support systems, or other forms of relief, appear unobtainable (Childs & Stoeber, 2012).

It has been found that teachers with high burnout levels report lower level of social support (Greenglass, Fiksenbaum, & Burke, 1994; Skaalvik & Skaalvik, 2010), and
support from principle leadership. There may be a principal causal pathway from lack of support to burnout, but as Burke et al. (1996) note, the opposing causal direction should not be excluded: depersonalised, exhausted implementers who feel deficient in their job performance are less inclined to make friends with colleagues and maintain close interpersonal relationships in the workplace. As relationships with others (e.g. peers, leadership) are thought to be important in implementation variability, then it stands to reason that teachers experiencing burnout will deliver evidence-based programmes less effectively, and make less time to do so. In order to understand the causal role of relationships and social supports in implementation variability a more comprehensive theoretical framework needs to be considered (e.g. Jennings & Greenberg, 2009), developed, and tested.

**Significant correlation: Emotional self-efficacy**

Emotional self-efficacy, divergent from the findings in the literature, demonstrated a negative relationship with dosage. Teachers with higher ESES are thought to possess greater emotional skill in teaching SEL programmes due to inherent ability in the teaching of emotional skills and the recognition of emotions in others (Corcoran & Tormey, 2013); theoretically teachers would have a stronger desire to teach SEL programmes with greater frequency. Nevertheless, it is important to note that self-perceived (trait) EI differs from observable (ability) EI; trait EI essentially concerns implementers’ self-perceptions of their emotional abilities, whereas ability EI is their *actual* skill. Emotional self-efficacy and trait EI, as discussed in the literature review are essentially one and the same. As the present study uses a self-reported measure of EI it is possible that the findings would differ if actual EI ability were measured. An alternative, plausible explanation may also be that teachers who rated themselves as highly emotionally intelligent may choose to make adaptations to the programme and deliver it how and when they deem fit for their students. Furthermore, not all implementers may have favoured the PATHS programme (e.g. section 5.6) and therefore chose not to implement it with the expected dosage by choice, potentially preferring the use of other SEL programmes instead. It is also possible that teachers with high emotional self-efficacy may teach SEL programmes more effectively and therefore do not need to teach it as frequently; quality of their delivery may be deemed to be more important than the quantity. In support of this, Goldberg et al. (2014) found
that in interventions used to promote emotional regulation (e.g. mindfulness), the quality of the delivery was deemed to be more important than the quantity delivered.

**Significant correlations: Experience of SEL, comfort, and instructional strategies**

Experience of SEL, comfort and instructional strategies were all found to have a small negative relationship with dosage. In terms of previous experience with SEL, as with ESES, teachers may have chosen to implement PATHS lessons less frequently based on their prior experience (or preference) of other SEL programmes; considering the perceived benefit that teachers had of the programme is important in this context. Implementers’ perceptions of the benefit of a programme have been demonstrated in the literature as highly influential in implementation success. Ringwalt et al. (2003) found that overall implementation quality was associated with seven curriculum implementation variables, the most important of which were the perceived effectiveness of the prevention programme. Higher perceived effectiveness, linked to prior implementer experience of prevention programmes, was positively related to fidelity and dosage.

**Marginally significant predictors: Gender**

Gender was the strongest (marginally significant) predictor in the implementation dosage model and demonstrated a positive correlation; being female was associated with higher levels of dosage. There is, to date, very little exploration of the relationship between gender and dosage in the implementation literature. The relationship is a complex one, with potentially too many other factors involved to elicit a clear relationship between the two. Although the distribution of male and female implementers in the present study was disproportionate there are, nevertheless, some precedents to explicate the relationship found. For example, Fernández-Berrocal et al. (2012) found in their research that being female was linked to better knowledge of emotions; they found that gender, EI, and age were are all interlinked. Females, overall, were suggested to have greater emotional self-efficacy and had greater comfort in delivering emotional based curriculums (e.g. SEL). Whilst this is a tenuous relationship with implementation dosage, studies examining teacher well-being and demographic characteristics discovered that there were certain demographic differences (such as number of years teaching, gender) that may impact on teacher well-being. In turn,
teacher well-being is thought to have an effect on implementation quality (Vesely et al., 2013) and thus these factors are potentially interconnected.

Studies relating to gender differences (e.g. Zabel & Zabel, 2001) across rating scales pertaining to teacher social and emotional functioning have been ambivalent. A study conducted by Hargreaves (2000) with a large sample of primary school teachers found that female teachers were equally as likely as their male counterparts to express their anger, and there was in fact very little difference in the social and emotional competence of males and females in the sample of teachers they analysed. A possible explanation to this might be that the primary teaching profession, in general, attracts individuals with higher social and emotional competence and therefore the difference between males and females are harder to tease apart. It is likely in the present study that gender is heavily associated with other predictor variables. Thus, it is evident that before any assumptions can be made regarding the relationship between gender and implementation variability that far more research is conducted.

6.3.4 Quality model

Level of variance

Individual level factors emerged as having a reasonably large influence on implementation quality, with the model explaining 15.3% of the variance. The $f^2$ value (Cohen, 1992) indicated a small to medium effect size at .18. Whilst the broader literature supports the relationship that implementers have with implementation variability, it has, to date, primarily focused on fidelity. Despite the fact that fidelity is clearly important in achieving programme outcomes (Domitrovich & Greenberg, 2000), it is likely that other factors such as quality play a critical role. Teachers may, for example, deliver a programme with high fidelity, but if this merely involves a didactic, ‘lifeless’ reading of the lesson plan or script then the level of participant responsiveness will suffer as a result (Lendrum & Humphrey, 2015). Participant responsiveness is arguably an output of quality (Berkel et al., 2011). In point of fact, Dusenbury et al. (2005) noted that as prevention programmes become disseminated the gravest threat to effectiveness is the quality of the implementation. Even with a small sample of teachers in their study they found that all teachers made adaptations to the programme and quality of implementation varied considerably. Creating a precise definition of quality is difficult, although existing literature generally suggests that for a programme to be
delivered with high quality it must: adhere well to the programme objectives, be delivered enthusiastically with high quality adaptations, engage participants, and generalise beyond the scripted lessons (Dusenbury et al., 2005; Humphrey, 2013; Kam et al., 2003).

**Significant correlation: Teacher attitudes to SEL**

As hypothesised in the literature, both teacher attitudes to SEL and teachers’ self-efficacy were found to have positive relationships with implementation quality. The strongest initial correlation was found between quality and commitment; instructional strategies, classroom management, culture, and student engagement closely followed this. Teachers’ beliefs and attitudes can play an important role in delivering SEL programmes, with positive beliefs tending to be associated with positive programme outcomes (Brackett et al., 2012). However, it is possible that not all teachers have positive beliefs about SEL. For example, the beliefs that teachers have may diverge, depending on their teaching or subject specialism, their own social and emotional competence, and the overall culture within their school (Collie et al., 2012).

Teachers’ beliefs play an important role in the workplace, as they are responsible for the organisation, structure, and tone of pupils’ learning experiences (Gill & Fives, 2015). Teachers attend to certain information based on these beliefs, guiding both intention and action (Fives & Buehl, 2010). Previous research has shown that teachers’ beliefs are heavily interconnected with their teaching practices and experiences, as well being associated with programme outcomes (Collie, Shapka, Perry, & Martin, 2015; Holzberger, Philipp, & Kunter, 2014). The current research was interested in progressing understanding regarding teachers’ beliefs and attitudes about SEL; this is discussed below in the section exploring the commitment predictor.

**Significant correlation: Teacher efficacy**

The initial correlations suggest that higher teaching self-efficacy in the classroom is associated with higher levels of observed implementation quality. Previous longitudinal research on teacher efficacy and implementation has found that teachers who have higher levels of self-efficacy, whether in classroom management, student engagement, or instructional strategies, demonstrated higher levels of delivery quality, as well as lower levels of burnout (Evers et al., 2002; Ransford et al., 2009). When taken together
with previous research, these findings indicate that teachers’ feelings of self-efficacy are vitally important in the delivery of SEL programmes and in teacher well being. Although the relationship between teacher self-efficacy and quality cannot infer causation, it is still important that principle leadership teams and programme developers are aware of the need to address teachers’ feelings of efficacy by encouraging effective teacher training and continuing coaching support regarding classroom instruction and management.

**Marginally significant predictors: Commitment**

Teachers’ commitment to SEL was the strongest (marginally significant) predictor in the implementation quality model and demonstrated a positive correlation; teachers who were more committed to the delivery of the PATHS programme demonstrated higher levels of delivery quality. SEL commitment refers to how committed teachers are to improving their SEL skills; when teachers are committed to SEL they are more likely to invest in the programme and deliver it more readily (Brackett et al., 2012). SEL commitment combines with comfort and culture to give a broader overview of teachers’ attitudes and perceptions to SEL; understanding how these three subscales combine is valuable for developing an understanding of the different implementer types that exist within schools.

As commitment is one of the key areas in SEL programme success, it was expected that this variable would be a significant predictor: this is also consistent with the existing literature that has examined teachers’ beliefs (e.g. Zinsser, Shewark, Denham, & Curby, 2014) and found that teachers’ commitment to SEL was directly related to implementation variability and programme success. Highly committed teachers see SEL as highly valuable and central to their daily interactions with their students (Zinsser et al., 2014). When assessing the relative contributions of commitment, comfort, and culture it is important to note that SEL commitment and SEL comfort reflects teachers’ individual beliefs, whereas SEL culture relates to teachers’ perceptions and attitudes towards their organisational culture. There is still relatively little literature on teacher’s attitudes and perceptions relating to SEL in this developing field. However, there is some recent research that concurs with the findings of the present study.
Collie et al. (2015) conducted a person-centred mixed-methods analysis to evaluate the degree to which teachers could be differentiated based on their SEL beliefs. Their analysis revealed three distinct profiles that were comparable across different samples and a pooled sample: the SEL-thriver (high SEL comfort, commitment, and culture), the SEL-advocate (high comfort and commitment, low culture), and the SEL-striver (low comfort and culture, high commitment). They also found that there were several differences between the different profiles based on the demographic characteristics of the teachers – burnout and job satisfaction. They found that the SEL-thriver reported the most positive SEL beliefs, which represented the largest majority of their participants (77%). The higher prevalence of the SEL-thriver in this body of research may be due to growing awareness of the importance of SEL both in North America and in many other parts of the world (e.g. Dusenbury, 2011; Humphrey, 2013). Conversely, the smaller proportion of the SEL-advocate and the SEL-striver (23% combined) profiles may have occurred as there are still many teachers who are not yet comfortable implementing SEL and school leadership teams who do not think of SEL as a priority to their schools. In case of point, Price (2012) found that principals’ relationships with their teachers affect teachers’ satisfaction, cohesion, and commitment levels. They found that a large variation in how committed teachers were in the workplace was explained directly by the relationship and process by which principals shared expectations with their teachers. As Brackett et al. (2012) suggest, schools that support the development of SEL are more likely to have an environment where the development of SEL skills in students are nurtured, potentially meaning that teachers are also supported to a greater extent.

When these findings are consolidated with the research findings of the present study it provides a solid exploratory foundation to support when and where implemener-based SEL intervention is most effective. The Collie et al. (2015) research demonstrated that a majority of the sample placed a high-level of importance on the development of their SEL skills (SEL commitment). Whilst the authors of the study reflect on the fact that SEL has growing interest in Canada, the same could be said of the United Kingdom and might explain the reason for commitment being the strongest individual predictor in the quality model. Recent reports by the Department for Education and the Early Intervention Foundation (2015) state that SEL skills are critical for healthy development in children and young people and must be given a key role in curriculum development:
“It is clear that social and emotional skills play a fundamental role in shaping life chances of children and young people and the nature of their adult lives. They are important both for individuals, for society and in influencing intergenerational patterns of inequality and disadvantage. It is also clear that there are many things that schools can do that have an effect on these capabilities. There are programmes that have been shown in replicated, quality evaluations to have an impact on social and emotional skills [...] There are many innovative programmes across the country often led by the voluntary sector, that are based on sound principles and may well be effective, but for which the current evidence of impact is limited. Given the reduction in funding in this area, the case for building a robust and broad-based pool of evidence is stronger than ever—both to ensure that programmes are of the highest quality and to strengthen the case for investment from a range of sources.” (Social Mobility and Child Poverty Commission, 2015, p.11)

Given such support, it is not difficult to understand why such programmes have garnered support and commitment from educators, in both principal leadership teams and at the implementer level. Although there may be a strong commitment to developing SEL skills, there is precedent to further develop SEL comfort and culture. Research outwith the confines of the present study has determined that teachers’ beliefs about self-efficacy and school culture have an important connection with teacher effectiveness (Collie et al., 2012). Furthermore, the provision of sufficient support at the school-level has been shown to be important in retaining successful teachers in schools across the world (Grayson & Alvarez, 2008). Thus, in future research there is a need to evaluate the extent to which professional knowledge and school-level support for SEL influence outcomes.

### 6.3.5 Overall effects of interaction terms in all models

Adding interaction terms to a regression model can help to increase the understanding of the relationships between the variables in the model and allow for a deeper appreciation of the combined effect of certain predictors, chosen a-priori, on the various aspects of implementation that were the focus of the current study. Whilst regression models are both powerful and useful, they assume that the predictor variables and the outcome variable are related linearly. Simple regression models also assume that if a
predictor variable affects the outcome variable, it does so in a way that is independent of all the other predictor variables. Hence, the addition of interaction terms in a regression model addresses the potential non-independence of the predictor variables. As Field (2013) notes, the presence of a significant interaction indicates that the effect of one predictor variable on the DV is different at different values of the other predictor variables; an interaction is tested by including a term to the model in which two predictor variables are multiplied.

There was a justified theoretical rationale for the inclusion of interaction terms in the present study based on a small body of evidence that suggests some individual level predictors interact to have an overall effect on implementation variability (e.g. Little et al., 2013; Ransford et al., 2009). As detailed in the quantitative results (Chapter 4), to test this interaction hypothesis a second series of regression models were estimated that incorporated both main effects and a series of interaction terms: crossing teaching self-efficacy subscales, burnout subscales, and the total emotional self-efficacy score. Cohen, Cohen, West and Aitken (2003) recommend using this statistical method to tease apart the relationships between respective predictor variables and their influence over the response variables. The results of the present study differ from previous research; the interaction terms had no effect on the respective regression models (fidelity, dosage, and quality). Perhaps this was not surprising given the relatively low levels of burnout and high levels of efficacy in the teacher sample. Yet, there are some parallels to be drawn with another similar study.

In their study on the role of teachers’ psychological experiences and perceptions of curriculum supports on the implementation of the PATHS curriculum, Ransford et al. (2009) found that individual level factors had very little influence on implementation fidelity, dosage, and quality; there were no significant models relating to implementer level factors and implementation. After a series of several interaction terms were added, however, they eventually found significant effects. Results revealed that interaction terms between teachers’ psychological experiences (burnout, self-efficacy) and perceptions of curriculum supports were significantly associated with implementation dosage. Teacher burnout was negatively associated and teacher self-efficacy was positively associated with implementation dosage. These findings are of particular interest as the findings are somewhat concordant with those in the present study;
teaching self-efficacy and burnout demonstrated positive and negative correlations respectively with implementation dosage, although it is important to note that these predictors were not significant in the regression model. Nonetheless, correlation results from the current study add some weight to the evidence base that teacher characteristics are associated with how frequently evidence-based programmes are delivered. Ransford et al. (2009) also found that teachers who perceived their school administration as more supportive reported higher implementation quality, and positive perceptions of training and coaching were associated with higher levels of implementation dosage and quality.

Interestingly, the findings, as with the present study, found very little impact of individual level factors on the implementation fidelity model. It is reasonable to assume when reflecting on these findings that teachers who seemingly received better coaching support, and support from their principle leadership, demonstrated less variability in implementation. Further evidence for the interaction of context and fidelity factors comes from within-intervention research on the PATHS curriculum (Kam, Greenberg, & Walls, 2003) that suggested that the programme was successful in schools only where both principal leadership support for the programme and quality of implementation were high. Thus, whilst the added interaction terms incorporated in the present study had no effect on any of the respective regression models, some of the overall findings do in fact concur with the discoveries in the extant literature. One explanation of this might be that a latent effect is occurring, which is detailed in the following section.

6.3.6 Possible latent effects

Latent effects in statistical models refers to the notion that observable phenomena are influenced by underlying or unobserved causes (Bollen, 2002). In simple terms, latent effects are “underlying: not directly measurable, existing in hidden form but usually capable of being measured indirectly by observables” (Bandeen-Roche, 2006, p4). The notion of a latent effect suggests that a (regression) model can be significant, yet the individual predictor variables are not; the overall variance in the respective models could be attributed to latent effects. Essentially this could indicate that each of the separate individual level factors are important, yet no single factor is at heart accountable for a large proportion of the model’s variance; alternatively, ‘hidden’ variables could be at work which are concealed within the model. Factors, unmeasured
variables, unobserved variables, constructs, or true scores are just a small selection of the terms that researchers use to allude to variables in the model which are not present in the data set (Bollen, 2002). Another common definition by Jöreskog and Sörbom (1979) suggests that latent variables are impossible to measure, “latent variables […] cannot be directly measured” (p.105), and similarly Bannock, Baxter and Davis (1988) state that latent variables in regression models “… are variables in regression models which are, in principle, unmeasurable” (p.8). These statements essentially propose that within all measurement scales (e.g. emotional self-efficacy, self-efficacy) there is a possibility that there are aspects of the construct which are not accounted for; latent effects suggest that these ‘missing’ aspects are potentially accountable for variance in the regression models. This is pertinent for the present study as there are a multitude of variables that could have been measured, including a fuller exploration of some of the variables that are present. Analysis of latent variables would have allowed for a fuller understanding of the variability in implementation taking place, however, the absence and exploration of these variables is due to a number of practical reasons. It is also difficult to detect latent variables within regression models due to the fact that they are not directly observed, but rather are inferred, from other variables, which are observed.

Bollen (2002) discussing the presence of latent variables in psychology and the social science expresses this point further:

“Although we might be able to manipulate the equations in which a latent variable appears, we cannot manipulate it to the point at which the latent variable is completely determined by the observed variables, that is, the latent variable is a nondeterministic function of the observed variables […] the main restriction for this definition is that it is devised for linear structural equation systems and some latent variable models.” (p.611)

Evaluating the presence of latent variables is beyond the scope of this thesis, however, and would require a far greater number of participants to examine appropriately (e.g. using structural equation modelling). Nevertheless, discussion on limitations in methodological issues such as sample size, analytical considerations, and inclusion of additional variables are considered in section 6.6.
6.3.7 Summary statements

- The model with the smallest level of variance was fidelity. The findings differed from the literature as individual level factors had a smaller influence on implementation variability in the fidelity model than was expected. It is possible that the inclusion of the support systems (e.g. coaching, principal support) reduces the level of variability at the implementer level.

- The dosage model demonstrated the largest influence on implementation variability out of the three models. Several predictors had small to medium correlations with dosage. Whilst these findings are consistent with the literature, gender’s (marginally significant) relationship with dosage is less common; it is likely that multiple factors influence this specific predictor.

- The quality model had a reasonably large influence on implementation variability, with the strongest correlations being that of teacher attitudes to SEL and teacher self-efficacy. The strongest predictor in the model related to commitment. These findings provide an interesting supporting foundation when paralleled with other recent research to further develop research into the influence of teachers’ attitudes and beliefs in delivering SEL interventions.

- Whilst the interaction terms used in the present study did not have an overall effect on the respective models’ variance, the rationale for their inclusion was considered. Parallels were drawn to studies with similar findings and reflections on these were also discussed.

- Finally, a concluding section considered the possibility of latent effects in the respective regression models, with an overview of possible underlying or unobserved causes noted.
6.4 Research question 2: Implementer perspectives on implementation variability

What are the implementers’ perspectives regarding the individual level barriers and facilitators associated with implementation variability in the PATHS programme?

In this section, the five main themes that emerged from the qualitative phase of the study are considered in relation to the literature. As the present research has both quantitative and qualitative elements (QUANT → qual) some of the referenced literature converges, although where possible replication has been avoided. Discussion pertaining to the integration and confluence of approaches is included in the next section of the chapter.

Programme experiences

Experiences in the qualitative study varied greatly, based largely on the individual experiences that implementers had with: delivering SEL programmes, their experience in the profession, their perceptions of coaching, engagement with training, and their attitudes towards the programme resources. Whilst many of the teachers suggested that implementation of the PATHS programme had not been too problematic, it was apparent that individual experiences contributed to implementation variability in fidelity and quality. Experienced teachers, both in the profession and in delivering SEL programmes, found it easier to deliver the programme due to their greater level of skill. Whilst not all studies have suggested that the length of time teaching and experience with SEL necessarily translates to high quality implementation, the findings here are consistent with some of the findings in the implementation literature. For example, Dusenbury (2005) reported that experienced teachers were more likely to adhere to the curriculum, deliver it in a manner that was more interactive and stimulating to participants, convey the goals and objectives better, and make positive (high-quality) adaptations. Similarly, Rohrbach et al. (2006) noted that teachers with greater experience aided widespread dissemination of prevention programmes more effectively due to their enhanced training and skill. However, a caveat exists in that more experienced teachers may be willing to make adaptations to the programme (Hansen et
al., 2013). Whilst some adaptations can enhance intervention quality, they also have the capacity to erode the essential components of the programme (Century et al., 2010).

Easily accessible, well-designed programme resources (e.g. lesson plans, scripts) aided teachers’ delivery of the programme significantly, with many of the teachers feeling that the resources aided their planning and preparation time. This resonates with the findings in the implementation literature that implementation fidelity will be higher where there is stability in school leadership and the necessary resources are provided (Little et al., 2013). Those that felt the resources were not fit for purpose primarily felt this way due to ‘Americanisms’, or that the resources did not fit the cultural context of their students or school; this highlights the need for awareness by programme developers to design culturally sensitive materials that work within a flexible framework.

Teachers’ experience with the coaching model, a core component of the support system, was predominantly well received once teachers had adapted to regular visits. Initial ambivalence may not have been surprising in the UK context, as typically ‘coaching’ support in both primary and secondary schools is unconventional. Again, the cultural validity of an intervention is important; if teachers do not see the benefit or need for it in their own context then they will be less receptive to the support system (Castro-Villarreal, Rodriguez, & Moore, 2014). The general body of literature supports the belief that coaching can enhance the implementation of evidence-based programmes, helping implementers to deliver the programme with greater fidelity, better quality, and maintain the appropriate dosage. The seminal work of Joyce and Showers (1988) indicated that support in the form of coaching could result in increased implementation of newly adopted practices; over the last few decades the continued research into coaching has yielded similar results (Becker et al., 2013; Cappella et al., 2012; Reinke et al., 2014). Teachers in the present study felt they were more enthusiastic about implementing the programme as a result of coaching support, and felt that they were more likely to keep up with the implementation of the programme as a result of the regular drop-in sessions. Teachers’ experiences with training at the University elicited a similar pattern but were generally viewed as being an inclusive component of the coaching process, the first phase of the PATHS coaching model is, after all, a universal training stage.
In terms of understanding the complex role that coaching and training plays in the delivery of evidence-based programmes, the findings of this study suggest that performance feedback appears to be a critical component for intensifying teacher implementation of new skills in their classrooms. However, many questions are still unanswered regarding the most effective means of utilising coaching in preventative programmes. The two-phase coaching model detailed by Becker et al. (2013) includes many components such as classroom observations of teachers, provision of feedback, and tuition on specific skills (e.g. modelling of lessons, differentiating responses). However, beyond the components of this model, there is very little empirical evidence to suggest the most effective way to coach teachers, respond to individual training needs, and how coaching is carried out specifically to improve SEL outcomes for students. Hence, continued research on the use of coaching, eliciting a clear view of the intricacies of the coaching process, coaches’ own fidelity to their practice, and the specific outcomes desired by the coaching process (e.g. improving fidelity, dosage, and quality) are still needed.

**Relationships**

It is not surprising that relationships with others emerged as an important theme, given some of the strong associations in the implementation literature (e.g. Durlak, 2010; Emshoff, 2008; Roorda et al., 2011). The majority of the existing literature on teacher relationships, however, focuses predominantly on teachers’ relationships with their students and how well supported they are by principal leadership. The present study has expanded the focus and also examined implementers’ relationships with peers and parents, which is rarely covered in teacher-based studies. In terms of teachers’ relationships with their peers, there was evidence to suggest that if teachers felt supported by their colleagues, shared best practice, and problem solved together they were far more comfortable in delivering the programme than those working by themselves. Positive peer relationships were also shown to improve generalisation of the programme, if teachers had positive relationships with other members of staff (e.g. teaching assistants, learning mentors) they reported higher levels of implementation; when the key components of the lessons are repeated throughout the school day, even when the classroom teacher is not present, the quality of implementation should improve. These findings were reflected by Fixen et al. (2005) who noted that
generalisation of a preventative programme is enhanced when all staff within a setting are aware of the core components of the intervention and deliver it in a comparable way.

One area that united all of the focus implementers was that teacher relationships with the school leadership team and the principal were profoundly related to how well they felt they could deliver the PATHS curriculum. School principals act as ‘sentinels’ for new curricula and interventions that are put forward to their schools. Thus, it is not surprising that their behaviours can significantly affect teachers’ implementation of SEL programmes. This is entirely consistent with the implementation literature that has found that the attitudes of principals can adversely affect the implementation quality of a programme (Gottfredson & Gottfredson, 2002), and in particular light of the range of activities teachers are allowed to take on (Ransford et al., 2009), training opportunities (Stormont et al., 2015), job satisfaction (Brackett et al., 2010) and positive behaviour reinforcement (Webster-Stratton & Reinke, 2011). When these needs are disregarded in the teacher’s viewpoint, the implementation of preventative programmes can become overwhelming, leading to poorly delivered interventions that have little chance of reaching the developer’s intentions. The level of consultation that principals had with their staff appeared to be directly proportional to how enthusiastic teachers were about starting the programme - this is also explored in the subsequent section on teacher attitudes to SEL.

Three of the teachers interviewed indicated that working in partnership with parents during the course of the study was problematic. Difficulties persisted in that not all parents were comfortable with the content that was covered or thought it was appropriate (e.g. the topic of drugs in a religious school). Additionally, some teachers felt that speaking to parents about social and emotional issues with their children was somewhat intrusive. Some of the emergent literature has found that teacher relationships with parents are typically problematic in universal SEL interventions; schools often have difficulties in getting parents involved with the programme or conveying the nature and intention of the programme (e.g. Letarte et al., 2010; Stern et al., 2008). In schools where parents were receptive to the programme teachers noted that the overall generalisation of the programme improved. It might be that parents are more inclined to get involved with SEL work when the intervention is targeted instead of universal, as
the level of the contact and support they have with the school and other professionals (e.g. school psychologists) is far greater. For example, Knoche, Sheridan, Edwards and Obsborn (2010) found that parents in the ‘Getting Ready’ trial were far more receptive to engaging with the programme when they were actively encouraged to participate, set goals, and assist in educational decision making. They found that student outcomes of strategy use (fidelity) and effectiveness (quality) was far higher in the group that had parents actively engaged in the intervention process. In general, the effectiveness of the trial was positively related to the amount of time that teachers and parents spent interacting. Thus, the findings in the present study are once more consistent with the literature that describes the difficulties that universal SEL programmes have in engaging parents; the potential link between better programme generalisation and parental engagement is clear.

Teachers’ relationships with their students are relatively well documented in the implementation literature (e.g. de Jong et al., 2014; Hamre & Pianta, 2005); a well established fact is that a positive classroom environment is important in developing students’ academic, social, and emotional skills. Nevertheless, very little research has examined the influence that student attitudes towards SEL programmes have on their teachers. The findings of the present study reported a ‘cyclical’ relationship; if pupils reminded their teachers about delivering ‘pupil of the day’, were receptive to the lessons, and generally appeared to be enjoying the programme, then teachers were, correspondingly, more likely to want to deliver the intervention regularly. Conversely, when teachers concluded that their students were not enjoying the programme, based on their engagement, they were less willing to implement the programme and even went so far as to skip lessons that they felt their students would not enjoy. This raises some interesting questions around participant responsiveness, dosage, and fidelity – if teachers perceive the programme to be working, solely based on the response of their participants, then it has implications for understanding the nature of how and why teachers deliver interventions. Berkel et al. (2011) and Prado et al. (2006) noted that participant responsiveness is consistently associated with stronger programme effects. Participant reports of satisfaction with a programme, completion of homework tasks, and implementer reports of participants’ level of participation have also been associated with positive programme outcomes.
Self-efficacy

A wealth of literature exists that acknowledges the important relationship between teachers’ self-efficacy and, to a degree, emotional self-efficacy in the successful delivery of preventative programmes (e.g. Egyed & Short, 2006; Lim & Eo, 2014; Skaalvik & Skaalvik, 2014). Thus, it is not surprising that teachers who felt they were well equipped to handle the teaching of SEL programmes reported greater levels of implementation fidelity and quality. The sense of teaching self-efficacy construct has been associated with important outcomes for teachers, including the use of effective instructional strategies (Ross, 1992), improved teacher well-being (Egyed & Short, 2006), and better classroom management (Freiberg, Huzinec, & Borders, 2008). Teachers with higher levels of self-efficacy reported lower levels of stress when implementing the PATHS programme; this was due in part to the level of experience that some of the teachers had. Nevertheless, this adds support to those within the implementation debate who argue that self-efficacy is a protective factor against stress and burnout (Aloe et al., 2013). In the current study it was clear that many of the teachers had put in a considerable amount of effort into implementing the programme, to the extent that many had designed extra supplementary resources (e.g. slides, posters, cooperative learning group cards) in order to achieve a high delivery quality. Whilst the general self-efficacy literature supports the role of classroom management in implementation, the extent to which a teacher feels that they are capable of gaining and maintaining students’ attention, and dealing with disruptive behaviour (O’Neill & Stephenson, 2011), there is less research on the role of instructional strategies or student engagement. Thus, it is interesting that in the current study teachers reported instructional strategies as the most important factor of their self-efficacy – the confidence in their ability to use effective strategies for teaching (Tschannen-Moran & Woolfolk Hoy, 2001).

Teaching self-efficacy clearly played an important role into how well teachers felt they could deliver the programme; lower self-efficacy was associated with lower levels of delivery confidence. All the same, with greater experience and increased confidence came the desire to make adaptations to the programme and alter its delivery. The role of fidelity and adaptation in effective programme implementation has been widely debated in the literature; in early discourse, adaptation was thought to counteract fidelity. That
is, intentional or purposive adaptations to the programme were thought to diminish fidelity. However, more recently (Dusenbury et al., 2005; Hansen et al., 2013) the extent to which teachers introduce adaptations into their practice has been considered a separate facet. Lendrum and Humphrey (2015) note that surface-level adaptations, such as changing character names in a story, or altering a poster, may be advantageous in supporting a better programme ‘fit’ for participants, improving ownership, sustainability, and commitment (e.g. Greenberg et al., 2005; O’Donnell, 2008). On the other hand, deep-level adaptations, such as reducing the number or length of sessions, or eliminating key messages or skills learned, pose a serious threat to programme integrity. Some of the teachers in the present study felt that the programme didn’t fit their cultural context, or were too ‘wordy’ for their classes’ ability, and thus adapted the programme accordingly. Therefore, some adaptations are undoubtedly the result of culture, climate, the availability of accessible resources to the implementation, and other legitimate circumstances that require change. These findings are entirely in keeping with the literature where there is emerging consensus that fidelity and adaptation should not be thought of as separate entities, but rather they may, and should, work in partnership (Durlak, 1998; Lendrum & Humphrey, 2015). Durlak and Dupre (2008) noted that expecting perfect or near-perfect implementation is unrealistic. They reported that positive results have been achieved with levels around 60%; few studies have accomplished levels greater than 80%, suggesting that full fidelity may not always be required and that adaptations may occur without necessarily affecting intervention outcomes. What appears to be the most vital consideration is that the critical components (Century et al., 2010) of a programme, that is the components that are deemed essential to ignite the change process (Chen, 2005), are strictly adhered to by teachers when delivering an intervention. Thus, in context of the present study, examination of teachers’ self-efficacy adds another element of understanding as to why implementers choose to make adaptations, which can, in turn, affect the delivery quality of an intervention.

The findings relating to teachers’ emotional self-efficacy differ from teaching self-efficacy, in so much that teacher’s reported ability to handle their own emotional state, and the emotional state of others, played a part in their desire to implement the programme, rather than adapt it. It has been a long established truism in educational research that teachers’ emotional self-efficacy should be associated with their abilities
in implementing social and emotional curriculums, yet very little research exists to support this assumption. Jennings and Greenberg (2009) hypothesised that emotional self-efficacy was an important facet of how well teachers performed in the classroom; when teachers lack emotional competence they are thought to experience higher levels of emotional stress and deliver poorer classroom management. Corcoran and Tormey’s (2013) emotional intelligence framework (Table 2) that connects to the role of the teacher is perhaps the best attempt to date to link emotional skills to the practical role of the teacher; they note that one of the biggest challenges in assessing affective teacher-student relationships is in finding an effective means of assessment. The findings of the present study concur with the conjecture in the literature (e.g. Domitrovich et al., 2010) that teachers who consider themselves emotionally skilled are more likely to want to implement SEL programmes. One of the teachers interviewed noted that emotional skills were central to their role as a teacher and, despite the lack of principal support, they would try to implement PATHS whenever they could as they considered it an essential skill. Another teacher that was interviewed stated that because they considered themselves emotionally competent, and the teaching of SEL important, they would deliver the programme as close to the developer’s guidelines as possible. Although this is unlikely to be found in all schools, the findings in this study contribute to the argument that teachers with the right emotional skills will want to deliver SEL programmes with higher levels of dosage and fidelity as they believe it to be important, even if other ecological factors oppose the implementation of SEL (e.g. lack of time, leadership support). One explanation for these findings is likely to originate from the fact that teachers who have the ability to understand their own emotions and wish to teach these to others, whilst believing in their skills to deliver them, creates a powerful combination that could lead to high quality implementation. Whilst these early findings are intriguing, there remain a number of unanswered questions into the best way to assess teachers’ emotional self-efficacy, understand whether this translates into higher levels of implementation quality, and consequently improved student outcomes.

Teacher state
One of the most documented areas in teacher research is around the matter of teacher ‘state’, in the broadest sense, the specific condition that a teacher is in at a given time. At a more localised level this can refer to the experience of feeling under pressure,
overloaded, or burnt out. Teacher attrition is a serious concern for the UK education system with over 40% of newly qualified teachers leaving the profession within a year of starting (ATL, 2015), with workload being stated as the predominant cause. Ofsted and principal leadership impose an excessive bureaucratic load on staff (e.g. excessive marking, form filling, data monitoring), creating: "A tsunami of curriculum and qualification changes threaten to engulf schools and colleges as Ofqual, the qualification agency, marches on - leaving dismay and devastation in its wake" (ATL conference, 2015). Thus, reflections on these recent findings are particularly pertinent for the findings of the present study; teachers that experience pressure and stress will be unlikely to deliver preventative programmes to the best of their ability. Burnout is a well researched phenomenon (e.g. Chang, 2013; Gavish & Friedman, 2010; Schaufeli et al., 2009), but is very difficult to accurately measure. Teachers will often wish to give socially desirable answers in both self-report questionnaire and interview (Demerouti, Bakker, & Leiter, 2014), even when they have been informed that the research is an anonymous process.

A general consensus existed, however, in the way that teachers felt a sense of pressure to deliver the PATHS programme effectively, whilst finding the time to attend to the rest of their responsibilities. This seemed to be the case even in schools where the principal supported the implementation of the programme. Only in schools where there appeared to be a shared agreement between principal leadership and school staff, regarding the adoption of the programme, did implementers report less pressure. These findings are in keeping with the literature (e.g. Annan & Moore, 2012; Buston, Wight, Hart, & Scott, 2002) that suggests all members of a school body need to support the adoption of a preventative programme in order to reduce pressure on staff. Similarly, teachers experience a sense of overload when they simply have too much to do (e.g. excessive work, responsibilities) to be able to implement interventions effectively. Universally, all teachers reported a lack of time due to the constraints of the curriculum. Competing priorities like literacy, numeracy, and SATs exams all took precedence over the PATHS programme. Despite the reluctance of implementers to discuss their experience of burnout, the one aspect that a handful of teachers were willing to discuss was their level of exhaustion. Professional burden and overload cause increased emotional demands on teachers that can lead to exhaustion, decreased job satisfaction, mental health problems, and attrition (Vesely et al., 2013). Exhaustion in particular can
result from teachers’ expectations and attempts to handle their own subsistence and the potentially challenging lives of their pupils, in addition to their own curriculum responsibilities (Skaalvik & Skaalvik, 2014). Some of the focus teachers noted that, with all the other demands in the school day, it is often very difficult to find the additional emotional resources required by the generalisation of the PATHS programme.

Thus, the present study raises some interesting questions regarding the viability of adopting evidence-based programmes in schools when there are so many other competing priorities. The review on implementation science and school psychology by Forman et al. (2013) illustrated a similar picture – competing priorities within a school were seen as barriers to effective implementation. Implementers who wish to deliver programmes with the best possible implementation could very well be ‘swimming against the tide’. Until schools are monitored and measured on how well they deliver SEL interventions, as well as other preventative curriculums, it is unlikely they will ever become a priority.

**Teacher attitudes to SEL**

The final theme focused on teachers in terms of their attitudes towards social and emotional learning programmes and how this may act as a barrier or facilitator to implementation variability. While there is sparsity in educational and psychological literature on teacher attitudes to SEL (and their impact on implementation), there are findings to suggest that teachers who feel comfortable with SEL, who are committed to SEL, and who feel that their school culture supports the development of SEL, will implement more effectively (Brackett et al., 2011; Collie et al., 2015). This is echoed in the current study where teachers’ beliefs and attitudes had a powerful influence on how they delivered the PATHS programme. Many of the themes explored in the qualitative phase intertwine and do not exist in isolation of each other, as is consistent in the general body of literature regarding factors affecting implementation (Domitrovich et al., 2008).

The majority of teachers that were comfortable in delivering the programme revealed that this was the case due to the organisation and accessibility of the resources: scripted
lessons, predefined objectives, and engaging group tasks all contributed to this shared viewpoint. As discussed on the section on teachers’ experiences, well-prepared materials help to reduce much of the labour involved in the designing and developing resources. This is an encouraging finding given the amount of effort that programme developers dedicate to this task (e.g. Emshoff, 2008). A secondary factor that influenced teacher comfort corresponded with the amount of teaching (and SEL) experience acquired. This is perhaps unsurprising, given that the greater the length of time that teachers have had to refine their craft the more comfortable they will be in dealing with new interventions presented to them. Comparably, Kelly, Longbottom, Potts and Williamson (2004) support the findings of the current research in their own evaluation of the PATHS curriculum; teachers with substantial experience of preventative programmes proved effective in building a whole-school ethos, sharing skills, and developing a knowledge base. Prior experience of SEL programmes (e.g. SEAL) may therefore serve to improve the implementation of future preventative programmes.

Teachers’ commitment to SEL programmes could invariably lead to better implementation quality. Baker, Kupersmidt, Voegler-Lee, Arnold and Willoughby, (2010) noted that teachers’ commitment to an intervention, and perception of its need, were two of the most important factors in implementation variability. In keeping with this research, some of the teachers in the present study expressed the viewpoint that it was their own responsibility to make sure that the programme was delivered in the best possible way. In essence, their commitment to the programme was a critical factor in programme delivery. Commitment to the programme was also moderated by the emergence of the change process; teachers that perceived the programme making a difference to their students were subsequently more committed to its delivery. This perhaps raises some concerns for SEL programme developers, as it suggests that teachers’ motivation to a programme may be unduly influenced before the intervention’s effectiveness is fully realised. It is possible that an intervention could be working, but the visible effects of this take far longer to appear. Teachers that decide the intervention is not worth their effort, based on how their students regard the programme, may be acting with undue haste. Thus, it is important that the change process (e.g. the programme logic model) is addressed with implementers in appropriate depth in training at the universal level, and at the bespoke coaching stage.
A final, important subtheme that emerged throughout the interviews was the issue of whether the school culture supported the development of SEL. Durlak (2010) noted that researchers should be aware of the possibility that organisational factors (e.g. school culture, administrative leadership) may outshine individual level characteristics in terms of their respective influence on implementation. Undeniably, this was certainly the case in the present study, with all teachers alluding to the importance of principal support in the implementation of the PATHS programme. Head teachers who were enthusiastic about the programme inspired their staff at a whole-school level to deliver with high quality implementation. Schools that had effective principal support reported better levels of generalisation, timetabling, support staff training, and parental engagement. Conversely, where the school administration was reported to be apathetic towards PATHS, teachers reported great difficulties in implementing or generalising the programme. Even teachers who felt that social and emotional skills were important in the development of their students reiterated this. Whilst the vital role of principal support is not surprising (Kam et al., 2003; Ransford et al., 2009; Rohrbach et al., 1993), the findings of the present study unquestionably corroborate the research in the extant literature; in order for prevention programmes to succeed implementers must feel supported by their school administration.
6.4.2 Summary statements

- Teacher experiences varied considerably, most of them found the programme relatively straightforward to implement; teachers with greater experience reported greater ease with the programme. Teachers’ positive experiences with the coaching model are reflected in existing research. Implementers needed to understand the importance of the programme and support system in order to be receptive to it.

- Relationships with each other were consistent with the literature, demonstrating that teachers who had better relationships with peers, leadership, parents, and participants reported higher levels of implementation quality. Teachers were found to be more receptive to the programme if they perceived their students to be engaged with it. This highlighted some interesting points regarding the importance of participant responsiveness in preventative programmes.

- Teachers that reported higher levels of self-efficacy were more at ease with the programme. Instructional strategies were deemed particularly important. Greater levels of self-efficacy were associated with programme adaptations. Teachers with greater emotional self-efficacy were shown to have an increased desire to implement the programme, and viewed SEL skills as important. Little research exists pertaining to teachers EI and implementation, and so these findings contribute to the on-going debate over teachers’ emotional skills.

- Many teachers felt overloaded with little time to implement the programme effectively due to a wealth of competing priorities. Teachers that reported high levels of emotional exhaustion felt unable to implement the programme successfully. These findings are consistent with the implementation and burnout literature.

- All teachers felt that if their school culture did not support the implementation of SEL then programme delivery suffered accordingly. Schools that had effective leadership reported the highest levels of implementation quality. Thus, the importance of principal leadership and organisational factors were considered.
6.5 Integration of findings

The design of the study uses both quantitative and qualitative elements (QUANT → qual) through a concurrent, embedded, mixed-methods design. As such, the quantitative element encompassed a larger portion of the study, with the qualitative strand incorporated to contribute a deeper level of analysis and an additional level of understanding. As identified in the previous sections, each research question was handled separately and with a degree of independence from each other. Be that as it may, there is value to be had in determining whether confluence exists between the two separate strands, and whether the qualitative strand enriches the quantitative through a unique perspective.

Thus, the following sections will explore: the confluence of quantitative and qualitative approaches; the distinctive contributions made by the qualitative strand; and the value in the integration of the findings.

6.5.1 Confluence of quantitative and qualitative findings

There is a secure evidence base in this study regarding the importance of implementer characteristics on implementation variability, but this is far from uncomplicated and depends on subjective interpretation. For example, the fact that implementers had the least influence on fidelity could not be interpreted as consistent with studies that suggest implementers are the most important factor (Dariotis et al., 2008; Domitrovich et al., 2008). However, triangulation in the current study between the observed fidelity scores and interviews with implementers appears to shed some light on the matter. Teachers’ level of engagement with the support system demonstrated a positive impact on implementation fidelity. Specifically, teachers that maintained a favourable perspective on the role of coaching reported fewer difficulties in delivering the programme in line with the developer’s intentions. As the support system is designed to reduce the magnitude of variability at the implementer level, these findings are therefore consistent with some of the findings found in the literature, such Becker et al. (2013) and Reinke et al. (2014).
One factor that contributes to the difficulty in understanding the level of variability in implementation dosage is the way in which dosage is measured, with the current research using predicted dosage scores from the observations instead of self-reported dosage scores. The way in which dosage is reported is typically not alluded to in the literature, but the general assumption is made that researchers rely on implementers’ self-reports of the dosage achieved (e.g. number of lessons taught in a school year). This is not to suggest that self-reported measurement is inaccurate. Rather, it is the author’s argument that it highlights the need for research to become clearer in the way that dosage (and implementation data in general) is reported. It may be that a more accurate system of assessing dosage is required, perhaps at the support system level, in order to attain more accurate results. The question therefore arises whether it would be viable to use a single measurement tool that could measure dosage in a way that was transferable to other studies attempting to record similar information. Explaining the sizeable level of variance on implementation dosage in the quantitative model was problematic, due in part to the lack of significance at the individual predictor levels. Nonetheless, the qualitative strand of this study is in line with research that has found that teachers consistently report not having enough time to implement programmes effectively. As discussed in the context of RQ1 and RQ2, there are a number of probable reasons for this such as: competing priorities within a school, and the level of time awarded to teachers to deliver preventative programmes, both having a significant effect on programme dosage. In this context, it is perhaps unsurprising that this should be the case, with reports of teacher overload being highly prevalent in the implementation literature. Nevertheless, the significant contribution of teacher characteristics to implementation dosage found in this study may also be supported by the fact that several teachers stated that their own commitment to emotional skills and knowledge were important in how frequently they delivered the PATHS programme. The advantage of the qualitative data here is that the particulars surrounding the reasons for their delivery of the programme could be explored more fully. Individual level contribution to programme dosage has not specifically been explored in the literature before, and could indicate to schools that teachers’ alignment, and belief, in SEL skills has the ability to change how frequently programmes are implemented. This could indicate that some teachers will deliver preventative programmes more than others based on their own emotional skills: this is consistent with the hypothesised conceptual model of Jennings and Greenberg (2009), and the findings of Collie et al. (2015).
In terms of findings common to both the quantitative and qualitative strand, teachers’ self-efficacy appeared to play an important role in implementation (delivery) quality, with the qualitative strand compounding the statistical findings by offering explanations as to why this might be the case. For example, teachers that reported strong skills in classroom management and instructional strategies had a tendency to report delivering the programme with ease. Similarly, teachers that reported having these skills seemed far more comfortable in making high quality ‘surface-level’ adaptations. This demonstrated that there could be crucial differences in delivery quality for teachers with high self-efficacy when compared to some of their peers. The findings that high self-efficacy seemed to have a qualitatively different behavioural pattern towards preventative programme delivery adds to the debate on the importance of measuring adaptations in implementation science: this is of particular interest as much of the literature to date has assumed that adaptations to a programme are undesirable.

Although self-efficacy on the whole was not a significant predictor in the quality model, the discourse provided by teachers in the interviews adds a thought-provoking perspective on the nature of delivery quality and positive adaptations. Through use of the interview teachers offered an insight into the nature of how they felt about themselves as implementers, how they reflected on their own use of emotions, and finally how this related to their teaching practice. This is another area with relatively little research and would benefit from additional exploration and study.

6.5.2 Distinctive contribution of the qualitative findings

Despite the fact that the qualitative strand was informed by the research questions proposed in the quantitative, the themes emerging in the qualitative interviews were also regarded as highly consequential, and reflected on in an independent manner. Two such themes emerged and these are considered briefly in the subsequent section. A fuller discussion of these themes is present in section 6.4, in the discussion of the qualitative findings. Programme experiences were shown to be highly important in how teachers considered the PATHS programme. In particular, the importance of well-designed materials (e.g. scripted lesson plans, posters, prepared feelings cards, generalisation activities) to aid the implementation process was valued highly. It was clear that the teachers in question were making great efforts to use these materials effectively to deliver the curriculum and maximise their understanding of social and emotional
learning and evidence-based programmes. Teachers also communicated that their engagement with the coaching role was generally very positive. This is likely to have had a positive effect on implementation quality and may have been evidenced in the lower variability in the fidelity model.

Teachers’ relationships with others was an important emergent theme that was alluded to by all of the focus teachers interviewed. While some relationships may seemingly be more important than others in implementation variability, it is likely that all of the relationships that a teacher has have the capacity to affect the way in which they deliver interventions. Not only do teachers rely on support from their peers and leadership team in disseminating best-practice, but also from the communication that they receive from parents and pupils. Pupils that respond well to preventative programmes often wish to share what they have learnt in the home environment, possibly as a means of validation of what is happening in their school lives. While parental involvement in SEL programmes is often cited anecdotally as less important or potentially problematic, the level of concern that some teachers placed on having parents involved in the programme suggests that further research could be valuable in improving implementation quality.

6.5.3 Value in the integration of findings

In using an embedded approach of both quantitative and qualitative elements, the aim was to enrich the starker quantitative findings (Greene et al., 1989) in order to create a more vivid picture of the individual level factors that affect implementation variability. Bryman (2006) notes that the weaknesses of one method are often augmented by the strengths of the other, with a reduction in researcher bias. It is the author’s conviction that this has been achieved in the current study, given the degree of confluence that exists between the two methodological strands. It is apparent that the ‘what’ of the quantitative findings has been enhanced by the ‘why’ and ‘how’ of the qualitative, with some of the more complex issues surrounding the statistical results clarified by the interviews conducted. The qualitative interview data was able to offer explanations and give a voice to the complicated nature of why teachers implement preventative programmes in a specific way, allowing for the overall picture of implementation variability to become clearer.
A further benefit is related to the conceptual theory and models of factors that affect implementation. As discussed in the literature review (Chapter 1 and 2), no single theory can comprehensively account for implementation variability (Durlak et al., 2011; Durlak, 2015), due to its intrinsic complexity and multifaceted nature. Yet, by using mixed-methods research, the numerous factors that can affect implementation (e.g. individual level, school level) can be realised and understood. For example, when we consider the evidence in the quantitative model regarding teachers’ attitudes and perceptions towards SEL, both individual level factors and school level factors are shown to be important: evidence for this is drawn from the quantitative approach, with the qualitative interviews helping to explain the findings. Similarly, evidence is provided in the quantitative strand regarding the influence of burnout on implementation variability, which is then explicated further in the interviews. Burnout manifests itself in many different ways and can only fully be appreciated through a mixed-methods approach. This is consistent with Maslach et al.’s (2001) understanding of burnout, that a complex interchange between multiple factors elucidates the greatest understanding of the condition.

The use of MMR is rare in implementation research, with very little research to date using quantitative approaches as well as qualitative. By triangulating data using two different sources (surveys and interviews), it creates a clearer picture and aids the validity of the findings. The steps taken in this research towards this approach appear to be effective and may help future studies deepen the existing body of evidence.
6.5.4 Summary statements

Confluence of findings

- There is a degree of confluence in the quantitative and qualitative strands, but this is dependent on subjective interpretation.
- Interviews with teachers shed some light on how fidelity of implementation could have been affected by the presence of coaches and use of the support system.
- Teachers implemented the programme with varying dosage. Teachers’ alignment, emotional skills, and belief in SEL skills had the ability to change how frequently the PATHS programme was implemented.
- Teachers’ self-efficacy was important, with those reporting higher levels of self-efficacy finding the programme easier to implement. Higher self-efficacy was also shown to be important in the type of adaptations that teachers were willing to make.

Distinctiveness of the qualitative findings

- Programme experiences were very important to teachers, with programme resources and engagement with the coach appearing to be the most eminent factors.
- Teachers’ relationships with others emerged strongly, indicating that all relationships implementers maintained were likely to have some affect on the delivery of the programme, including those with parents.

Value in integration of the findings

- Using an embedded mixed-methods approach allowed for a richer, deeper illustration of the nature of individual level factors in implementation variability - beyond the scope of exclusively quantitative or qualitative studies.
- Although MMR is rare in the field, triangulation of the data aided the understanding of the different research perspectives and aided the overall research validity.
6.6 Limitations

Within any given body of research exist limitations, which can restrict the scope and interpretability of the study. Limitations are inevitable in real-world research, yet, it is important that these are identified so that future research may be aware of these and consider them accordingly. Whilst it was the intention of the present study to reduce as many of these as possible, several limitations nonetheless endure. The following section therefore aims to acknowledge these limitations and appraise their potential impact on the research findings. For the sake of clarity the next section is separated into two sections: methodological issues, and conceptual issues.

6.6.1 Methodological issues

Selection of the PATHS to Success sample

Working within the constraints of the data collected for the PATHS to Success trial (Humphrey et al., under review) had its own challenges and these should be acknowledged from the outset. As mentioned in the Method section, the teacher sample came from the 23 intervention schools recruited in the initial phase of the PATHS to Success trial. The implementers in the study were drawn from the KS2 teachers in the schools that opted-in to be part of the study. There was a significant disparity in the way that teachers were asked to participate in the study; certain schools had a full consultation with their staff before signing up to the trial, whereas others chose not to have a consultation process. This may prompt the notion that sample was unrepresentative. However, there are number of reasons as to why this may not be an issue in current study. The overall large sample of 183 teachers should ensure that there is a large demographic spread of implementers with different genders, experiences, training, and length of time in the profession. The analysis performed indicated that this was indeed the case with a strong degree of variation in the sample being studied. The distribution of female to male teachers, 80% to 20%, was nationally representative (DfE, 2014), working within seven different local authorities. The nature of the research design in RQ1 did not require a control group, and the intention of the second research question was not to make direct comparisons between teachers. Rather, the focus was to identify the unique barriers and facilitators in implementation variability. In this context, the inclusion of a control group would have delivered no useful benefit.
Data collection

*PATHS to Success* was a well-funded trial, with schools receiving an abundance of free resources, literacy and numeracy assessments, training, and coaching support. Thus, the prospect of receiving such resources and support was an attractive prospect to school principals and administrations. This creates a potential ethical dilemma, in that the teachers that were included in the trial may have felt coerced to do so. To overcome this issue, teachers were able to opt-in to the research, with the surveys, observations, and interviews obtained on a voluntary basis. Teachers were able to speak directly to the PATHS psychologists, or the University of Manchester directly, to avoid coming into conflict with their school leadership teams. The fact that only a very small number of teachers refused to complete the surveys, with an even smaller number opting out of being interviewed by the research team, suggests that the main body of teachers were happy to complete the tasks requested of them. As is common in any body research (Cohen, Manion, & Morrison, 2011), attrition is to be expected. Missing data is certainly not a new issue in educational research, particularly given the restrictions of formulating and delivering research in schools. Within the present study, teacher attrition was 55% over the two-year research period, with many teachers leaving after the first year of the study. This was problematic in that the complete, two-year dataset only comprised 45% of the teachers from the first year. This is a clear limitation, given that a considerable proportion of the optimum sample was not included in the present study. However, the use of multiple imputation, to deal with missing data, ensured that a large sample of teacher data was retained without going to waste (Domitrovich et al., 2015; Pampaka et al., 2016).

The accuracy of survey information provided by teachers creates a deal of consternation from researchers (Donaldson & Grant-Vallone, 2002), although it is generally accepted that teachers are now far more aware of the importance of SEL and implementation skills (e.g. Kelly et al., 2004). Primary school teachers spend a great deal of time in the classroom working on a variety of interventions (universal and targeted), as well as attending to the curriculum needs of their students. Given the length of time that they spend with their students when compared, for example, to secondary school teachers, means that they tend to have a better grasp of what works in their classrooms and why. Primary school teachers also have far more time than their secondary counterparts to generalise the skills recommended in evidence-based programmes. Variability in the
quality of teacher responses is always a challenge for research in education. Nonetheless, as there were a large number of teachers involved in the present study, it is likely that a high number of authentic responses were included.

Another potential limitation relating to the veracity of the information that teachers gave is that they had a reasonably large number of surveys to complete. Teachers completing the surveys may have experienced fatigue and therefore not completed the surveys accurately. Although this is a potential issue, realistically each teacher survey only took approximately five minutes to complete, so it is unlikely that this would have substantially altered the results. Teachers may also have felt that their performance was being assessed (e.g. in the teaching self-efficacy survey), although in the guidance materials that teachers were given they were informed this was not the case. Teachers may have wished, therefore, to respond with socially desirable answers regarding their implementation of the PATHS programme in order to appear more effective.

With respect to the environment in which the surveys were submitted, most of the teachers completed them on training days at the University. Occasionally teachers completed them in a school setting when they had not attended the training. Many teachers completed these surveys on paper, although they were also able to complete these online if they preferred. There was a potential issue in the timing in which teachers completed some of the surveys; the burnout inventory was predominantly completed in the summer term, although some teachers completed this at various time points throughout the school year. This is potentially problematic as, in accordance with the literature (McCarthy, 2009; Pas, Bradshaw, & Hershfeldt, 2012), teachers may be less inclined to report symptoms of burnout after a period of rest. Conversely, teachers may have been more inclined to feel negatively about coming back to the school environment after a long summer break and, therefore, feel pessimistic about their state on returning to practice. In support of this point, Hoglund, Klingle, & Hosan, (2015) note that feelings of job-related burnout may accumulate over long periods of time; teachers returning to work after a period of rest may still experience symptoms of burnout as they have developed gradually over several years.

A further limitation was that although the present study aimed to examine the implementation of the PATHS programme in naturalistic settings, it is irrefutable that...
the intervention schools experienced advantageous conditions for implementation than would commonly be expected when PATHS is more widely dispersed. As all of the intervention schools chose to opt-in to participate in the study, it could consequently be assumed that they were at least, to some degree, receptive to PATHS, motivated by the resources and training that they otherwise might not have received. Although researcher subjectivity is present throughout all stages of the research process, it is a particular risk when engaging in qualitative research. Thus, it is believed that the use of multiple methods to aid triangulation, verbatim extracts, and large sample sizes accurately refined the way in which the data was reported.

_Cross-sectional research_

Whilst commonly used in psychological research (Pas et al., 2012; Ungar, 2013), there are certain limitations that occur when employing a cross-sectional design. Use of a cross-sectional design in the present study only represents a ‘snap-shot’ of teachers’ implementation and therefore can only provide limited information. Cross-sectional studies are limited in that they cannot establish a sequence of events, nor can they infer causation. There is evidence to suggest that longitudinal designs may be beneficial, in that they can allow changes in implementation behaviour to be charted over a period of time. As a rare example, Domitrovich et al. (2015) used longitudinal implementation data to determine that teachers’ implementation of the Good Behaviour Game was related to how well they felt it fitted into their practice over the course of an academic year. Nevertheless, longitudinal designs are resource, personnel, and time intensive; the practical constraints of observing teachers implementing PATHS multiple times over a two-year period were nonviable.

_Measurement tools_

Although widely used, self-report measures must be interpreted with caution. Self-report measures are popular for a number of reasons. Firstly, they represent a low-cost way (in both time and resources) of obtaining data. Secondly, they can be implemented with ease to large groups of participants, particularly when using online survey tools. Yet, researchers using self-report measures are relying on the honesty of their participants when completing the surveys. The degree to which this might be an issue is ostensibly related to the nature of the survey, for example teachers are less likely to be honest in their level of depersonalisation to their students than they will be about their
use of classroom management strategies. Even when a participant is attempting to be honest they may lack the introspective ability to provide an accurate response - conceivably, teachers may see themselves in a different light than others view them. Teachers may have varied considerably in their interpretation or understanding of particular questions. This is less of a concern with surveys measuring concrete issues like lesson planning, but is a substantially larger issue when measuring more abstract concepts such as emotional self-efficacy. Teachers may have also varied in their interpretation and use of rating scales; research suggests that there are large individual differences in how respondents may rate themselves (e.g. Wilcox, 2005). Some participants may have been ‘extreme responders’ who prefer to use the extremities of the scales, whereas others prefer to use the midpoints and would rarely use the outer reaches.

A potential limitation in the tool used to measure emotional self-efficacy, the ESES (Kirk et al., 2008), is that some of the constructs used within the scale did not all correlate strongly with the validation measures. The 32-item scale did, however, have a Cronbach’s alpha of .96, which is deemed excellent (Pallant, 2013). As would be expected of such a measure, the ESES correlated strongly with other measures of trait EI. It did not, however, correlate as strongly with other measures of ability EI. Petrides and Furnham (2003) argue that trait EI, or what they deem to be ‘emotional self-efficacy’, is an entirely different construct than ability EI. Thus, it is possible that the ESES did not capture a full enough picture of the range of EI abilities that teachers have. Examination of the relationship between emotional self-efficacy and ability/trait EI subscales demonstrated that they were most significantly associated with the understanding and managing of emotions subscales. The understanding and managing of emotions are frequently termed as ‘strategic’ skills as they relate strongly to the way in which individuals work with and understand each other (Kirk et al., 2008). The ESES is a relatively new measure of EI and therefore is still to develop a strong evidence base for its use; further confirmatory analyses need to be conducted in order to address some of these limitations.

There were certain limitations for the self-efficacy measure, the teachers’ sense of efficacy scale (Tschannen-Moran & Hoy, 2001). Despite the fact that all of the 24 items in the scale yielding significant loadings (0.54 to 0.83), with high internal consistency
(Cronbach’s alpha = 0.97), there were relatively low correlations between general teaching efficacy (GTE) and other measures of self-efficacy. This suggests that the teachers’ sense of efficacy scale was not successful in capturing the essence, or core, of efficacy. Several authors (e.g. Lin et al., 2002) suggest that teachers’ efficacy measures in general are not robust, varying greatly depending on cultural norms. As this is a measure for North American teachers, it is possible that the teachers’ sense of efficacy scale may not be culturally appropriate in a UK context. However, research by Tsigilis, Grammatikopoulos, and Koustelios (2007) in a Greek study note in the discussion that: “teachers’ sense of competence as conceptualized in the teachers’ sense of efficacy scale might not be culturally oriented” (p.639), due to the strong findings of their parallel analysis. Nevertheless, as noted with the ESES, the teachers’ sense of efficacy scale requires further testing through confirmatory factor analysis and cross-validation before conclusions can be made regarding how robustly the scale performs in other cultural contexts.

Although the Maslach Burnout Inventory (Maslach & Jackson, 1986) has been well used and generally well validated over the past few decades (e.g. Taris, Le Blanc, Schaufeli, & Schreurs, 2005), there are some methodological limitations to be considered in its use. The scale has been criticised for the cross loadings of items 12 and 16 in the scale (Figueiredo-Ferraz, Gil-Monte, & Grau-Alberola, 2013), as well as the issue of the poor internal consistency coefficients in the depersonalisation subscale. There has also been discussion around whether the scale should utilise a two-factor model, instead of the three-factor original structure (Brackett et al., 2010). It is also worth reflecting on the notion that different groups of professionals may ‘burnout’ in different ways, and so a scarcely altered measurement tool for each of the respective professions (e.g. medical, teaching) may not be fit for purpose. The burnout inventory focuses only on the affective state of burnout, the inclusion of physical symptoms should be considered, given that many teachers reported feeling physically tired in the qualitative interviews. Finally, as noted in the limitations of the previous two measures, cultural differences can significantly change the way in which individuals attribute stress or burnout - these should also be considered in the administration of this tool.

In spite of these limitations, the surveys used (as detailed in section 3.6.1) elicit strong psychometric properties, which have been subject to rigorous review and testing.
Moreover, there is a continuing belief in recent research that self-report is the most
effective way to gain insight into a problem, and is the most powerful way to gain a
unique perspective on the individual (Graham & Unterschute, 2015; Greene, 2015).

The inclusion of semi-structured interviews in the qualitative phase opens the present
study to criticism by researchers who believe that qualitative (and MMR) research may
be biased or lacking in validity (e.g. Symonds & Gorard, 2010), due to a lack of
objectivity. However, as considered in the Method, all facets of the qualitative enquiry
were scrutinised and validated at every juncture. Triangulation in implementation
research has rarely been possible, thus its inclusion in the present study offers numerous
benefits. Whilst the overall investigation may be limited by the intrinsic difficulties in
unifying quantitative and qualitative data from opposing epistemological stances, it is
hoped that the relevant steps have been taken to achieve an appropriate level of quality.

**Analytical strategy**

The analytical strategy chosen for the current study was multiple regression. Using such
a method allowed for variance in implementation variability to be explained at the
individual level. Whilst the sample size in the present study was similar, or better, to
that of other studies in previous research, the effect size calculations revealed that only
medium effect sizes could be detected. Thus, it is possible that the analysis conducted
lacked the sensitivity to accurately identify the individual level factors that may have
become significant with a larger size of sample. Additionally, a major conceptual
limitation of multiple regression is that it can only determine relationships rather than
causal mechanisms (Cohen et al., 2011). To further this point, Rubinson and Ragin
(2007) note: “In regression analysis, cases do not constitute anything in and of
themselves, they are merely the carriers of information about relationships among
variables” (p.375); thus, caution is required in the interpretations and conclusions
drawn. However, given that very little empirical evidence exists to date in the field of
implementation and individual level characteristics research it is the author’s hope that
the findings in this early, exploratory research help to build on the understanding of how
implementers can affect variability in implementation.
Additional variable considerations

The present study could be criticised for not incorporating sufficient variables to fully account for the variability in implementation demonstrated. One of the primary constraints affecting the present study is due to the fact that its data is drawn from the PATHS to Success trial. This means from the start there were restrictions on the variables that could be incorporated in the research. There is evidence, as discussed in chapter 2, that teacher’s social and emotional wellbeing (Jennings & Greenberg, 2009), variation in implementer style and interpersonal behaviour (den Brok et al., 2005), as well as exposure to training and coaching (Becker et al., 2013) all contribute to variance in implementation variability. The present study acknowledges the importance of these variables; nevertheless, it would be impossible within a single study to include every possible individual influence on implementation variability, and to endeavour to do so would be beyond the confines of this study. The target population was implementers of evidence-based programmes, as little research has specifically drawn on the influence that this population has, the variables incorporated in this study make a distinctive contribution to explaining how teachers influence implementation. Whilst there are drawbacks in having to extract data from a larger study, there are irrefutably some significant advantages. Having access to a larger data set allows for the exploration of a much larger sample that would otherwise have been unobtainable, as well as having access to a wide range of contextual information. Furthermore, it was possible to use observed implementation data instead of self-report, which is exceptionally rare in this type of research, and thus is a discernable advantage.

Research on implementation, an emerging field in research, results in a balance between acknowledging factors that have already been established to affect implementation whilst exploring new, untapped possibilities (e.g. the exploration of emotional self-efficacy). In the instance of the present research, 14 predictor variables were included that all had a theoretical justification in the study as potential predictors for affecting implementation variability at the teacher level.

6.6.2 Conceptual issues

Defining and measuring implementation

A dominant limitation within the present study concerns the principal concept under appraisal - implementation. Implementation can be interpreted subjectively, and an
aspect of implementation reported or observed by one individual could be defined and reported differently by another. These difficulties were expressed by Aarons, Hurlburt and Horwitz (2011) who note that:

"Many efforts to implement programs designed to improve the quality and outcomes of human services have not reached their full potential due to a variety of challenges inherent in the implementation process. Implementation of innovative human service technologies is generally considered to be more complex than implementation of other types of technology, due to the fact that human service technologies are delivered through the actions of individuals and organizations, which exist within complex, multi-layered social contexts." (p.4)

As such, the difficulties expressed above could have been an issue with the present study, however, as a reliable measure of implementation was used (i.e. the lesson observation proforma) based on the eight aspects of implementation (Durlak & DuPre, 2008) it is the author’s hope that subjective interpretations were substantially lessened.

There is also a degree of subjectivity involved in the interpretation of Domitrovich et al.’s (2008) implementation quality conceptual model, as it makes the assumption that implementer factors are one of the most important levels of the framework. It is possible, as Durlak (2010) notes, that implementer factors can be ‘trumped’ by the power and dominance exerted by organisational and administrative factors. Therefore, the way in which researchers hierarchically make assumptions on the factors that affect implementation should be carefully considered.

It has also been noted by Domitrovich et al., (2015) that studies examining the influence of implementer characteristics on implementation have had mixed findings, possibly due to the methodological inconsistencies in how it is reported. For example: which aspects of implementation are assessed, when and how often measures of implementation are taken, and by whom (e.g. teacher versus independent observation).

In the context of the present study, this could mean that implementation observations were not taken frequently enough, or at the optimal time in the academic year (e.g. teachers may not having been teaching the programme for long enough). In addition, the expectation of regular researcher and coaching visits is likely to have affected the process of implementation in some schools, especially in encouraging progress and the addressing of difficulties. Despite the fact that multiple observations of teachers’
implementation of the PATHS programme may have been beneficial, the time constraints in covering four-year groups in a two-year period made this impractical. However, this assumption cannot be verified and it is possible that there would have been no significant difference in observing teachers over multiple junctures than in a single observation.

**Burnout**

Most of the research on burnout has been conducted in the medical profession, mainly with doctors, nurses, and to a lesser extent, teachers. The symptoms of stress, usually characterised by emotional exhaustion, diminished personal accomplishment, and depersonalisation are well established. However, whilst the symptoms of burnout have long been recognised, the term ‘burnout’ in itself is fairly new, with most of the research having been conducted in the last couple of decades. Prevalence rates of burnout seem to be on the rise (e.g. Guin, 2004; Wehby et al., 2011) but this is likely due to more comprehensive diagnostic criteria and better awareness among varying professions. Nevertheless, there is still an element of subjectivity, with no single agreed assessment tool or guidance as how to properly assess the ‘burnt out’ state. For example, some researchers claim that burnout should be conceived as a unidimensional construct, with others suggesting they have found four or more constructs. In other words, consensus on the dimensionality of the burnout construct can hardly be said to exist (Hellesøy, Grønhaug, & Kvitastein, 2000).

Perhaps a more pressing concern is how the teachers in the present study were identified as having symptoms of burnout. Due to the large number of teachers involved in the *PATHS to Success* trial, it was not practical to verify burnout through medical/counselling services, as well as the obvious ethical problems that would be involved in doing so. Thus, reliance on a self-report burnout measure (Maslach et al., 2001) was required which, as detailed in section 6.6.1, has its own drawbacks and limitations. Burnout is defined by Hellesøy et al., (2000) as: “a state characterized by very negative emotional feelings, which can be characterized by the individual seeing himself or herself as completely “locked in” a hopeless person-environment situation, from which it feels impossible to escape.” (p.236). From this description it would be easy discern that burnout is a specific state with a common set of characteristics. However, burnout does not develop quickly, or over the course of a single day. The
highest degree of burnout can be encapsulated as an end-of-state process, given that it would have taken a long time to develop. This in turn suggests that it might be more appropriate to refer to stages, or degrees of burnout. Whilst certain variables like teacher self-efficacy would be expected to remain relatively stable over the course of a school year, teacher burnout is less likely to meet this assumption, as it is likely to be lower at the commencement of the school year and higher towards the end. This may, in part, explain the reasonably low levels of burnout reported throughout the PATHS to Success trial. Nonetheless, teachers are in the best position to know about their own individual state and the present study acknowledges using a self-report tool will result in the best possible measure of burnout.

**Self-efficacy**

Conceptual issues relating to self-efficacy are centred on the fact that there is an assumption made within the research that self-efficacy beliefs are often presumed to be fixed and unchanging. However, previous research has demonstrated that self-efficacy beliefs are only strong when individuals have a very clear understanding of the demands of their role (Bandura, 1997). Given the nature and variability of the teaching role it is possible that teachers would struggle to give an accurate estimate of their ability to perform certain tasks (e.g. varying instructional strategies). It is possible those teachers would estimate their abilities differently at certain junctures throughout the academic year and that these do not always remain constant. Furthermore, in a behaviour-analytic critique of self-efficacy theory, Biglan (1987) proposes that self-efficacy does not unequivocally correlate with how an individual actually behaves. Biglan (1987) instead suggests that self-efficacy may be better explained through the influence of environmental events. Thus, teacher self-efficacy ratings of their behaviour (e.g. classroom management) and other behaviour (e.g. that of pupils), may be due to occurrence reinforcement that establishes an accord between verbal predictions and the behaviours that an implementer may refer to.

**Emotional self-efficacy**

As already mentioned in section 2.2, there is a great deal of contention surrounding the conceptual issues of EI. As the APA (1999) suggest, a strong measure must be based upon a clear conceptual definition of a construct; even among the more empirical definitions, however, it remains unclear how EI should be conceptualised. Although
advocates (e.g. Bar-On, 2000) would argue that EI is a conceptually intelligible concept, a review of the literature would suggest otherwise (Murphy, 2014). An overarching role of EI (Goleman, 1996; Bar-On, 2010) includes concepts such as assertiveness, independence, optimism, adaptability, social responsibility, empathy, altruism, and even morality. Therefore, the claims made for EI seem almost like a universal panacea for both individual and life troubles. Whilst these claims may have engaged the minds of educators and researchers alike, there are few empirical studies to have supported any of these assertions. The main conceptual issue is that perhaps the assertions made by EI advocates are simply too broad. Thus, when we consider the work of Kirk et al. (2008) in their development and preliminary validation of an emotional self-efficacy scale, they suggest that: “because emotional self-efficacy may be an aspect of trait or dispositional emotional intelligence, one would expect a measure of emotional self-efficacy to be related to, but not redundant with, a measure of trait emotional intelligence.” (p.433). Therefore, it could be argued that emotional self-efficacy is a more succinct way of measuring aspects of trait emotional intelligence, in that it refers, mainly, to how an individual understands their own emotions and the emotions of others. This is conceivably a more practical way of assessing the influence of emotional skills. In this context, it is acknowledged that the current study uses a more simplistic definition of EI, but it is the author’s belief that this permitted a simpler, pragmatic definition that could be better applied to the research.
6.6.3 Summary statements

Whilst limitations are inevitable in any piece of research, their consideration remains highly important. In the context of the present study, there were a number of limitations that have been classified either as methodological or conceptual.

Methodological limitations:

- The selection of the PATHS to Success sample was addressed.
- The way in which data was collected was reflected on, including potential issues with survey information.
- Issues with measurement tools and the limitations of individual measures were discussed.
- Limitations for the use of multiple regression as the chosen analytical strategy were included.
- Additional variable considerations and inherent constraints were considered.

Conceptual limitations:

- Issues associated with the defining and measuring of implementation were addressed.
- The conceptual issues of burnout were reflected on and considered.
- Potential conceptual limitations of self-efficacy and emotional self-efficacy were discussed in relation to the respective literature.

To conclude, whilst the author acknowledges the presence of potential limitations in the current study, the above sections have aimed to address the possible influence that these may have had on the research findings.
6.7 Implications

In this section the implications of this study are brought forward in light of the findings presented in the previous chapter. A number of implications have emerged that have relevance on the development of implementation science, the influence of individual level characteristics, and what can be done to potentially improve research and practice. Given that the results of each research question have been addressed individually, with a section pertaining to the confluence of approaches, the implications of the present study are considered according to the wider elements of the research: implementation, and the specific individual level of the implementation quality model.

6.7.1 Implementation

As is concordant with the broader implementation literature, there is a considerable amount of variation in the way that implementation is measured and conceptualised, with some of the reasons for this being considered in the evaluation of RQ1. What appears to have emerged from the findings of the study is that researchers and implementers must be cautious in the way in which they measure, handle, and record implementation data. On one hand, teachers may have felt that they were delivering the programme with high fidelity (e.g. rigidly sticking to the lesson plans and objectives), whilst on the other failing to deliver the programme with high enough quality to effectively engage their participants. Furthermore, delivering the programme occasionally, and in many cases delivering the programme less frequently than required, led to variability in programme dosage. In this context, programme developers, researchers, and implementers must be especially observant for signs of implementation drift, as they may escalate over a period of time, resulting in low levels of implementation quality or programme abandonment. Given some of the implementation variability in this study, supplementary training and coaching sessions on the critical role that implementation plays in programme success may secure better outcomes.

Implementation is slowly gaining traction in the prevention literature as a vital component of programme success (Durlak & DuPre, 2008; Lendrum, 2010), but the findings here provide evidence in one of the few studies of its kind, that unless all aspects of implementation are taken into consideration as a whole, as opposed to
concentrating on one or two disparate elements, then the overall implementation quality suffers as a result. This may lead to undesirable programme outcomes that are not in keeping with programme developer intentions. While implementation fidelity has typically been considered the most important factor in previous research, arguably because of the emphasis placed on adhering to the core programme components (Dane & Schneider, 1998; Ringwalt et al., 2003), it must be acknowledged that delivery quality and dosage are equally, if not more important. This must be taken on board by schools, not only for monitoring what is being delivered in the classroom, but also at other times of the day when the programme needs to be generalised. While a lesson may be effectively delivered in the classroom with the key objectives being met, this is often not extended to intervals or dinner times when pupils are left to interact with each other. In addition, many schools now utilise ‘lunchtime assistants’ who are not teachers and who are therefore unaware of the key skills being taught in the classroom (e.g. the three steps for calming down). This means that they are unlikely to be using the strategies that the teachers are attempting to consolidate, as well as unintentionally subverting their efforts. Thus, the implications from the findings here suggest that all schools would benefit from taking a whole-school approach to aid intervention clarity, given that teacher attitudes to school culture played an important role in how successfully the programme was delivered.

A troubling aspect of implementing evidence-based programmes is the level of awareness and attitudes that teachers have towards programme dosage, and this was apparent in the qualitative phase of this study. As discussed in the literature review and conceptual limitations sections, there is a continuing discussion regarding measurement and appreciation of implementation by different stakeholders. If implementers do not have a clear understanding of the importance of delivering evidence-based programmes with the appropriate frequency, then it is unlikely that these interventions are ever likely to reach their full potential. For example, Humphrey (2013) notes the importance of programme dosage and likens it to an inoculation metaphor: “a certain amount of exposure is required in order for children to reap the benefits of a given SEL intervention, in much the same way that certain drugs need to build up in the body before they become effective in fighting infection or disease” (p.95). Therefore, it is important that all implementers understand the possibly deleterious effects of skipping lessons that they do not deem to be important, or choosing to dispense with the
programme in favour of other activities. As mentioned in the literature review, programmes may need an ‘optimal’ amount of dosage before they become effective, meaning that implementing a programme below a certain threshold could lead to unfavourable outcomes. Greater understanding of whether a dosage threshold exists may be vital in achieving stronger programme outcomes.

It is also important to note that implementers may not be aware of the skills required to achieve better delivery quality and the adaptations they are able to make without undermining the programme. It is indicated in the literature that some implementers struggle to tease apart quality from fidelity (e.g. Meyers et al., 2012), and this was evident in the qualitative phase of the study. There appeared to be a disparity between how implementers regarded adhering to the programme and the way in which they actually delivered it. Implementers and schools should be aware that fidelity and quality are not one in the same. It is possible to deliver any given lesson with high fidelity (by adhering to the lesson plan, objectives, and structure), but deliver it with low quality through a lack of preparedness, enthusiasm, clarity, or responsiveness.

There are certain implications that have come to light from the findings in this study regarding the use of the IQ model (Domitrovich et al., 2008) that informed this thesis. One of the most important points to reflect on is that the IQ model, as an ecological model of implementation, is not bereft of context. Understanding how these contextual factors in implementation lead to variability in implementation quality is vitally important. Whilst it may be reductive to see every aspect affecting implementation as a result of context, the implications from the present study suggest that multiple levels of the model may be important in ensuring high quality implementation. The present study set out to examine the level of influence that individual level factors have on implementation variability; the findings from the study would seem to suggest that implementation variability is a product of interaction from many different ecological systems. Future implementation research using the IQ model should take into account the importance of the individual level of model, whilst addressing the systemic influence and interactions of school and community level factors.
6.7.2 Individual level factors

Psychological characteristics

A multitude of individual factors contributed to the overall variance in the three regression models, with gender and classroom management elicited as marginally significant predictors. Self-efficacy is an indicator of psychological functioning that drives implementers’ efforts when faced with various challenges. Extant research has determined that self-efficacy is an important psychological characteristic in the delivery of prevention programmes and is generally associated with higher implementation quality (Skaalvik & Skaalvik, 2014), and this was consistent with some of the findings in RQ1 and RQ2. However, while having higher self-efficacy may be a greater predictor for delivery quality, it was noted in section 6.4 that it was teachers who reported higher levels of emotional self-efficacy who had a greater desire to implement the programme more frequently. Thus, self-efficacy and emotional self-efficacy may have different trajectories to different aspects of implementation. This means that programme developers need to be aware of the specific needs and skills of implementers and tailor their approach to implementation respectively. This falls in line with the approach of a two-phase coaching model by Becker et al., (2013), who advocate a ‘tailored’ phase in the training process.

While the sense of overload and pressure that teachers face is not necessarily a novel concept (e.g. Schaufeli et al., 2009), schools nevertheless must be aware that teacher burnout is a risk to the implementation of evidence-based programmes. The findings of the present study, both in RQ1 and RQ2, suggest that teachers are indeed under a great deal of pressure. The consequences of stress and burnout are detrimental for teachers, their students, and the education field in general. There is a risk that teachers no longer feel that their efforts are effectively contributing to the development of their students. The implication here is that better strategies need to be in place in order to ease the strain that teachers face. Some of the more arbitrary advice (e.g. Kyriacou, 2001) suggests that teachers need to avoid confrontation, relax after work, and have a healthy home life. Whilst direct action may appear to be the best strategy in dealing with job stress, it inevitably may be impossible to implement. Recent research suggests that teachers who report higher levels of overall workplace stress also report greater conflict in their relationships with the students in their classrooms (Whitaker, Dearth-Wesley, & Gooze, 2015). Therefore, therapeutic intervention may be the best possible solution,
with cognitive therapies (Howard & Johnson, 2004) demonstrating that teachers’ attitudes to troublesome situations at work are mediated by the way in which they think about stress in general. Mindfulness therapies show promise in reducing stress by developing the capacity for teachers to observe their emotions and thought processes without reaction or judgment (Taylor et al., 2016; Whitaker et al., 2015). It is vital that schools are aware of such interventions to ensure that there is a support network in place to aid the health and well-being of their staff, conceivably improving the implementation of preventative programmes in the process.

Research by Ennett et al. (2003) suggests that lack of experience in delivering preventative interventions, or the level of comfort that teachers felt towards delivering SEL programmes, increases levels of anxiety when they are required to implement. This was certainly the case in the present study and was consistent with the findings from RQ2. With this in mind, further research would be useful in examining what type of implementers are more likely to take to preventative programme implementation more easily. For example, Lochman, Wells and Lenhart (2008) as well as Côté and Miners (2006), found that implementer traits such as extroversion, sociability, agreeableness, gregariousness, and assertiveness were all characteristics related to positive implementation outcomes, irrespective of the length of time spent teaching. Very few studies have examined how these psychological constructs relate to implementation variability, but it is likely that they would have an impact, given that new programme innovations are often regarded as an additional obligation or burden. Therefore, the implication is that by understanding the individual psychological characteristics of implementers, schools and programme developers are better equipped to know how to support the individual in the delivery of interventions.

**Professional characteristics**

Not having enough time to implement the programme was identified as a severe risk to programme dosage. The findings in this study suggest that programme dosage decreases in line with the level of competing factors, particularly in exam classes. While most teachers find it difficult to balance their responsibilities (Tschannen-Moran & Hoy, 2001), the increasing level of curriculum burden means that preventative programmes, more so than ever, may struggle to achieve their desired goals. It is essential that schools are aware of this and respond accordingly, with timetabled sessions that are not
deviated from and interventions forming part of the schools’ regular plan. The findings from this study demonstrate that schools need to be committed to the implementation of prevention programmes; implementers alone do not have the ability to make interventions successful. Very few teacher-training programmes include any training on preventative interventions; teachers are often left to cope with the demands of understanding the discrete elements of new programmes whilst continuing on with the regular delivery of the national curriculum. In support of this point, a recent report from CASEL (2014) reported that an overwhelming majority of 83 percent of teachers wanted training in SEL, yet research by Schonert-Reichl and Hymel (2014) demonstrated that very few trainee teachers are receiving any. Therefore, many teachers vary considerably in their level of skills and experience in delivering SEL programmes, which can contribute greatly to variability in implementation. Higher levels of education and training are reflected in the literature as having a positive effect on intervention outcomes (e.g. Aarons, 2004; Abry et al., 2013). Conversely, a lack of SEL training from teachers has actually been demonstrated to erode student SEL skills (Reyes et al., 2012). Thus, the implications of the current study suggest that teachers were generally very receptive to training at both a universal and individual level, but only when they were given the time to do so. Time must be given to teachers to deliver interventions effectively, as well as allowing for the continuing professional development of skills to hone their craft. The coaching process must also be handled with a degree of care; teachers were only receptive to training when they felt that they were given the respect that they deserved and a level of empathy that they, not outside bodies, understand their students better than anyone.

Perceptions and attitudes
Numerous programme attributes that are reflected in the perceptions and attitudes of implementers have been demonstrated to improve implementation quality (Domitrovich et al., 2008; Price, 2012). The literature suggests that as teachers become more familiar and comfortable with an intervention, their ability to understand and appreciate the intervention has ramifications on how it will be put into practice (Brackett et al., 2012; Dusenbury et al., 2003). Therefore, related to this is the perceived value that teachers place on the importance of the programme; if teachers do not value the programme or understand its importance they will be more likely to skip or adapt the programme as they see fit. This has obvious implications for both dosage and the quality of delivery;
this was reflected in both RQ1 and RQ2 of the present study. This implies that both researchers and programme developers need to address specific strategies to enable teacher ‘buy-in’ to an intervention. One possible way of achieving this might be to demonstrate that the newer programme is more effective that the current practice. If teachers are apathetic with strategies currently in place they may be more receptive to accepting a different programme with a validated evidence base (Elias et al., 2003) that better suits their needs and cultural context. As demonstrated in RQ2, other perceptions and attitudes develop over time as implementers begin to have experience with the intervention. Teachers that perceived the PATHS programme to be effective reported higher levels of implementation quality. Indeed, this is reflected in several other studies where the perceived effectiveness of an intervention influenced implementers to deliver with greater implementation quality (Baker et al., 2010; Ringwalt et al., 2003). Han and Weiss (2005), in a study on sustainability of teacher implementation of school-based mental health programmes, found that an intervention’s reported effectiveness appeared to influence implementers’ ratings of acceptability. Teachers that perceived an intervention to be ‘strong’ were more likely to find it acceptable to implement. Given that there is a growing evidence base in both the present study and in the existing literature between acceptability and perceived effectiveness, programme developers and schools should provide data pertaining to an intervention’s effectiveness. This could possibly improve implementers’ perceptions of the intervention’s acceptability, and therefore enhance teachers’ commitment to implement successfully.

Undeniably, teachers’ perceptions of school culture can have a substantial effect on the way in which they deliver evidence-based programmes. A wealth of research exists regarding the important role that school culture plays in implementation (e.g. Aarons et al., 2011; Dusenbury et al., 2010; Lendrum, 2010); culture influences the way in which activities are scheduled and planned, and reflects the value system, norms, and shared beliefs of the system. Teachers’ perceptions and attitudes towards the school culture was a marginally significant finding in RQ1, but came out as a very strong theme in the qualitative strand; in particular, the notable role that principal leadership and school administration play. Research finds that the attitudes of principal leadership create an atmosphere for learning that influences the delivery of evidence-based programmes (Bryk, Sebring, Allensworth, Luppescu, & Easton, 2009). Other research demonstrates that school principals who create an atmosphere of trust, share their vision for the
school, and are open with their staff create a favourable school culture (Stephenson & Baur, 2010). Research by Kam et al. (2003) found that support from school leadership was of central importance to school-based programme implementation; the support from the principal and the delivery quality of the teacher were determined to be critical factors in ascertaining the success of the programme on participant outcomes. It may be that principal leadership is so important due to the fact that they have the ability to influence programme generalisation outside of the classroom and drive a ‘whole-school’ approach. Therefore, in the context of findings in other areas of research that have found similar patterns, it is vital that researchers and programme developers fully acknowledge the importance that principal leadership can play in implementation variability at the individual teacher level.

**Factors at different ecological levels of influence in the IQ model**

Although the previous three sections have clarified some of the implications at the individual level, there are ostensibly a number of other factors at different ecological levels that can affect implementation quality. Whilst it is acknowledged that implementers play an important role in implementation variability, the role of school level factors are also likely to play a vital role. The influence of the school may manifest in a variety of different ways, such as the resources that are available to support interventions, the nature of the school’s characteristics, and the presence of effective administrative leadership that fosters a positive school culture. Understanding the organisational context of schools is essential for the implementation and perpetuation of preventative programmes because all key elements of the intervention (e.g. teachers, support staff, participants) are nestled within this shared environment (Domitrovich et al., 2008; Durlak, 2010). Therefore, implementation is not solely accountable to factors at the individual level, but is influenced by other external factors that interlace and must be considered.
6.7.3 Summary statements

With an evidence base that is still in its infancy, there are a number of potential implications from the present mixed-methods study for researchers, programme developers, and schools in understanding implementation variability at the individual level:

- Given the high level of implementation variability in this study, additional training and coaching sessions on the vital role that implementation plays in intervention success may help to secure better outcomes.
- All aspects of implementation should be taken into account by schools, as well as effectively monitoring how the programme is being generalised throughout the school day. Implementers need to be especially aware of how frequently they are delivering the programme as well as understanding the type of adaptations they can make.
- Programme developers should tailor their approach to implementers by better understanding their own specific needs and skills. In doing so they may be better equipped to understand the type of implementers they have delivering the programme and therefore improve the implementation quality.
- School leadership teams should be aware of the levels of stress that their teachers face, while putting into place strategies to help combat the effects of burnout.
- Teachers must be given enough time to implement preventative programmes. Allowing time for appropriate additional training and the development of professional skills enables teachers to implement in the best possible way.
- Teachers’ perceptions and attitudes have the ability to change the way in which programmes are delivered. Sharing programme effectiveness data with teachers may increase teachers’ acceptability of the programme.
- In terms of leadership, school principals must be receptive to programme implementation in order to foster a positive school culture that supports the development of SEL.
6.8 Directions for future research

The present study was largely preliminary in nature, in an area of study that has not yet garnered a great deal of research. As a result, the findings have raised some interesting implications for programme developers, researchers, and schools in understanding variability in implementation that exists at the individual level. Nevertheless, given that the research is still in its relative infancy it has identified certain gaps that warrant further investigation. The most significant gaps highlighted throughout the current study are presented in the sections below.

6.8.1 Defining and measuring implementation

The study of implementation has received substantially more attention in education over the last couple of decades, brought on partially by the emergence of evidence-based practices and programmes. Yet, there are wider issues in implementation research that remain insufficient; as Fixsen and Ogden (2014) note: “even if the concept of implementation is not new, the idea of developing ways of measuring it certainly is. Consequently, there is a great need for the development of instruments which operationalize and standardise the measurement and analyses of implementation processes and outcomes” (p.8). Some of the conceptual difficulties within implementation have been apparent throughout this thesis, and the findings discussed serve to strengthen the necessity for further research. One of the key issues is that different authors, when describing the implementation process, use a number of different terms. This could be down to the fact that implementation science spans many different disciplines and therefore has different ways of describing what are essentially similar processes. While there have been some attempts to standardise some of the definitions and terminologies used (e.g. Durlak & DuPre, 2008; Hansen et al., 2013), as yet no universal terms have been agreed on. As a result, it is the author’s contention that in order for studies on implementation to become parsimonious and generalisable, standardised terms must be used, and it is apparent that this aspect is missing in much of the research.

A secondary issue is the degree to which researchers attempt to measure and control for the factors that affect the successful adoption of evidence-based programmes. There are
numerous frameworks detailing the factors that affect implementation, operating over many different ecological levels and focusing on different levels of factors. A recent study by Tabak, Khoong, Chambers and Brownson (2012) included a total of 61 different frameworks for factors that affect the implementation of evidence-based practices. Whilst they acknowledge that the use of frameworks make studies more likely to be successful, it is apparent that there is very little consensus on what the best frameworks to use are. For example, the use of the term ‘factor’ is a relatively indistinct descriptor in implementation research (Richards & Hallberg, 2015). A factor may be a simple description, such as the gender or age of individuals involved in the implementation process, or it may describe something far more complex, such as the organisational structure, which almost irrefutably pertains to multiple factors grouped together. As such, one of the most complicated aspects of implementation research is in understanding how the domains and constructs of one framework relate to another (Ivers et al., 2014). The disparity in terminology used for the implementation process is also reflected in how different frameworks use different terms to describe the same thing. This makes it very difficult to evaluate different frameworks and decide which framework is the potentially the most useful in planning the implementation process. While it is important to acknowledge the distinct ‘factors’ that affect the implementation process, research is nevertheless urgently required to decide how to traverse the complex myriad of factors involved and bring them all together in a systematic, step by step implementation framework.

6.8.2 Further examination of variables

Many of the findings in the present study stemmed from domains that have previously had very little research, and so further examination of these areas is advised. The proportion of implementers who reported that teaching self-efficacy was an important aspect of their ability to deliver SEL programmes was concordant with other similar studies (e.g. Aloe et al., 2013). Much of the literature has suggested that self-efficacy is a protective factor against burnout and attrition (Ransford et al., 2009; Schwarzer & Hallum, 2008). Although the present study failed to replicate this relationship, there is nevertheless precedent for additional research given the fact that many teachers qualitatively reported that they experienced symptoms of stress and overload. In the context of self-efficacy being one of the stronger predictors of implementation
variability in this study, it is important that further steps are taken to research this relationship.

The finding that emotional self-efficacy is important in the desire of implementers to deliver SEL programmes, suggests a pattern between emotional self-efficacy and better SEL skills. As the current study only investigated a sub-branch of larger emotional intelligence abilities, it would be of benefit to investigate patterns in other domains of EI to implementation outcomes. It would be of interest to investigate how the different aspects of EI branches and the teaching role (Table 2) relate to the implementation process, as there are suggestions in the literature that the subtle EI relationship with the teaching role may influence implementation variability (e.g. Corcoran & Tormey, 2013). As the current study was one of the first of its kind to examine the relationship between implementers’ EI and observed implementation data, further research could more fully explore this intriguing relationship.

Further investigation is warranted on the level of experience that teachers have, as teachers in the present study noted that the greater their levels of experience in delivering SEL, the more at ease they felt with implementing the PATHS programme. This has clear implications for the way in which programmes are disseminated, and how training should be tailored to fit the needs of the individual. Furthermore, the finding that those who had been teaching longer were more likely to make adaptations to the programme is another area that requires additional research, specifically into the type of adaptations they are willing to make, and how to counterbalance possible detrimental effects. This is an area that is in a very early stage of research, yet studies that have examined adaptations (e.g. Hansen et al., 2013) suggest that it a hugely important issue to address.

6.8.3 Additional variables and latent effects
The section on limitations addressed the issue that it was impractical to include every conceivable variable that could affect implementation variability in a single study. Yet, the inclusion of 14 predictor variables, as well as a series of interaction terms over three different regression models, constitutes a very high number when set side by side with other studies into implementation at the individual level. Be that as it may, there are other appropriate variables that would be worthwhile to include in this field of study.
Models of interpersonal teacher behaviour, or teacher ‘personality-type’, is an area of research that is slowly proliferating as a result of a number of studies that place classroom management at the heart of intervention success, and effective curriculum delivery (e.g. Dicke, Elling, Schmeck, & Leutner, 2015; Poulou, 2015). In effect, teachers with effective classroom management skills are more likely to spend time delivering interventions, thus leading to better programme outcomes, as they spend less time attending to discipline issues. Models of interpersonal teacher behaviour are associated with this as they focus on the interpersonal relationship between the teacher and the student. Teachers that have more harmonious relationships with their students are more likely to be in control of their classrooms, thus improving both delivery quality and participant responsiveness. Given the social nature of SEL programmes and the importance of promoting harmony between one another, it is feasible that teachers’ interpersonal behavioural type is directly relevant to certain aspects of implementation quality. It was unfortunate that the exploration of different models of interpersonal teacher behaviour was not possible in the current study; future research might well benefit from the inclusion of these profiles in a large predictive model.

Training and coaching may be highly important factors in implementation variability of evidence-based programmes, and this was noted in detail in both the quantitative and qualitative findings. This is consistent with current research that suggests the role of the coaching model reduces variability in implementation and improves delivery quality (e.g. Dusenbury et al., 2010; Reinke et al., 2014; Stormont et al., 2015). Future research would benefit from mapping the coaching and training efforts of evidence-based programmes to the observed implementation data that is gathered, as well as attempting to ascertain the level of coaching that is required in order to achieve optimal implementation outcomes with the resources that are available.

In light of the possibility of latent effects (section 6.3.6), future research could consider further exploration of this phenomenon through the use of a large teacher sample and the use of an appropriate analytical strategy, such as structural equation modelling. The use of structural equation models would enable researchers to examine numerous hypothesised associations between observed and latent variables at the same time. In structural equation models, latent variables are constructed from observed variables, also known as ‘indicators’ (Abry et al., 2013). Analysis of latent variables would allow
for a fuller understanding of the variability in implementation taking place that has not been entirely possible in the quantitative stage of this study.

6.8.4 Longitudinal research

Cross-sectional research is limited in that it is difficult to make causal inferences, with only a ‘snapshot’ of the situation being provided. As noted in the literature review, teachers’ implementation and behaviour may change over a period of time and on a given day. The inclusion of a longitudinal research design would have allowed for a better picture of the variability in implementation over time in the implementer sample. Maladaptive implementation drift may occur over a period of time given the numerous demands that are placed upon teachers. It is quite possible that high levels of implementation quality in the autumn would not be perpetuated by the same individuals throughout the school year (Greene, 2015). Indeed, there is some evidence to suggest that programme fidelity may change when observations are executed over multiple junctures; Melde, Esbensen, and Tusinski (2006), in their evaluation of a school-based victimisation prevention programme, found that sessions of the programme were not consistently delivered in the manner intended. Of the 110 lessons observed, across 14 schools, it was reported that only 16 percent of the lessons were being delivered in line with the developer’s intentions. This was established by observing the same teachers delivering the programme at least three times throughout the course of the school year. Common deviations from the programme included missing steps in some of the lessons, not using the appropriate introduction, spending too much time on a single task, and running out of time. Whilst it was not the aim of the current study to investigate implementation variability over time, the ability to be able to chart the changes in implementation behaviour would have been an advantage that would add to the current findings on implementation variability at the individual level.
6.8.5 Summary statements

There are a number of areas in the current study that may benefit from further research. The following areas were considered:

- Further research into conceptual issues surrounding implementation.

- The development of standardised frameworks that concern the ‘factors’ affecting implementation. Tighter definitions may be needed to improve research efforts.

- Further exploration of some of the more significant aspects in this study: the relationship of self-efficacy, emotional self-efficacy, and burnout in implementation variability.

- Research into teacher models of interpersonal behaviour using additional variables to determine whether these have an influence on the delivery of SEL interventions.

- Further research into the training and coaching process and the influence that this relationship has on implementer delivery quality.

- The possibility of examining latent effects to enable a fuller understanding of the variability in implementation taking place.

- The possible use of longitudinal research to examine implementation drift and to determine whether teachers’ implementation behaviour changes over time.
6.9 Original contribution to knowledge

The present study has provided a unique and distinctive contribution to advancing the evidence base regarding the influence of individual level characteristics on implementation variability in universal SEL programmes. It is the aim of any doctoral thesis to provide an original contribution to knowledge, and so it is the intention of this final section to establish that this has been achieved in light of the rationale presented in the literature review.

It is now widely acknowledged that the study of implementation, despite its complexity, is an essential component in the success of evidence-based programmes. Studies to date are sometimes not consistent with each other, making generalisation somewhat difficult. Factors that have been shown to affect implementation in some studies (Ransford et al., 2009) are not significant in others (Domitrovich et al., 2015). There is also the issue that certain predictor variables only seem to influence a certain aspect of implementation within a study (e.g. a significant relationship with dosage, but not fidelity). Thus, addressing issues of such complexity is not an easy task. Indeed, Durlak (2015) argues this point strongly:

“The eight components of implementation, the over 20 contextual factors potentially affecting implementation, and the 14 steps necessary to achieving effective implementation leave a staggering array of possible permutations that could affect any attempt at implementation. Researchers are thus faced with the task of investigating multiple factors that might operate in any situation and influence program outcomes. Further complicating the picture is that it is not yet clear what methods should be used in different circumstances to measure implementation most reliably and validly, and how often such measurements should be taken because levels of achieved implementation can vary over time. Finally, there is likely to be a threshold level of implementation at which desired program outcomes are obtained.” (p.2)

Be that as it may, the PATHS to Success trial is one of the largest SEL studies ever conducted in the United Kingdom, with a large sample of teachers over a number of local authorities; this allows for greater confidence in the generalisation of the findings.
As such, comparisons with other studies can be drawn and reasonable conclusions can be made. A major contribution to knowledge within this study was its focus on implementers of evidence-based programmes. There remains a scarcity of study within this under researched, yet important, group. Very few studies have attempted to examine as many individual level factors that may affect implementation as the present study, and certainly not in a UK context. The present study therefore offers a significant contribution to knowledge here.

**Methodological contributions**

The field of implementation continues to rely heavily on implementer self-report for information on the delivery of evidence-based programmes (Domitrovich et al., 2015; Little et al., 2013; Melde et al., 2006). As discussed in the section on Methodological issues (6.6.1), there are certain limitations that endure when self-reported implementation information is used. The present study has contributed to the field in terms of methodological advancements by utilising the PATHS observation schedule (reference). This was a bespoke observation schedule that was designed specifically for measuring implementation fidelity, dosage, quality, participant responsiveness, and reach. In utilising such a measure, the central issues relevant to implementation can be captured. The present study is among the first in which observation data has been attempted in this sphere and, while observation data may still have certain limitations, it has the potential to depict a more accurate representation of implementation variability. Furthermore, the inclusion of the voice of the implementer in the qualitative strand adds a distinctive contribution to the way in which implementation data is understood and was largely concordant with the literature base concerning the factors that affect implementation. Very rarely are the views of teachers captured in studies such as these, despite the fact that they are able to shed so much light on the implementation process. In this respect it is the author’s belief that this particular aspect of the present study is both unique and original.

As well as the unique contribution of the observational data, the present study also utilised a pragmatic concurrent embedded mixed-methods approach. It is the author’s belief that the findings of the present study are strengthened by the confluence of quantitative and qualitative approaches, as this is the only study of its kind to use this type of method to explore the factors that are related to implementation variability in
evidence-based programmes. Whilst it is true that an exclusively quantitative approach would have elicited some interesting findings regarding the influence of individual level characteristics on implementation variability, it is apparent that the inclusion of a qualitative strand has allowed for an enlightening, personal exploration that otherwise would not have been possible. Given the complexity involved in evaluating the factors that affect implementation, it would appear that utilising a mixed-methods design works well for this type of research. Although it must be acknowledged that MMR has its limitations, the benefit of using such a design in the present study is apparent.

In terms of predictive factors included in the model, this is one of the first pieces of research to attempt to address the notion of whether teachers’ emotional self-efficacy has an influence on the way in which they deliver SEL programmes. While the findings are somewhat difficult to interpret, they nevertheless suggest that teachers who are more comfortable with their own emotional skills have a greater desire, or will, to implement social and emotional based interventions. This is one of the first studies to address this association, as much of the research to date holds this as an assumed truth. The present study also addressed the impact that stress and overload have on the amount of time that implementers have to deliver SEL programmes. Both the quantitative and qualitative phases of the study suggested that the implementer has the ability to alter amount of the intervention that was delivered, highlighting the need for additional research in this area.

**Theoretical Contributions**

The present study was also one of first to examine the veracity of the IQ model (Domitrovich et al., 2008) and determine the variability that individual level factors have on implementation quality. Whilst it cannot be denied that implementers do in fact have a degree of influence over the implementation of evidence-based programmes, the findings of the current study have underlined the ecosystemic influence of certain school level factors in reaching higher levels of implementation quality. In adopting the IQ model as a framework for organising individual level variables, as well as including the influence of the school (SEL culture), the present study furthers the understanding of the multiple factors that affect implementation. Very few studies to date have acknowledged the possible interactions between factors, including those occurring at multiple ecological levels, and in this regard the present study contributes to the
literature. The qualitative strand of this study in particular highlighted that without effective principal leadership it is very difficult for implementers to deliver interventions effectively, or find the time to do so. These findings are consistent with the findings of Kam et al., (2003) who also determined that successful principal leadership is the key to unlocking the best possible programme outcomes. Few studies have examined the influence of principal leadership in evidence-based programmes, and even less so in respect to how their influence affects the implementer; the present study also strengthens the evidence base in this domain. This area in particular would benefit from additional research, exploring the most efficient way in which to enable ‘buy-in’ from principals and school administrative bodies.

**Practical contributions**
The study of implementation is highly complex with interventions rarely being delivered as envisaged by programme developers. There are some significant gaps in the research base that have been highlighted throughout this thesis: the effects of training and coaching, and the influence of adaptations foremost among them. By including the voice of the implementer the present study has contributed to a practical knowledge base that will allow programme developers and researchers to better understand the difficulties that teachers face in delivering evidence-based programmes, as well as the need for continued training, support, and time to implement. Furthermore, by utilising the voice of the implementer the present study is able to offer potential reasons as to why teachers adapt preventative programmes in the way that they do. By drawing on the knowledge provided by the present study programme developers and researchers may be in a better position to anticipate and counter the adaptations that inevitably occur. It is therefore crucial that research continues to push forward the understanding of the most significant issues that affect programme delivery, including the role of the implementer. It is the author’s hope that the distinctive elements contributed by this study will help to build on the efforts of researchers and practitioners in continuing to improve the way in which evidence-based programmes are both developed and delivered.
6.9.1 Summary statements

In keeping with the aims of a PhD thesis, it was the author’s intention to provide an original contribution to knowledge in the field of implementation science, specifically relating to the influence of individual level factors. A synthesis of the contributions covered in this section are provided here:

Methodological contributions

- Using a new and sound measure for observing implementation (i.e. the PATHS observation proforma), specifically designed for evidence-based SEL programmes, therefore promoting methodological development within this field.
- The inclusion of the voice of the implementer in the qualitative strand adds a distinctive contribution to the way in which implementation data is understood.
- The use of a pragmatic, concurrent embedded mixed-methods approach, which is very rare in this field.

Theoretical contributions

- Focusing specifically on teachers’ implementation variability: these teachers represent an important but often under researched group of people.
- One of the first studies of its kind to test the veracity of Domitrovich et al.’s (2008) Implementation Quality model.
- The use of variables which have had little research to date, as well as developing the knowledge base for variables which already appear in the extant literature.

Practical contributions

- The use of a large teacher sample from many different local authorities allowing for greater generalisability.
- Identification of some significant gaps in the research base that need development, primarily the effects of training and coaching, and the influence of adaptations.
- Using the voice of the implementer has highlighted the need for continued support, training, and time to implement SEL programmes effectively.
6.10 Conclusion

6.10.1 Summary of the study

The aims of this study were to examine the influence of individual level characteristics on implementation variability in a universal social and emotional learning programme. Specifically, the purpose was to investigate whether implementation of the PATHS curriculum varied as a function of individual differences in implementers’ professional and psychological characteristics, as well as their perceptions and attitudes towards SEL. The intention was to unify the data from a large, quantitative model with the richness associated with qualitative research. To achieve this a concurrent embedded mixed methods design was adopted.

The data for this research project was captured from the University of Manchester’s PATHS to Success trial, in which 45 primary schools in the Greater Manchester area of England participated, with a total of 183 teachers. There were two main research questions, with a quantitative and qualitative strand respectively. The quantitative strand consisted of implementers completing a series of self-report surveys, with sociodemographic data also being drawn from the sample. The qualitative strand consisted of interviews with implementers regarding their experiences of delivering the PATHS programme. In total 12 focus implementers were selected by means of maximum variation sampling, which allowed for both breadth and depth in the characteristics exhibited by the total sample.

Using hierarchical multiple regression, a series of 14 theoretically justified predictor variables were entered into three different implementation models. It was found that implementer characteristics accounted for 9% of the variance in the fidelity model, 21% in the dosage model, and 15% in the quality model. Although no individual predictor variables were significant there were, nevertheless, some overall model effects as well as some marginally significant predictors. A series of interaction terms were also added to each of the models, where no reported increase in variance was found as a result of their inclusion. The qualitative interviews aided the clarification of some of the quantitative findings with a good degree of confluence between the two approaches, adding substantial depth to some of the conclusions drawn. They also suggested that school leadership played a significant role in the successful implementation of the programme.
As is to be expected in any body of research there were a number of limitations, these were addressed as either methodological or conceptual issues. Methodological issues related to the selection of *PATHS to Success* sample, data collection, measurement tools, analytical strategy, and additional variable considerations. Conceptual issues in the study were concerned with the definition and measurement of implementation, as well as addressing the concept of burnout, and emotional self-efficacy.

There were a number of implications as a result of the findings from the current study for researchers, programme developers, and schools in understanding implementation variability at the individual level. Specifically, given the high level of implementation variability in this study, there is a need to understand the role that training and coaching plays in achieving intervention success. All aspects of implementation need to be taken into account by schools, as well as improving and monitoring the way in which programmes are being generalised throughout the school day, and in the home environment. School leadership teams need to be aware of the levels of stress that their teachers face, while putting strategies in place to effectively combat symptoms of burnout. In the same vein, implementers need to be given enough time by schools to deliver evidence-based programmes effectively, as well as allowing time for the development of new professional skills and competencies.

### 6.10.2 Closing statements

With the field of implementation science still in its relative infancy, there was a significant opportunity to investigate a gap in the literature regarding the individual level factors that affect implementation variability. This is one of the first studies of its kind in implementation research to incorporate both quantitative and qualitative methodologies through a concurrent embedded mixed methods design. As such, a more detailed understanding of some of the individual level factors that affect implementation has emerged, with several implications for future research. What has become apparent is that implementers are in fact important in the delivery of evidence-based programmes, with the ability to change the way in which programmes are delivered. However, perhaps what is even more discernible is that implementers cannot achieve intervention success on their own. The ecosystemic influence of school and community level factors must also be recognised; pressures from school leadership and Ofsted have the ability to erode the way in which programmes are implemented, with very little time
being awarded to SEL curricula. Without the support from these respective parties, implementers may be swimming against the tide in their attempts to deliver interventions effectively.

It is the author’s belief that the present study has made an original contribution to knowledge, with implications for both theory and practice. As is evident throughout the body of this thesis, research in this field is highly complex with a myriad of factors potentially affecting implementation. As Durlak (2015) notes, “studying programme implementation is not easy, but it is essential” (p.1). The understanding of implementation is vital to the evolution, appraisal, and dissemination of evidence-based programmes. The goal is straightforward, yet difficult to obtain, thus, only with further study can researchers better understand how to achieve the best possible outcomes.
References


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Appendices

Appendix 1: Memorandum of Agreement and survey information

1a: Memorandum of Agreement

PATHS TO SUCCESS

Memorandum of Agreement

This memorandum of agreement outlines the key conditions for schools entering into partnership with the University of Manchester in the PATHS to Success research project. It outlines what schools that participate in the project will receive, and what they will be required to do in return. The aim is to have a completely transparent process so that all parties have a clear understanding of the project and shared expectations.

Section 1 – ABOUT YOUR SCHOOL

We need some key details about your school – please complete the form below:

<table>
<thead>
<tr>
<th>Name of school</th>
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<tr>
<td>LAESTAB code</td>
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<tr>
<td>Address of school</td>
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<tr>
<td>Postcode of school</td>
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<tr>
<td>Telephone number of school</td>
<td></td>
</tr>
<tr>
<td>Name of head teacher</td>
<td></td>
</tr>
<tr>
<td>Email address of head teacher</td>
<td></td>
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</tbody>
</table>

It is useful in projects like this to have a nominated ‘link’ person, who can co-ordinate the project within the school and act as our first point of contact. This PATHS to Success (PTS) co-ordinator could be the head teacher, deputy/assistant head, SENCO, Key Stage 2 co-ordinator, PSHE or SEAL co-ordinator, or a class teacher from Years 3-6. Please provide details of the nominated link person below:

<table>
<thead>
<tr>
<th>Name of PTS co-ordinator</th>
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<td>Email address of PTS co-ordinator</td>
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Section 2 – KEY CONDITIONS OF PROJECT PARTICIPATION

In this section we outline the key conditions of project participation. Please read through them carefully.

(1) Randomisation – all schools signing this document agree that they can be randomly allocated to either (a) implement PATHS with pupils in Key Stage 2 throughout the school years 2012/13 and 2013/14, or (b) continue their usual practice during this period.

(2) Focus – this project focuses on pupils who will be on roll in Years 3, 4 and 5 at the start of the 2012/13 year only.

(3) Compliance with data collection requirements – all schools signing this document understand that they are committing to participation in a research project with certain data collection requirements. These are:
   a. Annual surveys to be conducted in the summer term (typically in June/July) of the school years 2011/12, 2012/13, and 2013/14
      i. Pupil surveys – assessing social and emotional skills and health-related quality of life
      ii. Staff surveys – assessing pupils’ mental health
      iii. Parent surveys – assessing pupils’ mental health and health-related quality of life
   b. Annual standardised assessments of pupils’ reading, maths and general ability to be conducted in the summer term (typically in June/July) of the school years 2011/12, 2012/13, and 2013/14
   c. Annual school-level survey of usual practice (e.g. involvement in different educational initiatives) to be conducted in the summer term (typically in June/July) of the school years 2011/12, 2012/13, and 2013/14
   d. For schools randomly allocated to the PATHS group only, a teacher characteristics survey to be completed during the initial PATHS training session (September 2012 for teachers of Years 3-5 and September 2013 for teachers of Year 6)
   e. For schools randomly allocated to the PATHS group only, one fieldwork visit per half-term in the school years 2012/13 and 2013/14, comprising:
      i. Observation of at least one PATHS lesson
      ii. Teacher implementation surveys
      iii. Interviews with key stakeholders (e.g. staff, parents, pupils)

(4) For schools randomly allocated to the PATHS group only, a commitment to implement the programme in Key Stage 2 throughout the school years 2012/13 and 2013/14 is required. This includes:
   a. Teachers of children in Years 3-5 being made available for initial training, to take place on an INSET day in early September 2012, and a follow-up training day at a date to be determined (most likely late November 2012 or early January 2013)
b. Teachers of children in Year 6 being made available for initial training, to take place on an INSET day in early September 2013, and a follow-up training day at a date to be determined (most likely late November 2013 or early January 2014)

c. Teachers of children in Key Stage 2 planning for the delivery of the PATHS curriculum within the normal school timetable (typical delivery models are 1 hour or 2 x 30 minute lessons per week)

d. Cascading of PATHS information and principles throughout the school to promote awareness among members of the school community (e.g., lunchtime supervisors) who may not directly be involved in implementation, in addition to promoting a positive climate in which skills developed in PATHS lessons may be generalised to other settings
Section 3 – WHAT PARTICIPATING SCHOOLS WILL RECEIVE

This section outlines what each participating school will receive as part of the PATHS to Success project. There is no financial cost whatsoever associated with participation – all of the items outlined below are covered by our project funding.

All participating schools – regardless of whether they are randomly assigned to the PATHS or usual practice group, will receive:

(1) Payment of £100 towards teacher cover for survey completion following each annual wave of data collection
(2) InCAS assessment feedback for reading, maths and general ability of pupils in the study cohort following each annual wave of data collection
(3) Bespoke aggregated feedback from our pupil, teacher and parent surveys following each annual wave of data collection
(4) Onsite support from a member of our research team to facilitate administration of surveys as required

In addition, schools randomly allocated to the PATHS group only will receive:

(1) PATHS training for teachers of children in Years 3-6, comprising:
   a. 1 day initial training
   b. 1 day follow-up training
(2) PATHS curriculum materials, comprising:
   a. Lesson packs for Years 3-6
   b. Supplementary materials (e.g., posters)
(3) Implementation support from an assigned PATHS psychologist, comprising:
   a. Up to 10 days per school year onsite support, to include co-teaching, modelling, coaching, discussion and feedback as required
   b. Telephone and email support as required (e.g., answering queries)
   c. Other methods of support on an ad-hoc basis (e.g., provision of additional support materials, annual PATHS events to promote sharing of ideas and practice)

The above items are subject to compliance with the data collection requirements outlined earlier. The details of these conditions are outlined in the next section.

---

1 Schools with larger numbers of pupils (e.g. double form entry) may be eligible for increased payments in recognition of the extra surveys they will complete.
Section 4 – WHAT WE NEED IN RETURN

In this section we outline the conditions that need to be fulfilled by each school in order for them to receive the items outlined in Section 3. These are as follows:

(1) In order to receive the £100 payment towards teacher cover for survey completion, we require a minimum 85% response rate for both teacher and pupil surveys by the end of a pre-specified survey period.

(2) In order to receive the InCAS assessment feedback for reading, maths and general ability of pupils in the study cohort, schools must administer the assessments (which will be provided by the Centre for Evaluation and Monitoring at the University of Durham) by the end of a pre-specified assessment period.

(3) For schools randomly allocated to the PATHS group only, receipt of the training, curriculum materials and ongoing technical support and assistance is conditional upon compliance with our implementation fieldwork requirements (outlined earlier).

We recognise that involvement in this project requires a time commitment on behalf of participating schools. In recognition of this we will do everything we can to support all schools to meet our data collection requirements. This includes (but is not limited to):

- Members of our research team providing on-site support to facilitate survey completion as required (including parent surveys)
- Detailed, clear instructions for survey completion processes, given well in advance in order to allow for adequate planning at the school level
- Parent surveys will be available in multiple languages and in both online and hard copy to encourage parents whose first language is not English or who do not have access to the Internet to participate in the project
Section 5 – COMMITMENT TO PARTICIPATION

Having read all of the above, if you are happy to participate in the PATHS to Success project, please sign below on behalf of your school.

If you have any queries, please email alexandra.barlow@manchester.ac.uk or visit our project website, www.pathstosuccess.info, where you can find detailed information about the study.

School commitment to participation

I confirm that I have read and understood all of the above and am happy to commit to participation in PATHS to Success on behalf of __________________________ school.

_______________________ (print name)

_______________________ (signature)

University of Manchester commitment

On behalf of the University of Manchester, we confirm our commitment to provide the items specified in this document to participating schools in the PATHS to Success project.

Professor Neil Humphrey
Principal Investigator
PATHS to Success Project
0161 275 3404
neil.humphrey@manchester.ac.uk

Dr. Alexandra Barlow
Research Associate
PATHS to Success Project
0161 275 3504
alexandra.barlow@manchester.ac.uk

HAVING SIGNED THIS DOCUMENT, PLEASE MAKE A COPY FOR YOUR RECORDS AND POST THE ORIGINAL BACK TO OUR RESEARCH TEAM IN THE PREPAID ENVELOPE PROVIDED. PLEASE NOTE THAT WE CANNOT ADVANCE YOUR SCHOOL TO THE NEXT STAGE OF THE PROJECT UNTIL WE HAVE RECEIVED A SIGNED MEMORANDUM OF AGREEMENT.
Your school is involved in an exciting project about the Promoting Alternative Thinking Strategies (PATHS) curriculum, called ‘PATHS To Success’. PATHS is a programme for all children that helps them to manage their behaviour, understand their emotions and work well with others. Our research project will help us to understand if PATHS works for children in Years 3-6. The project is funded by the National Institute for Health Research.

We are writing to you to explain your role as a teacher in the research project. We will collect your views, those of children in your class, and their parents once a year starting Winter term 2012 (see below). Specific information about this will be sent nearer the time.

If you would like any more information or have any questions about the research project, please telephone Dr. Alexandra Barlow on 0161 275 3504 or email her at alexandra.barlow@manchester.ac.uk.

Who will conduct the research?

The research will be conducted by Prof. Neil Humphrey and the PATHS to Success research team in the School of Education, University of Manchester, Oxford Road, Manchester M13 9PL.

Title of the research

“PATHS to Success”

What is the aim of the research?

Our main aim is to examine the impact of the PATHS curriculum on the social and emotional wellbeing of children in primary schools in England.

Where will the research be conducted?

Primary schools in Greater Manchester.

What is the duration of the research?

The project itself runs from January 2012 until August 2017. The schools that implement PATHS (see below) will do so from September 2012 to July 2014.
Why have I been chosen?

We are writing to you because your school is taking part in the PATHS to Success Project. Schools have been randomly chosen to (a) implement PATHS over a two year period (PATHS schools), or (b) continue as normal (comparison schools). We will be collecting data in both PATHS and comparison schools. After two years, all schools will be free to decide whether they wish to start/continue using PATHS.

What would I be asked to if I took part?

All participating schools (e.g. both PATHS and comparison schools)

Teachers (and/or support staff, such as teaching assistants) of participating Year 3, 4 and 5 (and 6 in the second year of the project) classes in both PATHS and comparison schools will be asked to complete a short online survey about each pupil in their class that focuses on their strengths and difficulties. These surveys will be completed three times – in June/July 2012, 2013 and 2014. Each survey will take around 5 minutes to complete for each child.

Additionally, one member of staff (the PATHS to Success school contact) in each participating school will complete a survey about the school’s usual practice. These surveys will also be completed three times – in June/July 2012, 2013 and 2014 – and will take approximately 15 minutes to complete.

PATHS schools only

In addition to the above, teachers of participating Year 3, 4 and 5 (and 6 in the second year of the project) classes in PATHS schools only will also complete a short survey about themselves which will cover issues such as the length of time they have been teaching, and their feelings about social and emotional learning programmes like PATHS. This survey will be completed once – at the initial PATHS training for teachers in September 2012 – and will take approximately 15 minutes to complete.

Teachers of participating classes in PATHS schools will also complete two further short surveys – one about their teaching of PATHS (e.g. how much they adapt the materials) and the other about factors affecting their teaching of PATHS (e.g. the pressures of competing priorities). The former survey will be completed in the spring term, and the latter in the summer term, and will take approximately 15 minutes each. Both surveys will be completed twice – once in 2012/13 and again in 2013/4.

Finally, in our research visits, we will observe teachers of participating classes delivering PATHS lessons approximately twice per year, after which they will be invited to participate in a short interview (approximately 30 minutes). This is intended to explore teachers’ thoughts and experiences of PATHS, including resources, implementation issues, training and the support model.

What happens to the data collected?

The data will be analysed by our research team at the University of Manchester. We will write a report based on our analyses for the National Institute for Health Research. It is also likely that we will write articles for academic journals based on the project findings. Finally, it is possible that we will write a book about the research. In all publications and reports data will be presented anonymously.
How is confidentiality maintained?

All data provided will be treated as confidential and will be completely anonymous. Identifying information (e.g. pupil names) will only be used in order to match responses about the same individual from different respondents (e.g. parents and teachers) and across different times (e.g. June/July 2012, 2013, and 2014). After this matching process is complete, all identifying information will be destroyed. For interview data, names will be changed at transcription and the audio-recordings will then be destroyed after the project is completed.

The website that houses the survey will be completely secure and password protected. All survey data will be stored on a secure, password protected computer to which only senior members of the research team have access.

For interview data, names will be changed at the time of transcription. and the source of any Comments included in reports or publications will be anonymous.

Criminal Records Check

Every member of our research team has undergone a Criminal Records Bureau check at the Enhanced Disclosure level.

Will I be paid for participating in the research?

We are not able to offer any payment or incentive for participating in this study.

Contact for further information

If you would like any more information or have any questions about the research project, please telephone Dr. Alexandra Barlow:

Dr. Alexandra Barlow
Educational Support and Inclusion
School of Education
University of Manchester
Oxford Road
Manchester
M13 9PL
Tel: 0161 275 3504
Email: alexandra.barlow@manchester.ac.uk

Also, please see our website for further details about the PATHS curriculum and background, the project design and project team.

The website can be found at: www.pathstosuccess.info

What if something goes wrong?

If completing the survey makes you worry about any of your pupils' wellbeing then you should speak to your school's safeguarding and child protection officer in the first instance.

If you ever wish to make a formal complaint about the conduct of the research you should contact the Head of the Research Office, Christie Building, University of Manchester, Oxford Road, Manchester M13 9PL.
TEACHER CONSENT FORM

An information sheet is attached to this form. Please read it carefully. Please complete the slip below to indicate if you would are happy to participate in the research strand of the PATHS to Success project, which involves an observation of a PATHS lesson and an interview by a member of our PATHS research team. Finally, please also remember that if you do decide to take part, you are free to change your mind at any point in the study.

I do not / do wish (please delete as appropriate) to participate in the PATHS lesson observation and interview strand of the PATHS to Success project. My details are as follows:

<table>
<thead>
<tr>
<th>My name</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>School name</td>
<td></td>
</tr>
</tbody>
</table>

Signed: ___________________________ Date: _________
Appendix 2: Descriptive statistics

2a: Frequencies

<table>
<thead>
<tr>
<th>What is your gender?</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valid male</td>
<td>1148</td>
<td>15.2</td>
<td>18.8</td>
<td>18.8</td>
</tr>
<tr>
<td>female</td>
<td>4961</td>
<td>65.8</td>
<td>81.2</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>6109</td>
<td>81.0</td>
<td>100.0</td>
<td></td>
</tr>
<tr>
<td>Missing System</td>
<td>1435</td>
<td>19.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>7544</td>
<td>100.0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Please indicate your experience of implementing classroom based SEL programmes?

<table>
<thead>
<tr>
<th>Experience of Implementing</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valid no experience</td>
<td>984</td>
<td>13.0</td>
<td>16.7</td>
<td>16.7</td>
</tr>
<tr>
<td>less than 1 year</td>
<td>1189</td>
<td>15.8</td>
<td>20.1</td>
<td>36.8</td>
</tr>
<tr>
<td>2-5 years</td>
<td>2009</td>
<td>26.6</td>
<td>34.0</td>
<td>70.8</td>
</tr>
<tr>
<td>more than 5 years</td>
<td>1722</td>
<td>22.8</td>
<td>29.2</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>5904</td>
<td>78.3</td>
<td>100.0</td>
<td></td>
</tr>
<tr>
<td>Missing System</td>
<td>1640</td>
<td>21.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>7544</td>
<td>100.0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix 3: Implementer Characteristics Survey

September 2013

This survey is designed to measure different characteristics that we think might influence the approach you take in implementing the PATHS curriculum. It will take approximately 15 minutes to complete.

There are 5 sections: (1) about you, (2) your emotional self-efficacy, (3) your teaching efficacy, (4) your views on social and emotional learning, and (5) the climate in your school. Please answer all questions. We will not share your responses with anyone, and the answers you provide will be treated in the strictest confidence.
Part 1 – ABOUT YOU

1. Are you

- Class teacher
- Support staff (e.g. teaching assistant, learning mentor)

2. If you are a class teacher, how many years have you been qualified?

3. If you are a class teacher, did your initial teacher training include coverage of social and emotional learning?  
   *Tick one only*

   - No coverage of SEL
   - Some coverage of SEL
   - Substantial coverage of SEL

4. What is your gender?  *Tick one only*

   - Male
   - Female

5. What is your age in years?

6. What is your highest qualification?  *Tick one only*

   - Undergraduate degree (e.g. BEd)
   - Postgraduate certificate (e.g. PGCE)
   - Masters degree (e.g. MEd, MSc)
   - Doctorate (e.g. DEd, PhD)

7. Please indicate your experience of implementing classroom-based social and emotional learning programmes (e.g. SEAL)  *Tick one only*

   - No experience
   - Less than 1 year
   - 2-5 years
   - More than 5 years

8. Do you have any of the following additional responsibilities?  *Tick any that apply*

   - Head teacher
   - Deputy/assistant head teacher
   - Special educational needs co-ordinator/inclusion manager
   - Key Stage co-ordinator
   - PSHE and/or SEAL co-ordinator
   - Other (please specify) __________________________
Part 2 – YOUR EMOTIONAL SELF-EFFICACY

This section focuses on your confidence in carrying out functions which involve identifying, understanding, and managing your emotions and those of other people. Please read each of the statements below and rate your confidence on a scale of 1 to 5, 1 being “not at all confident” and 5 being “very confident”.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Not at all confident</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>Very confident</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Understand what causes your emotions to change</td>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>2. Correctly identify your own positive emotions</td>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>3. Know what causes you to feel a negative emotion</td>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>4. Realise what causes another person to feel a negative emotion</td>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
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</tr>
<tr>
<td>5. Realise what causes another person to feel a positive emotion</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>6. Correctly identify when another person is feeling a positive emotion</td>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>7. Figure out what causes another person's differing emotions</td>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>8. Use positive emotions to generate good ideas</td>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>9. Recognise what emotion is being communicated through your facial express</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Notice the emotion your body language is portraying</td>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>11. Generate the right emotion so that creative ideas can unfold</td>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>12. Notice the emotion that another's body language is portraying</td>
<td></td>
<td>1</td>
<td>2</td>
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<td>5</td>
<td></td>
</tr>
<tr>
<td>13. Change your negative emotion to a positive emotion</td>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>14. Figure out what causes you to feel differing emotions</td>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>15. Understand what causes another person's emotions to change</td>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>16. Help another person to regulate emotions when under pressure</td>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>17. Correctly identify your own negative emotions</td>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>18. Know what causes you to feel a positive emotion</td>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>19. Help another person calm down when he or she is feeling angry</td>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>20. Correctly identify when another person is feeling a negative mood</td>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>21.</td>
<td>Get into a mood that best suits the occasion</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>22.</td>
<td>Create emotions to enhance cognitive performance</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>23.</td>
<td>Regulate your own emotions when close to reaching a goal</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>24.</td>
<td>Create a positive emotion when feeling a negative emotion</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>25.</td>
<td>Use positive emotions to generate novel solutions to old problems</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>26.</td>
<td>Recognise what emotion another person is communicating through his or her facial expression</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>27.</td>
<td>Create emotions to enhance physical performance</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>28.</td>
<td>Help another person change a negative emotion to a positive emotion</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>29.</td>
<td>Calm down when feeling angry</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>30.</td>
<td>Regulate your own emotions when under pressure</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>31.</td>
<td>Help another person regulate emotions after he or she has suffered a loss</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>32.</td>
<td>Generate in yourself the emotion another person is feeling</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
</tbody>
</table>

PLEASE TURN THE PAGE AND COMPLETE THE NEXT SECTION
### PART 3 – YOUR TEACHING EFFICACY

This section is designed to help us gain a better understanding of the kinds of things that create difficulties for teachers in their school activities. Please indicate your opinion about each of the statements below.

<table>
<thead>
<tr>
<th></th>
<th>Nothing</th>
<th>Very little</th>
<th>Some influence</th>
<th>Quite a bit</th>
<th>A great deal</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. How much can you do to control disruptive behaviour in the classroom?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>2. How much can you do to motivate pupils who show little interest in school work?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>3. How much can you do to get pupils to believe they can do well in school work?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>4. How much can you do to help your pupils value learning?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>5. To what extent can you craft good questions for your pupils?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>6. How much can you do to get pupils to follow classroom rules?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>7. How much can you do to calm a student who is disruptive or noisy?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>8. How well can you establish a classroom management system with each group of pupils?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>9. How much can you use a variety of assessment strategies?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>10. To what extent can you provide an alternative explanation or example when pupils are confused?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>11. How much can you assist families in helping their children do well in school?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>12. How well can you implement alternative strategies in your classroom?</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

Please turn the page and complete the next section.
This section focuses on your views on social and emotional learning and its role in education. Please read each statement and indicate your level of agreement.

<table>
<thead>
<tr>
<th></th>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Unsure</th>
<th>Agree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. My schools expects teachers to address children's social and emotional needs</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>2. The culture in my school supports the development of children's social and emotional skills</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>3. All teachers should receive training on how to teach social and emotional skills to pupils</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>4. I would like to attend a workshop to develop my own social and emotional skills</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>5. Taking care of my pupils' social and emotional needs comes naturally to me</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>6. The school leadership creates an environment that promotes social and emotional learning to our pupils</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>7. I am comfortable providing instruction on social and emotional skills to my pupils</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>8. Informal lessons in social and emotional learning are part of my regular teaching practice</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>9. I feel confident in my ability to provide instruction in social and emotional learning</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>10. I would like to attend a workshop to learn how to develop my pupils' social and emotional skills</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>11. I want to improve my ability to teach social and emotional skills to pupils</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>12. The school leadership does not encourage the teaching of social and emotional skills to pupils</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
Part 5 – HOW YOU FEEL ABOUT WORK

Below are statements about feelings you may have encountered in relation to your job. Please read each statement carefully and indicate how frequently you have felt this way.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Never</th>
<th>A few times a year or less</th>
<th>Once a month or less</th>
<th>A few times a month</th>
<th>Once a week</th>
<th>A few times a week</th>
<th>Everyday</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I feel emotionally drained from my work.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>2. I feel used up at the end of the workday.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>3. I feel fatigued when I get up in the morning and have to face another day on the job.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>4. I can easily understand how my students feel about things.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>5. I feel I treat some students as if they were impersonal objects.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>6. Working with people all day is really a strain for me.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>7. I deal very effectively with the problems of my students.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>8. I feel burned out from my work.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>9. I feel I'm positively influencing other people's lives through my work.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>10. I've become more callous toward people since I took this job.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>11. I worry that this job is hardening me emotionally.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>12. I feel very energetic.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>13. I feel frustrated by my job.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>14. I feel I'm working too hard on my job.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>15. I don't really care what happens to some students.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>16. Working with people directly puts too much stress on me.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>17. I can easily create a relaxed atmosphere with my students.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>18. I feel exhilarated after working closely with my students.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>19. I have accomplished many worthwhile things in this job.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>20. I feel like I'm at the end of my rope.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>21. In my work, I deal with emotional problems very calmly.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>22. I feel students blame me for some of their problems.</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
</tbody>
</table>
THANK YOU FOR COMPLETING THIS SURVEY. YOUR RESPONSES WILL BE TREATED IN THE STRICTEST CONFIDENCE AND WE WILL NOT SHARE THE ANSWERS YOU HAVE PROVIDED WITH ANYONE.

PLEASE HAND THIS DOCUMENT TO A MEMBER OF THE PATHS TO SUCCESS RESEARCH TEAM
Appendix 4: Interview Schedule

Teacher Interview Schedule (semi-structured) (20-40 minutes)

Interview data: aims

1. To explore, understand and explain the processes of implementation of PATHS in English educational contexts
2. To triangulate with and support interpretation of observation and impact data

Data needed for:

(a) Examining processes of implementation
   • Fidelity – the extent to which the school is adhering to the intended treatment model
   • Dosage - how much of session delivered; number of sessions
   • Quality – how well different PATHS components are delivered
   • Participant responsiveness – the degree to which children and their parents engage with the intervention
   • Programme reach – rate and scope of participation
   • Monitoring of control conditions
   • Adaptation – the nature and extent of changes made to the intervention

(b) Identification of context specific factors affecting implementation
(c) Evaluating the feasibility of the future implementation of PATHS in English educational contexts

Preamble

1. Check that the interviewee has received the information sheet and consent form and understands the project and his/her role in it.
   Ask: Have you any questions about the project?

2. Emphasise that:
   • The research team is speaking to a range of people involved in PATHS eg senior management, teachers, pupils at all of our (23) PATHS schools
   • We are interested in individual experiences and thoughts about PATHS, both positive and negative… “this is your opportunity to make your voice heard on PATHS … your comments may be helpful to others in your position at other schools at a later date”
   • However, we combine all the data we collect to provide an overall picture of PATHS and its implementation and any comments in the report are attributed very generally, for example, as “A (Year 3) teacher commented that…” . Any comments/opinions will not be reported back to schools
   Ask: Have you any questions about how we use your comments?

Ethics:
Remind interviewee:
   • The interview will take about 30 minutes.
   • You do not have to answer any questions that you are not comfortable with
   • You can stop at any time, no explanation needed
   • If any question doesn’t make sense, ask for an explanation
   Ask: Is it alright to record the interview? The transcript will only be seen by those working on the project. I will send you a copy too if you wish.
   Ask: Are you able/willing to sign the consent form?
**Explain procedure:**
I will begin the interview with my name, the date, time and the identifying code we have assigned to your school - this is just to keep the recordings organised. All your details will be anonymised when the data is transcribed.

The first question will be about your role in school, followed by general questions about social and emotional learning in school, then moving on to PATHS more specifically.

**Ask:** Have you any questions before we start?

**Ask:** Is it OK for me to start recording now?
Interview schedule

State researcher's name, date, time, school identifying code  *(for data management)*

Can I just ask you to confirm your roles at school……..

……..and in relation to PATHS *(eg Y3 teacher, co-ordinator, etc)*

A. Usual practice (Implementation - programme differentiation)

*Aims: to clarify foundations for PATHS and school ethos round SEL; perceptions of benefits of PATHS/SEL; perceptions of need for PATHS/SEL; previous practice around social-emotional learning, whether starting PATHS has been integrated or resulted in changes to this*

1. Why has the school decided to implement PATHS?

Looking for information about:
- What sort of outcomes/change is the school aiming for? Is there a shared understanding?
- Are there specific needs within the school that PATHS is expected to address/meet?
- Whose decision was it to adopt PATHS?

2. What was done in school to develop social and emotional skills before you started doing PATHS?
- Do you still do this?
- Is/was this the whole school or just within your classroom?

Looking for information about:
- a. Is PATHS part of a range of similar programmes/strategies? How does PATHS build on other local or national programmes/interventions within school?
- b. Has PATHS replaced previous programmes/interventions/approaches *(eg SEAL)*? Is it delivered alongside them? Are they integrated?
- c. PATHS is just in KS2 – what does the rest of school do?

3. How would you describe the overall profile of PATHS in your school?
- Is it just classroom teachers in Y3-5 *(Y4-6)* that are involved?
- How involved is the headteacher? Senior management team?

Looking for information about:
- a. Type of HT/SMT support
  - verbal only?
  - Active eg training time allowed, curriculum time allowed, included in planning etc

B. Implementation (dosage, adaptation)

*Aims: clarify implementation dosage and fidelity; modifications or adaptations and reasons for them; generalisation (link to quality)*
4. How long have you been implementing PATHS?

5. How often do you teach PATHS?  *Ask for example*

6. Is this a timetabled session? Same time every week?

   Looking for:
   - is timetabling a problem
   - (gently probe) status of PATHS? Competing priorities?

7. Are all pupils in the class present for PATHS?

   Looking for:
   - Participant reach
   - Is the PATHS session used as withdrawal time? If so, do these pupils have PATHS at another time?
   - Do some pupils have a more targeted approach eg SEAL small group work, nurture group? Is this in addition or instead of PATHS?

8. Are you able to cover all the lesson content in the time available? How long is a lesson on average?

   Ask for examples

   Looking for (probe gently):
   - Whether skipping content and why eg competing priorities, lack of time, low status of PATHS

9. Have you repeated any lessons?

   Ask for examples; gently probe reasons

10. Have you skipped any lessons?

    Ask for examples; gently probe reasons

11. Have you been able to use PATHS outside of the specific lessons/ in other subjects (teachable moments)?

    Ask for examples eg which lessons, which concepts, in what ways?

12. Have you or the pupils been able to apply/generalise from PATHS in the classroom?

    Ask for examples eg do pupils use control signals, fingers linked, feelings faces, compliments, golden rule
13. Have you/the pupils been able to apply/generalise from PATHS outside the classroom eg playtime?

Ask for examples eg do pupils use control signals, fingers linked, feelings faces, compliments, golden rule

C. Attitudes to PATHS specifically

Aims: clarify teacher and pupil attitudes to PATHS, including perceptions of impact; clarify fidelity and dosage, pupil responsiveness; describe and/or explain modifications or adaptations; inform interpretation of process data; inform future rollout of PATHS in UK context

14. What do you think about the PATHS lessons and structure?
   - How useful do you find the lesson plans?
   - How much preparation is needed?

Ask for examples; probe for explanations eg why like/don’t like scripted lessons?
Looking for (gently probe):
   - Do you follow the plans exactly? Make adaptations?
   - Is it useful to have everything prepared? What would be more useful?

- What do you think about the order of the lessons/structure of the programme? Have you changed the order around at all?

Looking for:
   - Adaptations or changes
   - Ask for examples – is this proactive, intended to enhance engagement and responsiveness? Is this reactive eg due to barriers (programme resources, lack of time?)

- How familiar are the concepts, strategies?

Looking for:
   - Changes to usual practice, foundations for PATHS

   (If Y4/5/6) How useful/necessary were the Jump Start lessons? Ask for examples

15. What do you think about the PATHS resources (if not included above)

- How appropriate/suitable are the resources?

Ask for examples eg availability of resources, age-level, particular class, SEN, emotional level, suitability for English context?
Looking for:
   - How much do you adapt/make changes to the lessons?
   - Ask for examples – want to identify whether this changes are proactive, intended to enhance engagement and responsiveness or reactive eg due to barriers (programme resources, time?)
• How useful have you found the parent (send-home) activities?
• How useful has PATHS been for meeting specific needs in your class?

Ask for examples eg improving relationships, empathy, inclusion, managing emotions, understanding feelings

• Are there any aspects of PATHS that you have found particularly useful for your class?

Ask for examples eg pupil of the day, compliments, Golden Rules, talking about feelings, control signals, fingers linked

• Are there any aspects of PATHS that you have found not useful/appropriate?

Ask for examples eg pupil of the day, compliments, Golden Rules, talking about feelings, control signals, fingers linked

16. What do the pupils in your class think about PATHS?
• Do they look forward to doing PATHS?
• Are they engaged by/do they enjoy the lessons?
• Are there any particular aspects they like?
• Are some groups more responsive than others (eg SEN, EBD, quiet/withdrawn)?
• PATHS has been designed for all the children in the class; have you found that it is useful for some groups more than others? (eg EAL, SEN, EBD, withdrawn)

Ask for specific examples (positive and negative)

17. Perceptions of impact: Has PATHS made a difference to your pupils? All pupils, or some groups of pupils particularly? The school more widely?

NB Acknowledge that may be too early to ask
Ask for examples eg Improved relationships, social skills, understanding of emotions, behaviour, self-control, confidence and participation (eg quiet pupils more prepared to participate), classroom climate/ethos/atmosphere, learning, motivation for learning, attendance, SEN

D.

Aims: teacher perceptions of self-efficacy, confidence, competence, skills and/or knowledge to implement PATHS; attitudes to training – quantity/quality, timing, content, utility etc; attitudes to support/coaching model - quantity/quality, timing, frequency, type of support available, utility etc. (NB to inform future roll-out)
18. **Training** The PATHS programme provides a training package for teachers, with one day of training as you begin to deliver PATHS and a top-up half-day at the beginning of the second term. Were you able to attend the training?

**Clarify whether first day, second (top-up) half-day or both**

If yes:
- How useful did you find this? What particular aspects were useful?
- Was there anything missing?
- What additional/alternative training might have been useful?
- Were you required to ‘cascade’ the training/ brief colleagues?

**Ask for examples (differentiate between first/second days)**

If no:
- Did any colleagues attend the training? Who?
- Did they cascade the training/brief you on the training later at school?
- How useful was this?

**Ask for examples (differentiate between first/second days)**

19. *(If appropriate)* Are you planning to attend the second training day? *(why/why not?)*

20. Have you had any additional training relating to PATHS specifically?

21. Have you had any other opportunities for training/professional development around social and emotional learning?

**Ask for examples**

22. **PP on-going support (coaching model)** In addition to the initial training, the PATHS programme includes ongoing support from a PATHS psychologist who has been assigned to your school. How useful have you found this ongoing support?

23. Would you like to see more support?

24. Would you like to see less support?

25. Would you like to see different types of support?

**Ask for examples**

26. How important do you feel it is to have access to ongoing support?
E. Factors affecting implementation

The list below outlines the key anticipated factors that may influence the implementation of PATHS at programme, classroom and school levels (there is likely to be interaction across levels). The questions above should have addressed most of these; however, please be aware of these factors so that answers may be probed or questions revisited if necessary.

Factors potentially affecting implementation

a. Programme level:
   - suitability of resources

b. Teacher level:
   - self-efficacy
   - knowledge and skill proficiency
   - level of training
   - external support
   - support from colleagues
   - curriculum time
   - preparation time
   - attitude/buy-in – do not perceive need for or benefits of PATHS; not compatible with teaching style

c. Pupil level:
   - Meets needs
   - Engaged, responsive (appropriate resources)
   - Classroom climate/pupil behaviour impede implementation

d. School level
   - Prior positive/negative involvement with similar approaches and existing climate supportive/not supportive of SEL/PATHS approach
   - PATHS integrated with other aspects of curriculum
   - Head teacher and senior management team actively supportive of PATHS
   - Head teacher and senior management state that supportive but not actively demonstrating support (status of PATHS within school)
   - Sufficient resources allocated – classroom/curriculum time
   - PATHS integrated with other aspects of school-life posters just in classrooms or across school? Whole-staff awareness of PATHS (other than teachers directly involved in delivery, including eg lunchtime staff)

27. How easy has it been to implement PATHS?
   - Is there anything about your school that has made it easier?
   - Ask for specific examples (positive and negative)

28. Have there been any challenges to the implementation of PATHS?
   - Ask for specific examples (positive and negative)

F. Sustainability

Aims: attitudes towards PATHS and change over time; sustainability
29. The PATHS project runs for two years; how likely do you think it is that you will continue with PATHS after this?
   • The entire programme?
   • Particular lessons?
   • PATHS framework (structure) but with amended lessons?
   • Key aspects of PATHS? *(Ask for examples)*

   Ask for specific examples (positive and negative)
   Eg PPoD, compliments, golden rules, feelings faces

G. Summarising experience

   *Aims: tap attitudes, beliefs, unanticipated experiences and factors*

As you know, the project is examining how well PATHS works in English schools. If it is successful, then it may be rolled out to more schools. Based on your experiences of PATHS so far, what advice would you give to a teacher in another school who has just been told she/he has to implement PATHS next term?

   Ask for specific examples if appropriate (positive and negative)

H. Closing the interview:

   *Aims: unanticipated experiences, factors etc; emergent themes*

I. Is there anything that you would like to add?
J. Is there anything that you think I should have asked you about, or missed out?

ASK: Do you have any questions?

Thank you very much for your help and time. I will now turn off the recorder.
## Appendix 5: Observation Schedule

**PATHS to Success**

**Lesson Observation Proforma**

<table>
<thead>
<tr>
<th>Date (dd/mm/yy)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>School name</td>
<td></td>
</tr>
<tr>
<td>Year group</td>
<td></td>
</tr>
<tr>
<td>Teacher name</td>
<td></td>
</tr>
<tr>
<td>PATHS unit number</td>
<td></td>
</tr>
<tr>
<td>PATHS lesson number</td>
<td></td>
</tr>
<tr>
<td>PATHS lesson title</td>
<td></td>
</tr>
<tr>
<td>Observation start time</td>
<td></td>
</tr>
<tr>
<td>Observation end time</td>
<td></td>
</tr>
<tr>
<td>Name of observer</td>
<td></td>
</tr>
<tr>
<td>Fieldwork or coaching?</td>
<td>F [ ] C [ ]</td>
</tr>
</tbody>
</table>

### General contextual notes

Contextual information that might be relevant to the conduct of the lesson (e.g. other things happening in the class or school). Remember ‘sensitising’ concepts.

<table>
<thead>
<tr>
<th>Descriptive Comments</th>
<th>Interpretations</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Number of children present: _____</th>
<th>Number of adults supporting class: _____</th>
</tr>
</thead>
</table>

### Physical artefacts – present and accessible/visible?

- Posters: None [ ] Some [ ] All [ ]
- Feelings dictionaries/feelings faces [ ]
- Other artefacts (e.g. drop-box) [ ]

### PATHS Pupil of the Day

(tick one only)
- No evidence [ ]
- Evidence, but process not seen [ ]
- Done but used poorly or inconsistently [ ] (e.g. doesn’t complete or send compliment list)
- Exemplary – completely and consistently [ ]

### 1. Fidelity/adherence

Rate the extent to which the teacher delivers the lesson with fidelity to the PATHS guidance:

#### 1a. Coverage of lesson objectives

- To what extent does the teacher cover the general and specific objectives of the lesson?
1b. Adherence to lesson structure and sequence
   - To what extent does the teacher follow the structure and sequence of activities outlined in the lesson guidance? E.g. introduction, core activities, closure.

1c. Core components
   - How closely does the teacher adhere to the guidance when teaching the core activities of the lesson? E.g. content, suggested mode of delivery.

<table>
<thead>
<tr>
<th>Fidelity notes</th>
<th>Descriptive Comments</th>
<th>Interpretations</th>
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<tbody>
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<td>1a.</td>
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2. Adaptations

<table>
<thead>
<tr>
<th>Adaptation (addition, omission and enhancement) notes</th>
<th>Descriptive Comments</th>
<th>Interpretations</th>
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3. Quality

Rate the quality of delivery of the lesson:

3a. Preparedness
   • How well prepared is the teacher for the lesson?
   <<SLIDING SCALE FROM 0-10>>

3b. Interest and enthusiasm
   • Rate the teacher’s interest and enthusiasm in his/her delivery of the lesson
   <<SLIDING SCALE FROM 0-10>>

3c. Clarity of expression
   • How clearly does the teacher explain key concepts and activities in the lesson?
   <<SLIDING SCALE FROM 0-10>>

3d. Teacher responsiveness as required
   • How well does the teacher respond to pupil queries/meet the needs of all of the class if it is required?
   << NOT APPLICABLE >>
   OR
   <<SLIDING SCALE FROM 0-10>>

<table>
<thead>
<tr>
<th>Quality notes</th>
<th>Descriptive Comments</th>
<th>Interpretations</th>
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<tbody>
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<td>3a.</td>
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<tr>
<td>3d.</td>
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</table>

4. Participant responsiveness

Rate children’s engagement with and responsiveness to the lesson

4a. Pupil engagement in core activities
   • Rate the extent to which children in the class actively participate in the lesson activities (e.g. joining in role plays, answering questions).
   <<SLIDING SCALE FROM 0-10>>

4b. Pupil interest levels
- Rate the level of sustained interest and attentiveness among children in the class during the lesson.

<<SLIDING SCALE FROM 0-10>>

4c. Pupil learning
  - Rate the extent to which the learning objectives have been met.

<<SLIDING SCALE FROM 0-10>>

<table>
<thead>
<tr>
<th>Participant responsiveness notes</th>
<th>Descriptive Comments</th>
<th>Interpretations</th>
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5. Reach

Approximately what proportion of the class are present throughout the lesson?

<<SLIDING SCALE FROM 0-10>>

<table>
<thead>
<tr>
<th>Participant reach and withdrawal notes</th>
<th>Descriptive Comments</th>
<th>Interpretations</th>
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6. Overall implementation quality

Provide a summative rating of implementation quality

<<SLIDING SCALE FROM 0-10>>

<table>
<thead>
<tr>
<th>Overall implementation quality notes, contributing factors and justification</th>
<th>Descriptive Comments</th>
<th>Interpretations</th>
</tr>
</thead>
</table>
Appendix 6: Charts of Assumptions for Multiple Regression: Fidelity

(Note: 1st iteration of imputed data is displayed, others available on request)
Appendix 7: Charts of Assumptions for Multiple Regression: Dosage

(Note: 1st iteration of imputed data is displayed, others available on request)
Normal P–P Plot of Regression Standardized Residual
Dependent Variable: Zscore(Mean_Dosage)

Scatterplot
Dependent Variable: Zscore(Mean_Dosage)
Appendix 8: Charts of Assumptions for Multiple Regression: Quality

(Note: 1st iteration of imputed data is displayed, others available on request)
Normal P–P Plot of Regression Standardized Residual
Dependent Variable: Zscore(Mean_Quality)

Scatterplot
Dependent Variable: Zscore(Mean_Quality)