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**MINDFULNESS PRACTICES AND SUPPORTING THE INCLUSION OF PUPILS WITH  
SOCIAL AND EMOTIONAL BEHAVIOURAL NEEDS: A SYSTEMATIC LITERATURE  
REVIEW.**

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## Abstract

The research project aims to investigate whether mindfulness practices are a suitable tool to support the inclusion of pupils with social, emotional and behavioural difficulties. This research project is a systematic literature review which has synthesised seven empirical articles found through searches within six bibliographic databases using several inclusion and exclusion criteria in order to ensure the relevance and suitability of the articles. Thematic analysis was used to gather data from these articles and seven themes were created which outlined the changes created through the use of the mindfulness practices. These themes were: Improved self-regulation; Improved social competencies; Improved emotional competencies; Improved behaviour regulation; Improved executive function; Greater benefit to pupils with lower social-emotional competencies and Feasibility of school-based practice. It is concluded that the use of mindfulness practices are of benefit to all learners and especially those with social, emotional and behavioural difficulties as this leads to better self-regulation and school readiness. Therefore, there is a need to encourage the use of mindfulness practices in order to assist and include pupils with social, emotional and behavioural difficulties in the Scottish primary school.

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## Introduction

This research project is a systematic literature review which aims to investigate whether mindfulness practices can be used as an effective tool within the Scottish primary school to support the inclusion of pupils with 'social, emotional and behavioural difficulties' (SEBD). This topic was chosen as inclusion is a key focus within Scottish education, since a key political goal within Scotland is to improve outcomes for all members of Scottish society through the promotion of social justice and equity (Education Scotland, 2015; Hamilton and O'Hara, 2011; McCluskey, 2017; Scottish Government, 2020; Sutherland and Stack, 2014). In light of this the Scottish education system attempts to promote inclusion to ensure all children are able to access, participate and feel valued within their learning community in order to achieve their full potential and access positive life outcomes (Education Scotland, 2015). Inclusion is a complex concept and is frequently defined within education as the identification and removal of barriers in order to encourage access, participation and success for all learners (Armstrong et al., 2000; Mitchell, 2017; Moran and Abbott, 2010; Reindal, 2016). This definition is mirrored within the Scottish context as inclusion is outlined as the ability to be present, participate, achieve and supported within the school context. (Scottish Government, 2019). Therefore, it is important to ask what adjustments need to be made to ensure all pupils are able to meet this definition of inclusion.

This discussion focuses on the inclusion of pupils with SEBD as this is a prevalent group within the context of Scottish education (Mowat, 2019). The social emotional behavioural needs of all pupils are of importance within Scottish education since a core aim of education policy is to promote long-term well-being by ensuring that pupils leave school able to participate as contributing members of wider society (Scottish Government, 2009). Therefore, it is important that pupils are able to access and participate in equitable learning experiences and are given opportunities to learn accepted norms of behaviour within a supportive environment which encourages the development of self-awareness, self-worth and personal achievement (Scottish Government, 2009; Scottish Government, 2017). Hyland (2010) extends this idea and states that the ultimate ends of education are to promote self-esteem, job satisfaction and life satisfaction. Therefore, it can be said that Scottish education has two clear

goals. Firstly, to ensure that Scotland's young people access a meaningful and equitable education system which allows pupils to achieve and attain highly within academic contexts. And secondly, to enable pupils to develop the necessary social and emotional competencies needed to be a fully functioning member of society with a sense of self-worth and the ability to build meaningful relationships. Therefore, this research project aims to find an approach which encourages pupils with SEBD to develop the skills needed to be able to be included within and access an equitable education and to improve their later life outcomes as fully functioning members of society.

The decision to write this research project was driven by one's interest in the pastoral care aspect of teaching. As a Scottish primary school teacher I have worked within a range of classes and have met numerous pupils with SEBD. As I progress within my career I want to build my understanding of how best to support these pupils in order to create a more inclusive and supportive environment within my classroom. Furthermore, I have a special interest in how mindfulness and nurture can be used within the classroom environment to support pupils as I completed a university placement within a school using specific mindfulness approaches to support their pupils. This was a fascinating experience and I could see a clear benefit to the pupils within these classes and wished to further my knowledge surrounding the benefits of mindfulness. Therefore, I decided to investigate how mindfulness can be used to better support and include pupils with SEBD within the classroom.

This research project will be structured as a systematic literature review. The initial literature review will aim to contextualise the topic and collate current understanding of what is meant by SEBD, what support current literature suggests these individuals require and how mindfulness practices can be linked to this support. The discussion within the initial literature review will then lead to the research questions which this research project will aim to answer. Following the initial literature review the methodology will discuss the research paradigm and will outline the systematic process which was used to collect the data necessary to answer the research questions. The following chapter will outline the findings collected during a process of thematic analysis using a range of studies which fit a set search criteria. These findings will then be



critically analysed within the discussion chapter finally leading to a conclusion which will present the overall implications and limitations of this study.

### Initial literature review

This initial literature review aims to analyse and evaluate the current discussions surrounding pupils with social emotional behavioural difficulties (SEBD) within Scottish primary education. Pupils with SEBD are of importance within discussions surrounding inclusion within Scotland's schools as the label 'SEBD' encompasses what is seen as the largest and fastest growing group of children with additional support needs in Scotland (Mowat, 2019). As Scottish education policy aims to ensure that all pupils are included within the education system and are able to achieve highly it is important to consider the needs of pupils with SEBD as it is suggested that pupils who struggle to follow expected behavioural norms are more likely to be low academic attainers and display poor emotional competencies which can have long-term effects on individual well-being (Chi et al., 2016; Education Scotland, 2015). Furthermore, it is suggested that pupils' social, emotional and behavioural development is a core factor to school success. This is evidence through suggestions that pupils with SEBD are more likely to be lower achieving and have more negative school experiences (Scottish Government, 2010). Furthermore, the Scottish Government (2010) warns that pupils who enter Scottish primary schools already presenting challenging behaviour have been shown to have more difficulty building effective peer and teacher relationships, have higher truancy rates and achieve at a lower level than their peers. Therefore, it is important that the needs of these pupils are being met and that these pupils are able to effectively access and participate within their learning environment in order to ensure that these learners are included and on a path to more positive outcomes.

#### **What is meant by social emotional behavioural difficulties?**

SEBD is a complex and multifaceted concept as a number of conditions and needs can be categorised within this term. Although a variety of terms are in current use within policy and literature, this discussion will use the term 'Social Emotional Behavioural Difficulties' as this is the terminology used within Scottish policy (Mowat, 2011; Scottish Government, 2010). The term SEBD can be difficult to define as definitions vary within different contexts. However, within the UK context, SEBD are commonly categorised as being displaying behaviours or emotions that differ from the

norm in such a way that this interferes with the child's own growth and development and/or the lives of others, such as anxiety or confrontational behaviours (Cooper and Whitebread, 2007, p.13; Sloan et al., 2020, p.1).

When examining what causes pupils to develop SEBD a key area of focus is the role of early childhood development. It is suggested that early childhood is an important developmental stage when individuals begin to learn to self-regulate, and if pupils experience a challenging or adverse early childhood environment then this important stage of emotional growth and development can be disrupted (Auerback and Delpont, 2018; Boyer and Boyer, 2016; Boxall, 2002; Chi et al., 2016; Posner and Rothbart 2009). This is of importance as it has been found that pupils who have disrupted early childhood development are often affected in ways that negatively impact cognitive function, emotional regulation, and increase their risk of low academic attainment, unemployment and poor mental health (Greenberg 2006; Kim and Cicchetti 2010; Scottish Government, 2010). Furthermore, poor self-regulation has been shown to impact education, since the inability to regulate emotions and behaviour is shown to increase the risk of poor academic success, decision making and social functioning (Humphries et al., 2018; Malboeiy-Hurtubise et al., 2018; Viglas and Pelman, 2018).

### **Supporting pupils with SEBD**

When considering how to best support pupils with SEBD Mowat (2010) suggests that there is a general agreement that development of self-regulation is an important goal. Self-regulation is a broad concept and is defined in a number of ways within current literature (Liew, 2012). The most prevalent definition within early childhood literature is that self-regulation comprises cognitive, emotional and behavioural processes and is "the ability to control one's emotions, attention, and behaviors" (Blair and Diamond, 2008; Blair and Razza, 2007; Halle and Darling-Churchill, 2016; Liew, 2012; Molfese et al., 2010; Nakamichi et al., 2021, p.159; Raffaelli et al., 2005). This definition is used within this discussion as it is the most prevalent definition within the context of this research project and unlike other definitions of self-regulation places a focus on the social aspect of self-regulation as well as the academic aspect. The development of social and emotional competencies (SEC) and Executive functions (EF)

are viewed as core to the development of self-regulation (Halle and Darling-Churchill, 2016; Nakamichi et al., 2021).

EF are control processes involved in the creation of deliberate, goal-orientated thought and cognitive skills such as concentration, decision making, motivation, optimism and awareness (Anderson, 2002; Diamond, 2013; Diamond and Lee, 2011; Liew, 2012; Martins et al., 2016; Nakamichi et al., 2021; Zelazo et al., 2008). There is a large agreement within the literature that there are three core aspects of EF: inhibitory control, working memory and cognitive flexibility or attention shifting, since these two terms are interchanged within the literature (Anderson, 2002; Bierman et al., 2008; Diamond, 2013; Diamond and Lee, 2011; Halle and Darling-Churchill, 2016; Liew, 2012; Martins et al., 2016, p.2; Zelazo et al., 2008). Inhibitory control is the capacity to alter a reactive response in order to attain personal goals and regulate behaviour (Bierman et al., 2008). Working memory is a complex function which allows for knowledge acquisition and information retention which leads to the development of long-term memory (Bierman et al., 2008; Bull and Scerif, 2001). Cognitive flexibility or attention shifting is the ability to sustain or shift attention to focus attention on specific stimuli which is an important skill needed to develop knowledge and learn new information (Bierman et al., 2008). These core EFs are viewed as key to the development of self-regulation since these functions allow individuals to apply knowledge and attention to specific tasks leading to development of cognitive, behavioural and emotional flexibility resulting in higher academic achievement and SEC (Anderson, 2002; Barkley, 2001; Bierman et al., 2008; Blair, 2002; Blair and Diamond 2008; McClelland et al., 2013; Nakamichi et al., 2021; Ponitz et al., 2009; Zelazo et al., 2008).

SEC encompasses a broad range of abilities including self-awareness, emotional-management, empathy, positive relationship skills and the ability to identify emotions within oneself and others (Gueldner and Feuerborn, 2016; Humphires et al., 2018; Maloney et al., 2016; Visser et al., 2012). Emotional competencies are defined as the ability to regulate emotions in order to recognise, understand and react appropriately to personal emotions and the emotions of others (Halle and Darling-Churchill, 2016; Jones et al., 2017). Having an understanding of how to interpret and regulate emotional processes is key to developing empathy and maintaining

attention, as when emotions are more controlled individuals are better able to engage in prosocial behaviours and have more effective cognitive regulation (Jones et al., 2017). Social competencies are defined as the ability to have positive social interactions with others and are displayed in actions such as cooperating with others and regulating appropriate behaviours (Halle and Darling-Churchill, 2016). Development of social competence is closely influenced by individuals' ability to regulate and understand emotions as these skills are key to reading and reacting to others emotions and social cues which are necessary skills for effective prosocial interactions (Halle and Darling-Churchill, 2016; Jones et al., 2017; Nakamichi et al., 2021). Social competencies are key to the development of prosocial behaviours, such as showing empathy, playing fairly, taking turns, problem solving, goal setting, listening and the ability to balance one's own needs with the needs of others, all of which are a key part of social engagement and successful participation within a school environment (Bierman et al., 2008; Halle and Darling-Churchill, 2016; Nakamichi et al., 2021). It is clear that the development of SEC is of importance as these skills have been shown to play a critical role within school success and later life outcomes (Halle and Darling-Churchill, 2016; Jones et al., 2017). Children who have been able to develop SEC and are able to understand emotional cues, display prosocial behaviours and build positive peer relationships which leads to higher levels of peer acceptance and academic achievement and reduced SEBD (Denham et al., 2012; Leerkes et al., 2008; Martins et al., 2016; Trentacosta and Fine, 2010). Therefore, it can be suggested that the development of SEC is key to supporting children with SEBD.

There is an acknowledgement within the literature that EFs are not fixed and can be developed (Liew, 2012). EFs are developed throughout childhood with a rapid growth period between the ages of three and five which allows children to develop the ability to organise their thoughts and regulate behaviours and reactions to events (Barkley, 2001; Bierman et al., 2008; Martins et al., 2016; Zelazo and Lyons, 2012). This early childhood period is when pupils begin to attend formal education and it is suggested that it is possible to provide specific school-based interventions for pupils to assist in the development of the necessary EF needed for effective self-regulation (Brocki and Bohlin, 2004; Liew, 2012; Zelazo et al., 2004). This is important as it has been found

that environmental factors play a key role in the development of EF and children who have experienced challenging early childhood experiences such as high stress, exposure to violence and poor levels of social support are more likely to experience delays in the development of EFs and therefore have poorer self-regulation skills (Bierman et al., 2008; Cicchetti, 2002). Furthermore, the development of SEC also begins in early childhood and these early SEC create the 'building blocks' for later competencies needed in adulthood ((Bierman et al., 2008; Halle and Darling-Churchill, 2016; Jones et al., 2017, p.52), meaning that if these competencies are underdeveloped within early childhood it is more challenging for these individuals to develop the more complex competencies needed for later life (Jones et al., 2017). Some suggest that the development of SEC is closely related to EFs (Blair, 2002; Blair and Razza, 2007; Halle and Darling-Churchill, 2016; Martins et al., 2016). Martins et al (2016) propose that EFs create a foundation for the development of emotional knowledge and understanding as EF controls attention-regulation which is necessary for children to learn to recognise and distinguish between emotions. Furthermore EFs provide the inhibitory control needed to control behaviour and emotional reactions which allows for the prosocial interactions needed to develop an understanding of emotions (Martins et al., 2016). The working memory is an important tool for the development of SEC as this allows children to learn from experience and develop an understanding of social rules and cues (Bierman et al., 2008). As there are clear links between the development of EF and SEC it is important that nurseries and schools provide the pupils who have missed the early development opportunities with time to develop both EF and SEC which will lead to better self-regulation, thereby encouraging pupils to succeed and participate effectively within the school environment and lessening the risk of long-term difficulties.

### **Self-regulation and school readiness**

This connection between a lack of opportunities to develop effective self-regulation skills and a lack of preparedness for school is a frequently raised issue within the literature, with the term 'school readiness' being highlighted within many pieces of literature. Pupils who display 'school readiness' are seen as those who have developed an appropriate level of the basic social, emotional and cognitive

competencies needed to adjust to, participate and succeed within the school environment (Blair, 2002; Denham, 2006; Ladd et al., 2006; Liew, 2012; Nakamichi et al., 2021; Raver et al., 2007; Snow, 2006). School readiness is key as those pupils who are able to self-regulate their emotions are found to be more likely to adjust well to school, have higher levels of motivation and show more adaptive learning behaviour (Aguilar-Pardo et al., 2013; Diamond, 2012; Humphries et al., 2018; Liew, 2012; Viglas and Pelman, 2018). Liew (2012) suggests that this is because even at an early level the teaching and learning found within schools requires pupils to demonstrate attentional and inhibitory control as they are expected to remain on task and work with their peers. Therefore EFs are a foundational aspect of school readiness as pupils require developed inhibitory control skills and working memory function to be able to follow classroom rules, sit still and pay attention (Barkley, 2001; Bierman et al., 2008; Blair, 2002; Liew, 2012; McClelland et al., 2007). Furthermore, pupils who are unable to self-regulate their emotions, attention and behaviour are more likely to be seen negatively by their teachers and peers which will impact their academic progress and ability to develop peer relationships (Bierman et al., 2008; Denham et al., 2003; Liew, 2012).

This is significant for those pupils with SEBD and poor self-regulation, as these pupils have been found to be less likely to display school readiness which can lead to long term difficulties and increase these pupils likelihood of being expelled or excluded from school (Blair and Diamond, 2008; Blair and Raver, 2014; Boxall, 2002; Brunzell et al., 2015; Halle and Darling-Churchill, 2016; Liew, 2012; Winsler et al., 2008). There are numerous bodies of evidence which suggest that pupils who begin school with underdeveloped self-regulation skills are less able to develop the SEC needed to adjust to school learning and are therefore at risk of low academic engagement and poor life-outcomes due to behavioural difficulties (Blair 2002; Blair and Razza 2007; Buckner et al 2009; Greenberg 2006; Ladd et al 2006; Raver et al 2009). Therefore, when examining how best to support pupils with SEBD, the research suggests that these pupils need to be provided with opportunities to develop the necessary EFs and SEC in order to improve self-regulation.

## **What is mindfulness and how is it linked to pupils with SEBD?**

A number of recent studies have begun to relate the development of self-regulation to mindfulness as it is believed that mindfulness practices, such as rhythmic breathing, yoga and mindful movement (Auerback and Delpont, 2018; Greenberg and Harris, 2012; Lam, 2016), can provide strategies to foster skills such as self-awareness, management of emotions and maintaining relationships in order to improve individual self-regulation (Kirby, 2016; Maloney et al., 2016; Nieminen and Sajaniemi, 2016). Although Coholic (2011) warns that definitions of mindfulness may vary as this is a relatively new and complex construct, it can be argued that there is a generally agreed definition of mindfulness within current literature, the Kabat-Zinn (2003) definition of mindfulness as “the awareness that emerges through paying attention on purpose, in the present moment, and nonjudgmentally to the unfolding of experience” (p. 145). As this definition is strongly supported within the literature this is the definition which will be used throughout this discussion when referring to mindfulness (Anderson et al., 2007; Auerback and Delpont, 2018; Chambers et al., 2009; Coholic. 2011; Coholic and Eys, 2016; Emerson et al., 2017; Feuerborn and Gueldner, 2019; Kirby, 2016; Malboeiy-Hurtubise et al., 2018; Maloney et al., 2016; Moreno-Gomez and Cejudo, 2018; Robins et al., 2012; Rybak, 2013; Snyder et al., 2012; Viglas and Pelman, 2018).

Robins et al (2012) suggest that a core part of mindfulness is the ability to regulate one's attention in order to be able to observe and be aware of one's thoughts, feelings and sensations in the current moment. This is linked to the development of EFs and SEC as by becoming more aware of their own internal reactions to external factors individuals are able to develop a sense of reflective self-control and behaviour control (Brown et al., 2007; Chambers et al., 2009; Frank et al., 2016; Snyder et al., 2012; Maloney et al., 2016). Brunzell et al (2016) highlight this mindful and reflective self-control as a key step in improving outcomes for pupils with SEBD as this allows pupils to move away from a reactive emotional response and instead be more cognitively aware of their behaviours and therefore more able to self-regulate. It also suggested that an important benefit of mindfulness is the development of an awareness and understanding of emotions as this arguably leads to a better understanding of one's



own emotional reactions and reduces the risk of reactive emotional reactions (Goodall et al., 2012; Brown et al., 2007).

These benefits have led many researchers to feel that as mindfulness can improve metacognition, develop internal awareness and assist in the management of thoughts and emotions then this is a suitable approach to support the development of self-regulation (Felver et al., 2013; Gueldner and Feuerbon, 2016; Hyland, 2010; Kirby, 2016; Moreno-Gomez and Cejudo, 2018; Nieminen and Sajaniemi, 2016; Robins et al., 2012; Roeser and Peck, 2009; Snyder et al., 2012). This hypothesis has led to a number of studies examining the impact of mindfulness on self-regulation and have found that these have enabled the development of a variety of EFs as well as numerous cognitive, social and emotional abilities, such as self and social awareness, relationship management, responsible decision making, social and emotional understanding and improved academic performance (Erwin and Robinson, 2016; Feuerborn and Gueldner, 2019; Maynard et al 2017; Semple et al 2017). However, it is important to note that although there has been a recent increase in the use of mindfulness in schools, the majority of these studies have used adults or teenagers within the research sample (Feuerborn and Gueldner, 2019).

## **Conclusion**

To conclude, it can be suggested that mindfulness practices can be used to support the development of self-regulation and therefore would be a suitable tool to support the inclusion of pupils with SEBD within the primary school environment. However, despite a handful of studies which have investigated the use of mindfulness amongst young children, the majority of studies have focused on the use of mindfulness practices amongst an adult or teenage population. Therefore, the suggestion that mindfulness allows for the development of better self-regulation relies on data gathered from adult studies and may not be applicable within the primary school setting. However, in recent years there has been a rising number of studies examining the effect of mindfulness on children (Emmerson et al., 2017; Feuerborn and Gueldner, 2019; Semple et al., 2017; Zelazo and Lyons, 2012). In light of this, the following discussion aims to answer two research questions by analysing research which uses mindfulness

within the primary school to assess whether the cognitive, emotional and social changes needed for improved self-regulation are also present within samples of primary school aged pupils.

### **Research questions**

What changes in cognitive, social and emotional competencies are shown in studies investigating mindfulness practices using primary school pupils?

Is there evidence to suggest the benefits of mindfulness practices found within adult studies can be replicated within the primary school environment?

## Methodology

This research project is a systematic literature review which aims to complete a comprehensive synthesis of pre-existing research in order to answer the research questions (Bell and Waters, 2014; Jesson et al., 2011). A systematic literature review has been chosen as this process encourages neutral and technical engagement with the literature which ensures that the research is rational and logical (Jesson et al., 2011; Purssell and McCrae, 2020). This research project aims to evaluate chosen empirical studies to gain an understanding of how mindfulness practices can be used to support pupils with SEBD within the primary school. Therefore the discussion centres on an interpretivist paradigm as this research is an interpretive attempt to understand the issue by exploring individuals' understanding of the world rather than focusing on a definite 'truth' (Cohen et al., 2018; Curtis and Pettigrew, 2010). Furthermore, the discussion follows a constructivist ontology, viewing reality as a social construct, and interpretivist epistemology, proposing that knowledge is developed through interpretations of different realities and human experience, as this fits well within an interpretivist paradigm (Arthur et al., 2012). As this research project aims to generate a hypothesis rather than find a definite answer to the research questions this body of research is more suited to being a piece of qualitative research (Cohen et al., 2018). Qualitative methods are more suited to the interpretivist paradigm as within qualitative research the truth is not viewed as objective but instead as a subjective reality experienced differently by individuals (Ryan et al., 2007). Therefore, qualitative research methods are arguably more suitable when attempting to understand individual experiences as these allow for greater expression of human experience (Bell and Waters, 2014; Oliver, 2012). Finally, it was decided that as the majority of studies used within the initial literature review and later discussion used qualitative methods it would be logical that this literature review will also be qualitative (Coholic, 2011; Maloney et al., 2016; Mowat, 2010).

## **Method**

To begin this systematic literature review an initial literature review was completed to establish if the chosen topic was a valuable area of discussion and

provide a background to the chosen topic of discussion. This process was an iterative process starting with the work of key authors within the field of SEBD, such as Joan Mowat, whose work was then used to identify further literature which was identified through investigation of reference lists within the key articles (Purssell and McCrae, 2020). This process led to the creation of the research questions which were established from queries which were raised during the discussion of current literature.

Once the research questions had been set the research protocol was created. The first step was to establish the key search terms which were gathered from the initial literature review by recording the key words listed within these studies. These keywords, such as 'self-regulation', were recorded and were then collated to identify terms with similar meaning which could be grouped together in order to identify alternative wording for key search terms (Appendix. A) (Boyer and Boyer, 2016; Viglas and Pelman, 2018). These key search terms were also discussed with a Glasgow University Library support assistant who advised how best to create search terms and suggested additional terms which could be used to improve the searches. The Glasgow University Library support assistant then recommended the use of Boolean operators to ensure that the search terms were being used effectively as did Jahan et al (2016) and Jesson et al (2011). Boolean operators use 'AND', 'OR' and 'NOT' to include and exclude certain terms, although within this piece of research the term 'NOT' is not used as Purssell and McCrae (2020) warn that this could risk the accidental exclusion of relevant pieces of research. More complex Boolean operators were also used, such as the use of an asterisk symbol to allow for truncated terms (Jahan et al., 2016; Purssell and McCrae, 2020). An example of this is the term 'Mindful\*' as this has numerous possible endings which are relevant to the current discussion. Finally adjacency operators were used which allow for search terms that occur within a given number of words of each other, such as the term 'Social emotional N5' (Purssell and McCrae, 2020).

After the key terms had been established the databases were chosen. Following the advice of Purssell and McCrae (2020), who advise that research should involve the use of at least three bibliographic databases, and the Glasgow University Library support assistant six bibliographic databases were selected: the British Education

Index, Child development and adolescent studies, Educational abstracts, ERIC and APA PsycInfo. As these databases were the most relevant to the chosen research topic and provide a wide scope of articles. The key word searches were then applied to these databases and were altered numerous times in order to produce papers of a suitable sample size and relevance, this process was recorded and evaluated in order to ensure the selection of the key word search was as robust and systematic as possible. This was an iterative process and was completed with numerous combinations of search terms until the most effective and relevant search was identified using the terms: '(Self or Emotion\*) N5 (regulation or control)'; 'Social emotional N5 (competencies or learning or development or intelligence)' and 'Mindful\*'.

Once the initial key word search had been completed the chosen papers were evaluated to assess whether they were suitable for purpose by creating an inclusion and exclusion protocol which set clear boundaries for the papers used within the study (Appendix B)(Jahan et al., 2016; Xenofontos et al., 2021). By using a clear and effective inclusion and exclusion protocol the risk of selection bias was reduced as texts were chosen based on the protocol rather than researcher selection and the research was narrowed to become more focussed and manageable (Jahan et al., 2016; Purssell and McCrae, 2020).

The first inclusion criterion was that the studies must be peer-reviewed as this is seen to improve the reliability and quality of the research (Jesson et al., 2011; Xenofontos et al., 2021). Although there is a risk of narrowing ideas through only using peer-reviewed journals this choice was made to ensure the research was as robust as possible (Nieminen and Sajaniemi, 2016). Searches were also narrowed through the exclusion of articles written before 2010 as it is recommended to limit searches to the last ten years to ensure that no outdated research is used within the research (Jesson et al., 2011; Purssell and McCrae, 2020). The search also excluded any articles written in a language other than English as although there may be studies of importance written in other languages translating the research can cause issues of reliability as the research may not be properly translated (Purssell and McCrae, 2020; Xenofontos et al., 2021). The articles produced from the search were then assessed by their title and abstract to ensure that they were relevant to the current study, an approach copied from

the methodologies of several studies used within the initial literature review (Nieminen and Sajaniemi, 2016). Finally, texts were only selected if they contained samples of children of three to thirteen years of age. This was originally set as only primary school age children from five to eleven years of age, however, this resulted in a very limited number of articles and after reflection it was decided to include preschool and early adolescent aged children to increase the range of the study. This was also deemed appropriate as studies used within the initial literature review suggested that the time period of growth which affects pupils' social, emotional and behavioural development is from preschool to late primary school (Jones et al., 2017).

Once the key search had been completed and inclusion and exclusion protocols had been applied the articles found had been limited from 43 articles to 10 chosen articles. However at closer inspection it was found that three of the chosen articles were literature reviews rather than empirical studies. These articles were then excluded following advice from one's supervisor who advised that literature reviews should be avoided as the data is not primary data which results in issues of analysis and potential ethical issues. There was concern that this was too small a sample of articles and following tutor advice the databases APA PsycArticles, SocINDEX with Full Text and MEDLINE were added to the original group of databases used. However, despite the larger range of databases the same articles were found meaning that the original seven articles were used within this research project.

After the rigorous selection process it was possible to begin the analysis. Thematic analysis (TA) was chosen as this method is used to identify, analyse and interpret themes within qualitative data and is viewed as an appropriate approach to use when attempting to identify and interpret key features of a data set as this is a systematic process leading to high quality and rigorous analysis (Clarke and Braun, 2006; Clarke and Braun, 2017; Vaismoradi et al., 2013). There are numerous benefits of using TA as this is a flexible approach which can not only produce rich data but also be applied across a range of paradigms and data sets, therefore making it a useful approach when completing a literature review which requires the assessment of a wide range of studies (Clarke and Braun, 2017; Clarke and Braun, 2006; Nowell et al., 2017; Vaismoradi et al., 2013). This review uses the Clarke and Braun model of TA as this is

cited as the most common TA approach used to analyse qualitative data (Clarke and Braun, 2017).

Clarke and Braun (2006) stress that although there is no single way to complete TA it is important that the choices made when planning for TA are made explicit. The first decision to be made was the aim of the analysis as Clarke and Braun (2006) outline two aims of analysis. The first is the production of a rich thematic description of your entire data set which is beneficial when the aim is to provide the reader with a sense of the predominant or important themes (Clarke and Braun, 2006). The second is the production of a detailed account of one theme or a group of themes in order to examine a particular area of interest or to answer a specific question (Clarke and Braun, 2006). It was decided that this study would produce a focused analysis of a group of themes as although producing a thematic description of the entire data set can provide a rich description this would be an unrealistic goal in terms of the time frame of this research project (Clarke and Braun, 2006). Another important choice was how the themes would be created. Themes are key as they provide a framework for organising and reporting analytical observations and aim to capture the important aspects, meaning or patterns within the data in relation to the research question (Clarke and Braun, 2006; Clarke and Braun, 2017). It was decided that the themes would be identified in an indicative way as this ensured that the themes were driven by the data and there were not pre-conceived notions of what the themes would be as this could bias the analysis of themes (Clarke and Braun, 2006).

This research followed the TA structure outlined by Clarke and Braun (2006) who provided a six step approach although it is important to note that this was not a linear process and there was a constant repeating of and changing between steps to produce a robust analysis of data (Nowell et al., 2017). The first step was to become familiar with the data by reading the studies and noting any initial ideas for codes and themes which may arise (Clarke and Braun, 2006). The quality of reporting was examined to ensure that the studies being used were well reported (Purssell and McCrae, 2020). The effectiveness of reporting was analysed by investigating whether the author had outlined aspects of the study such as the aim of the study, the significance of the work and shared aspects of the study such as whether the research was given ethical

approval as it would be unethical to use a study which gathered data without considering the ethics of the research (Purssell and McCrae, 2020; Ryan et al., 2007). The methodological quality of each study was also examined as this is also of importance as this influences the dependability and confirmability of the research and can be used to assess any issues such as a risk of bias and provides an explanation of how well the study has been designed and conducted to ensure that the findings are verifiable and rigorous (Purssell and McCrae, 2020; Ryan et al., 2007). Notes were kept on each article used within the study which could then be used within the discussion chapter.

The second step was to generate an initial code by coding the notable features of the data in a systematic way across the entire data set and highlighting which pieces of data were relevant to which code, codes being the small units of analysis which create the building blocks for themes (Clarke and Braun, 2006; Clarke and Braun, 2017). This process allowed for the organisation of the data into meaningful groups, and in order not to restrict the number of themes which could be used later within the research the data was coded for as many potential themes as possible (Clarke and Braun, 2006). 164 pieces of data were coded from the seven articles. The third step was to search the coded material to identify the themes, themes being large patterns of codes which are joined by a shared core idea, and then collate the codes into all potential themes by gathering the relevant data into as many relevant themes as possible (Clarke and Braun, 2006; Clarke and Braun, 2017). At the first stage of grouping codes into themes there were 33 themes identified from the coded data. The fourth step was to review the themes to ensure that the themes appropriately encapsulated the coded pieces of data (Clarke and Braun, 2006). This was done numerous times to ensure that the most suitable themes had been chosen to represent the coded data and that the coded data was grouped into coherent themes which resulted in seven clear themes emerging from the data. The penultimate step was to clearly define and name the themes which then led to the final step of TA, which was the endpoint of the analysis where the patterns in the data were reported through the selection of interesting extract examples which were related back to the research questions and literature shared within the initial literature review (Clarke and Braun, 2006).



## **Ethical considerations**

Ethical considerations are a key area of concern within any body of research as researchers must ensure that they work ethically in all aspects of their work by examining the motives and actions within the research to ensure there will be minimal negative consequences (Darlaston, 2007; Iphofen and Tolich, 2018). The first area which must be considered when attempting to produce an ethically sound piece of research is the purpose and scope of the study as there must be an understanding of the potential benefits and costs to the group being studied (Suri, 2020). This review presents few costs to the identified group being studied as the study does not directly involve participants and the purpose of the study is to identify an appropriate method to support pupils with SEBD to be included within Scottish schools. Suri (2020) writes that it is also important to consider the potential impact of one's personal and professional interest within the findings as this may influence the report of the findings to be directed in a specific direction. One does have both personal and professional interest within the study as this review is being completed to improve one's professional practice.

Therefore, a careful method has been outlined to ensure that the data is analysed in a systematic and fair way to make sure that the research avoids being biased in any way which would advance the professional or personal interests one has in the subject.

As this body of research is a systematic literature review there is a risk of using biased research as a source of data and in order to avoid this the research method has been designed to ensure that the systematic search provides relevant, high-quality and current primary research which is inclusive of diverse viewpoints as the inclusion and exclusion strategies narrow the field enough to ensure the work being used is recent and peer-reviewed but is also wide enough to ensure that a range of viewpoints from a range of geographical and cultural areas are incorporated within the research (Suri, 2020).

Furthermore, it was also decided that a desk-based systematic literature review was the most appropriate approach to this body of research as this research focuses on children with SEBD which is a vulnerable group of individuals and it would be unethical to identify a group of these pupils to use within a study as there may be a harmful

impact on these individuals as they would not have a trusting relationship with me and there is the potential to cause distress to these pupils (Suri, 2020).

### Findings

Following the vigorous selection process seven articles investigating the use of mindfulness practices (MP) were selected for this research project. The largest number of papers emerging from the United States (n=3), two Canadian studies and the last two papers originating from Italy and South Korea respectively. Therefore, a variety of education systems have been explored as these four countries have differing approaches and cultures. It is important to note that the two Canadian were written by Schonert-Reichl and Lawlor, which may narrow the range of opinion shared within these studies. However, this is a small concern as different researchers are also involved within their work. The majority of the studies (n=4) used a sample of preschool aged children while three papers used a sample of primary school aged pupils, meaning the total range of ages included within this study was age three to thirteen. Seven themes were created during the thematic analysis of these papers which will now be introduced and discussed.

#### **Theme 1: Improved self-regulation**

The theme 'improved self-regulation' was found across six of the seven of the research articles used within the study. These papers displayed evidence that there was an improvement in the participants' self-regulatory skills from pre to post-test (Berti and Cigala, 2020; Jackman et al., 2019; Kim et al., 2020; Razza et al., 2020; Schonert-Reichl and Lawlor, 2010; Schonert-Reichl et al., 2015). Schonert-Reichl and Lawlor (2010) found that the post-test teacher reports showed that the MP group teachers found their pupils were more regulated and socially-emotionally competent when compared to the pupil reports given by the control group teachers. Two studies using the 'Go-no-go task' as a measure of self-regulation found that the pupils showed an improved score after the MP indicating an improvement in self-regulation (Berti and Cigala, 2020; Jackman et al., 2019). Razza et al (2020) used the 'Head-Toes-Knees-Shoulder task' (HTKS) to assess self-regulation and also found an increase in scores between the pre and post-test measures with a significant difference between the study group and control group score. However, Berti and Cigala (2020) did

also report that although there was an increase in scores between the pre and post-test measure using the HTKS there was also an increase in scores for the control group which led them to suggest that as there was no 'significant difference' in the HTKS measure (p.10). Jackman et al (2019) also found that the total score for the HTKS was raised from pre to post-test although both the MP and control group showed an increase in scores within the total score for the HTKS task (p.2915).

## **Theme 2: Improved social competencies**

The second theme, 'improved social competencies', was found within six of the seven papers. There are a variety of terms used within the studies as some used the term 'pro-social' behaviour while others used 'social-competencies', but as these terms both address pupils' ability to interact positively with their peers they have been grouped within the same theme. Flook et al (2015) reported that the pupils who took part within the MP were perceived by their teachers to have increased in social competence. Berti and Cigala (2020) and Kim et al (2020) also found a significant improvement on pro-social scores for pupils in the MP group between the pre and post-test measures. Schonert-Reichl et al (2015) also reported that the MP pupils were found to have an increase in pro-social skills such as empathy and a decrease in aggressive behaviour.

A number of the papers used within this discussion used the same measure of social competencies. The 'Teachers' Rating Scale of Social Competence' or 'Teacher-rated social competence task' (TRSSC) was used within three studies and similar results were produced. The teachers in the study from Flook et al (2015) rated the MP group as displaying significantly higher post-test scores of pro-social behaviour. Schonert-Reichl and Lawlor (2010) found that at post-test the teachers within their study reported that the MP pupils showed a significantly higher level of social competence when compared to those in the control classrooms. Furthermore, there was a large agreement amongst this group of teachers that the MP had positively influenced the development of pupil social competencies (Schonert-Reichl and Lawlor, 2010). Jackman et al (2019) also reported that teachers reported benefits to the social competencies of their pupils such as increased levels of empathy and awareness of the feelings of others post-test.

A number of the papers reported that when compared to the control groups the MP pupils were found to have higher gains in social competency scores and measures (Flook et al., 2015; Jackman et al., 2019; Kim et al., 2020; Schonert-Reichl et al., 2015). Kim et al (2020) also noted that despite the pupils in the control group beginning the study with higher baseline scores in measures of cooperation and consoling, the MP group ended the study with a significantly higher score in both measures than the control group pupils. Three studies also reported that while the MP groups pro-social behaviour increased the pupils in the control group were found to decrease in pro-social behaviours such as a decrease in measures of sharing and peer-popularity (Flook et al., 2015; Kim et al., 2020; Schonert-Reichl et al., 2015).

### **Theme 3: Improved emotional competencies**

The theme 'improved emotional competencies' was found within six of the seven articles which all found an improvement from pre to post-test scores of emotional competencies for pupils within the MP groups (Berti and Cigala, 2020; Flook et al., 2015; Jackman et al., 2019; Kim et al., 2020; Schonert-Reichl and Lawlor, 2010; Schonert-Reichl et al., 2015). Berti and Cigala (2020) found an increase within their measure of emotional perspective-taking which suggested that pupils within the MP group were able to better understand the emotions of others post-test. Schonert-Reichl et al (2015) also examined pupils' perspective-taking in addition to a number of separate measures of emotional control and found that the children within the MP group displayed a significant improvement from pre to post-test in terms of perspective-taking, optimism and emotional control. Kim et al (2020) also reported an increase in resilience post-test amongst the MP group pupils. A number of the papers (n=3) used the TRSSC as a measure of emotional competencies and presented similar results as the teachers reported that the MP improved pupils' emotional regulation and competencies (Flook et al., 2015; Jackman et al., 2019; Schonert-Reichl and Lawlor, 2010).

Like the results of the measures of social competence, a difference was found between the MP and control groups as a number of the studies reported that the children in the MP group displayed higher increases in scores of emotional competence than the pupils within the control groups (Berti and Cigala, 2020; Flook et al., 2015; Jackman et al., 2019; Kim et al., 2020; Schonert-Reichl and Lawlor, 2010). Two studies

reported that the pupils within their control group decreased in ratings of emotional competencies as Schonert-Reichl et al (2015) found significant decreases in all measures of social-emotional well-being measures among their control group pupils and Kim et al (2020) found a decrease in ratings of resilience amongst the control group.

A notable finding was presented by Schonert-Reichl and Lawlor (2010) who found that although the pre-adolescent pupils within their study were shown to improve in the self-concept measure of emotional competencies post MP the pupils in the early-adolescent group showed no change. Furthermore, Schonert-Reichl and Lawlor (2010) found that while the pre-adolescents group showed a significant increase in self-concept compared to their control group this was not the case amongst the early-adolescent sample of pupils. As those in the early-adolescent MP group decreased in self-concept from pre to post-test while those in the control group increased in self-concept (Schonert-Reichl and Lawlor, 2010). However, Schonert-Reichl and Lawlor (2010) found that this was not the case for other aspects of emotional competence and the pre- and early-adolescents within the MP groups showed significant improvements in measures such as optimism compared to the control group pupils.

#### **Theme 4: Improved behaviour regulation**

The fourth theme is a relatively small theme but was found within a number of articles (n=4) which noted a positive change within pupil behaviour leading to the creation of the theme 'improved behaviour regulation' (Flook et al., 2015; Razza et al., 2020; Schonert-Reichl and Lawlor, 2010; Schonert-Reichl et al., 2015). Razza et al (2020) found that the MP pupils demonstrated a significant increase in behavioural regulation and that this was maintained across the three month follow up period for the pupils. Schonert-Reichl and Lawlor (2010) recorded similar results as the teachers who participated within their study reported that they often saw an immediate change in behaviour amongst the students who took part in the MP.

#### **Theme 5: Improved executive function**

The theme 'improved executive function' was created as a high number of the articles used measures of inhibitory control, attention regulation and cognitive flexibility

to assess pupil self-regulation. Jackman et al (2019) used a range of measures to assess EF including pupil 'Inhibitory Self-Control (ISCI)', 'Flexibility (FI)', and 'Emergent Metacognition (EMI)' and an 'overall score (GEC)' which represented the pupils overall EF (p.2913). However, no significant changes were found in either the ISCI or the total GEC, which suggests the pupils did not experience any changes in their EF skills (Jackman et al., 2019). Jackman et al (2019), moreover, found that although there was an improvement between the pre and post-test EMI score there was no difference between the MP or control group scores, which suggests that the MP had little to no influence on pupils EMI. Furthermore, the mean score for the MP group within the FI measure increased, indicating a poorer performance, therefore suggesting that the MP decreased the pupils cognitive flexibility (Jackman et al., 2019).

However, other studies presented data which suggested that their MP did lead to improved EF. Berti and Cigala (2020) found that the MP pupils displayed improvements within the measures of cognitive perspective taking. Schonert-Reichl et al (2015) suggest that MPs promote positive cognitive change as it was found that when compared to the control group the pupils within the MP group were shown to outperform in tasks measuring response inhibition, working memory and cognitive flexibility. Flook et al (2015) measured cognitive flexibility and found that the MP group showed post-test scores which indicated more improved cognitive flexibility than those in the control group.

Two papers used the Flanker task as a measure of inhibitory control but produced different results. Flook et al (2015) found that although both the MP and control group pupils showed improved inhibitory control there was a larger increase in the control groups score. In contrast to this Schonert-Reichl et al (2015) found that at post-test the MP group pupils showed shorter reaction times and outperformed the control group in all three flanker switch tasks, which was seen to indicate that the MP group pupils had developed a greater ability to pay attention and inhibit distractions. However, although the MP children had faster reaction times during the post-test flanker tasks they did not have higher accuracy than the control group pupils (Schonert-Reichl et al., 2015).

A number of papers assessed attention regulation as an indicator of improved

EF. Razza et al (2020) found a significant increase in attention regulation from pre to post-test as the pupils were able to sustain attention more effectively after the invention. The increase in attention regulation was also shown to continue to develop post MP within the data gathered in the follow up visit (Razza et al., 2020). Schonert-Reichl and Lawlor (2010) also reported that the teacher reports indicated that the MP pupils displayed an immediate change in attention regulation. Academic achievement is also raised as a measure of increased EFs as this incorporates functions such as working memory and attention regulation. Schonert-Reichl et al (2015) measured pupil mathematics attainment as a measure of improved EF and found that at post-test the MP pupils showed higher end of year grades in maths performance when compared to the control group pupils. Flook et al (2015) found similar results as they measured overall end of year academic achievement and found that the MP pupils showed higher grades than the control group on the post-test report cards.

#### **Theme 6: Greater benefit to pupils with lower social-emotional competencies**

The sixth theme, 'Greater benefit to pupils with lower social-emotional competencies', was created from data from a number of studies (n=4) which showed that the pupils who began the MP with the lowest SEC had the most significant increase in measures of self-regulation and SEC (Berti and Cigala, 2020; Flook et al., 2015; Kim et al., 2020; Schonert-Reichl et al., 2015). Kim et al (2020) found that at baseline the control group pupils had higher levels of resilience, pro-social behaviour, adaptive regulation and emotional regulation, but at post-test the MP group showed significantly higher levels within all areas than the control group. Schonert-Reichl et al (2015) also found this trend within their data as the control group showed significantly higher scores on the pretest measures of pro-social behaviour and the pupils in the MP group scored higher on the scores for dimensions such as 'starts fights' and 'breaks rules' (p.60). However, the pupils within the MP group were found to have improved at post-test on almost every dimension of pro-social behaviour (Schonert-Reichl et al., 2015).

#### **Theme 7: Feasibility of school-based practice**

The final theme to be discussed within this writing is the theme 'feasibility of school-based practice' as this was raised within a number of the papers (n=6). Flook et

al (2015) and Schonert-Reichl et al (2015) both stated in their papers that the findings from their studies suggest that the addition of a MP in addition to the general curriculum within the classroom has a significant impact on pupils' pro-social behaviour, EF and emotional control. Flook et al (2015) felt that their study demonstrated that the implementation of an MP was a feasible and beneficial approach within an elementary school classroom. Schonert-Reichl et al (2015) also reported that their study showed that it is feasible to implement mindfulness exercises within the elementary school classroom and that this led to positive behavioural changes for the pupils involved.

Teacher perceptions played a key role within the development of this theme as many articles included teachers in the sample and data collection. Schonert-Reichl and Lawlor (2010) assessed the feasibility of implementing a MP programme within the elementary school classroom and found that the teachers involved in the study felt that this programme was easy to implement and embed the tasks within the curriculum, and there was a high level of implementation reported within this study. These teachers also felt that the MP was beneficial to the students as the teachers reported that they often saw an immediate change in the pupils behaviour, focus and SEC (Schonert-Reichl and Lawlor, 2010). These results were also found within the studies using a sample of pupils from a preschool environment as both Kim et al (2020) and Razza et al (2020) reported that their studies showed it was feasible to use MP within the preschool classroom.

Jackman et al (2019) showed a complex array of teacher attitudes towards the implementation of MPI. Jackman et al (2019) suggest that overall the teachers within the study felt that the programme was an easy approach which benefited the pupils development of empathy, emotional awareness and self-regulation and no teachers felt that there were any risks to the programme. However when examining the meditation aspect of the programme many teachers felt unsure whether this was an effective practice and the majority of teachers felt this was a difficult task to integrate within the regular school day (Jackman et al., 2019).



## Discussion

This discussion aims to explore whether mindfulness practices (MP) can be used to support the inclusion of pupils with SEBD within the primary school environment. As stated within the initial literature review the inclusion of pupils with SEBD revolves around the need to improve pupil self-regulation (Mowat, 2010). Mindfulness practices have been brought into this discussion as mindfulness is suggested to be an effective tool in the promotion of self-regulation (Brown et al., 2007; Chambers et al., 2009; Frank et al., 2016; Maloney et al., 2016; Snyder et al., 2012). Therefore, this study aims to analyse whether various MPs used within nursery and primary aged cohorts encourages the development of self-regulation leading to increased pro-social behaviour and school readiness amongst pupils. This study aims to answer two research questions: 'what cognitive, social and emotional changes are shown in studies investigating mindfulness practices for primary school pupils?' and 'is there evidence to suggest the benefits of mindfulness practices found within adult studies can be replicated within the primary school environment?'

### **Research question 1: What changes in cognitive, social and emotional competencies are shown in studies investigating mindfulness practices using primary school pupils?**

The themes one, two, three and five outlined in the findings chapter are used within the discussion of this research question, as the first research question revolves around the development of self-regulation and how this change in self-regulation is shown within the various studies being discussed. Self-regulation is defined within the literature as having control over one's emotions, behaviour and attention and is seen to involve one's SEC and EF (Halle and Darling-Churchill, 2016; Nakamichi et al., 2021). Within this discussion development of self-regulation is being examined through the changes found within pupils' social, emotional and cognitive competencies. Within the six studies which presented measures of self-regulation there is a unanimous agreement that the pupils within the MP groups displayed an improvement in measures

of self-regulation from pre to post-test (Berti and Cigala, 2020; Jackman et al., 2019; Kim et al., 2020; Razza et al., 2020; Schonert-Reichl and Lawlor, 2010; Schonert-Reichl et al., 2015). These results were produced by researchers who were working across the globe and using a wide range of sample sizes and age groups. Each study was altered to ensure that the MP suited the demographic of pupils being studied, meaning that a range of MP have been included within this discussion. Despite the demographic and methodological differences each study produced results which indicated an increase in self-regulation, thereby suggesting that the core idea, mindfulness, is what led to the improved self-regulation. Therefore, it is possible to suggest that MP can be used to improve pupils' self-regulation.

However, although all six of the studies reported an overall improvement in pupil self-regulation there are some differences in the data when examining the measures used to assess self-regulation. The HTKS is a frequently used measure of self-regulation and the studies using this measure found differing results. Berti and Cigala (2020) and Jackman et al (2019) both found that while the pupils did demonstrate an increase in score pre to post-test there was no difference between the study and control group, therefore suggesting that the HTKS task does not indicate that the MP improved self-regulation. However, Razza et al (2020) also implemented the HTKS as a measure of self-regulation and found that there was an increase in scores amongst pupils within the study group but not those within the control group.

This difference in results is not obviously linked to the studies using differing samples as Razza et al (2020) had a sample group of preschool pupils aged three to five years old meaning they used a similar age demographic as Berti and Cigala (2020) and Jackman et al (2019). Furthermore, the work of Razza et al (2020) uses a similar demographic to the study by Jackman et al (2019) as both completed their research in the US. A possible reason for this disagreement in data is that the studies used different styles of MP. Jackman et al (2019) used the OpenMind (OM) program which was a year long program which asked classroom teachers to implement seven daily practices including meditation, yoga and gratitude practices (p.2912). However, Berti and Cigala (2020) implemented a much shorter programme lasting approximately eleven weeks and involved two types of activities. The pupils completed six weekly sessions of

'mindfulness-based playful activities' and nine sessions of 'short mindfulness-meditation', following this the pupils then attended a series of mindfulness activities three times a week for 15 sessions (Berti and Cigala, 2020). In contrast to this the pupils within the study completed by Razza et al (2020) received a programme which involved two weekly 25 minute sessions of mindful-yoga a week led by an expert for eight weeks. As a difference was found between the HTKS measure of self-regulation amongst the study group and the control group within the study completed by Razza et al (2020) and not within the studies completed by Berti and Cigala (2020) and Jackman et al (2019) it could be suggested that the expert-led year-long programme was the most effective MP in order to improve pupil's self-regulatory skills.

### **Changes in social and emotional competencies**

Differences or deficits of SEC are key within discussion of SEBD as a core component of defining SEBD is that individuals display challenging behaviours and emotions, such as anxiety and aggressive behaviour, which interfere with their social interactions and the lives of others (Cooper and Whitebread, 2007; Sloan et al., 2020). Deficits in SECs are linked to poor self-regulation and lack of school readiness as if pupils are unable to regulate their emotions it is more likely that they will display more reactive social behaviours, thereby creating a more challenging school environment and an increase in likelihood of low academic achievement (Delafield-butt and Adie, 2016; Halle and Darling-Churchill, 2016; Humphries et al., 2018; Nakamichi et al., 2021; Viglas and Pelman, 2018). Therefore, the development of SEC is a key aim when attempting to improve self-regulation and create better outcomes for individuals with SEBD.

The studies used within this discussion present a wide agreement that the MP improved pupils' SEC (Berti and Cigala, 2020; Flook et al., 2015; Jackman et al., 2019; Kim et al., 2020; Schonert-Reichl and Lawlor, 2010; Schonert-Reichl et al., 2015). For example, Berti and Cigala (2020) and Schonert-Reichl et al (2015) both present data which suggests that the pupils who took part in their MP displayed improvements in measures of empathy and perspective taking. This is a significant finding as it was

suggested within the initial literature review that the ability to understand that others have emotions and show empathy is key to engaging in pro-social behaviours (Halle and Darling-Churchill, 2016; Jones et al., 2017).

However, although there was a general agreement that the use of MP led to better SEC, a number of studies found that the pupils within the control group cohort decreased in social competence during the MP (Flook et al., 2015; Kim et al., 2020; Schonert-Reichl et al., 2015). Flook et al (2015) and Kim et al (2020) both presented data that indicated that the control group pupils showed a decrease in willingness to share and an increase in selfishness. Furthermore, Schonert-Reichl et al (2015) found that the control group decreased in assessments of peer rated popularity from pre to post-test. When attempting to understand why this is the case it is important to investigate what measures each study's control group received. The control group in the study completed by Kim et al (2020) received the standard preschool curriculum used within Korea, the Nuri curriculum. The control group pupils within Flook et al's (2015) study also did not receive a specific curriculum and were instead placed in a wait-list control group. The details of the control group are not disclosed within the study, so it is assumed that the pupils within this group received the standard elementary school curriculum of the area (Flook et al., 2015). Schonert-Reichl et al (2015) are the only one of these three studies to implement a specific curriculum for the control group study as they implemented a 'social responsibility program' (p.54) which focused on the development of contributing, peaceful problem solving, valuing diversity and defending human rights and practicing democratic rights and responsibility (p.55). As there is no consistency between these studies in terms of what measures the control group received, it is challenging to explain why the pupils within the control groups decreased in measures of popularity and pro-social behaviour. However, as these studies relied on self-report measures it could be suggested that these changes within the control group stem from teacher biases (Sheinman et al., 2018). Therefore, there is a risk of biased data being collected within the studies as due to the participating teachers being aware of which pupils received the MP they may report more positive or negative results based on their own attitude to the programme. Furthermore, the lack of information shared about the control groups may stem from an ethical concern as the use of control groups

is often criticised within educational research as many argue that it is unethical to deny certain pupils access to a possibly beneficial intervention (Cohen et al., 2011). This is a possible reason for the lack of discussion surrounding these findings within the original paper and is why this point will not be discussed further within this research.

Another significant finding was shared by Schonert-Reichl and Lawlor (2010) who found that the age of pupils involved affected whether the MP improved self-concept. Self-concept revolves around the way one sees oneself and was measured by Schonert-Reichl and Lawlor (2010) through a likert-scale based questionnaire. It was noted by Schonert-Reichl and Lawlor (2010) that while the pupils within the pre-adolescent cohort improved in self-concept, those in the early-adolescent group showed no change in self-concept. Furthermore the early-adolescent study group were found to display a decrease in positive self-concept (Schonert-Reichl and Lawlor, 2010). It can be argued that this difference in results is because the pupils in the early-adolescent group are older which makes it more challenging for these pupils to alter their perceptions of themselves. This suggestion is supported by the work of Jones et al (2017) who writes that early childhood competencies create the foundations for later competencies and that if these are missed it becomes more challenging to develop later competencies. Therefore, it can be argued that the needs of the pupils within the early-adolescent cohort were not addressed soon enough. Thereby suggesting that these MP should be incorporated within earlier stages of education systems as this is when the practices were shown to have the most positive effect.

However, it can be argued that as there was an overall agreement within the studies that the use of MP has been shown to improve pupils' SEC it can be suggested mindfulness can encourage school readiness and reduces the risk of reactive emotional behaviours in turn leading to less instances of SEBD.

### **Changes in cognitive functions**

This discussion has outlined cognitive changes as a key indicator of improved self-regulation as it is generally agreed that self-regulation is closely linked to the development of EF (Blair and Diamond, 2008; Halle and Darling-Churchill, 2016; Liew, 2012; Nakamichi et al., 2021). As discussed within the initial literature review, EF are constructed from three core aspects these being working memory, inhibitory control and

cognitive flexibility/attention shifting, therefore, there are a number of different measures which can be used to assess EF (Bierman et al., 2008; Halle and Darling-Churchill, 2016; Liew, 2012; Martins et al., 2016, p.2). However, unlike the discussions of overall self-regulation and SEC where there was an agreement between the papers, the discussion surrounding EF is more contested.

Jackman et al (2019) produced results which suggested that the use of an MP had little impact on pupils EF skills and that this practice may decrease pupils' cognitive ability. This contrasts with the findings of the studies used within the initial literature review as a number of researchers argued that mindfulness has been shown to enhance EF (Brown et al., 2007; Chambers et al., 2009; Frank et al., 2016; Snyder et al., 2012; Maloney et al., 2016). The work of Brunzell et al (2016) was raised within the initial literature review as they argue that mindfulness is a key tool to improve outcomes for pupils with SEBD since this allows them to become more cognitively aware of themselves. Although the findings of Jackman et al (2019) clearly disagree with this suggestion, there is a larger body of evidence which suggests that mindfulness leads to improved EF as Berti and Cigala (2020), Schonert-Reichl et al (2015) and Flook et al (2015) are in agreement that the MP used within their studies increased EF.

Cognitive flexibility is a key aspect of EF and Schonert-Reichl et al (2015) presented data which suggests the pupils in their MP group increased in cognitive flexibility. In contrast to this, both Flook et al (2015) and Jackman et al (2019) present data which suggests that MPs do not positively impact individual cognitive flexibility. In order to assess why this decrease in cognitive flexibility occurred it is important to compare the different studies. As mentioned previously Jackman et al (2019) used the OM program as a year-long daily programme for the preschool pupils taking part in their study. Flook et al (2015) used a much shorter programme and implemented the Kindness Curriculum (KC) for 12 weeks which focuses on 'cultivating attention and emotion regulation, with a shared emphasis on kindness practices' (Flook et al., 2015, p.45). Schonert-Reichl et al (2015) implemented the MindUP program which purposefully promotes development of EF in addition to encouraging development of social-emotional understanding, community collaboration and positive moods (Schonert-Reichl et al., 2015, p.55). Therefore, it can be argued that as this MP places

a specific emphasis on the development of EF then this is why the work of Schonert-Reichl et al (2015) found that there was an increase in cognitive flexibility while the work of Flook et al (2015) and Jackman et al (2019) did not.

Another area of conflict within the discussion surrounding the cognitive changes is inhibitory control as two papers used within this discussion used the Flanker task and found contrasting results. Martins et al (2016) outline inhibitory control as a key aspect of EF and Bierman et al (2008) state that inhibitory control is needed to adjust reactions which allows individuals to regulate behaviour. Therefore, this is important for pupils with SEBD as being able to regulate behaviour is a key area of difficulty for these pupils (Cooper and Whitebread, 2007; Sloan et al., 2020). Flook et al (2015) found that while both the study and control groups increased in scores of inhibitory control the increase was too small to be deemed significant. However, Schonert-Reichl et al (2015) found that the pupils in the study group showed an increase in inhibition control which suggests that the MP did help the pupils to develop their EF. This difference in results could be due to the difference in ages of the two sample groups as Flook et al (2015) worked with younger pupils than Schonert-Reichl et al (2015). This is important as it has been found that while EFs develop throughout childhood there is a specific growth period between the ages of three and five (Bierman et al., 2008). Therefore, the samples used by Flook et al (2015) fall directly into this growth period and may be still developing the EF needed for effective inhibition control, which is a possible explanation as to why there was no change in inhibition control found amongst this cohort.

## **Research question 2: Is there evidence to suggest the benefits of mindfulness practices found within adult studies can be replicated within the primary school environment?**

This research question has been raised as although mindfulness was found to be an effective tool to encourage self-regulation within adult studies there are a limited number of studies focusing on children (Gueldner and Feuerbon, 2016). Therefore it was deemed important to establish whether these findings could be replicated within the primary school environment. As previously mentioned it has been shown that the use of MP with pupils aged between three and thirteen can lead to improvements in

self-regulation. This discussion will now examine whether MP can be implemented effectively in a primary school environment as a long-term solution for pupils. The themes four, six and seven are used within the discussion of this research question.

Teachers' perceptions over whether the MP are a feasible approach were a key area of discussion as both studies using preschool and elementary cohorts found that the teachers who took part perceived the MP as feasible, easy to implement and beneficial for the pupils (Flook et al., 2015; Kim et al., 2020; Razza et al., 2020; Schonert-Reichl and Lawlor, 2010; Schonert-Reichl et al., 2015). In contrast, Jackman et al (2019) found that, while the teachers in their study felt that the MP was a beneficial practice, a number of the teachers felt that it was difficult to integrate the tasks within the school day. However, as the majority of the papers used within this discussion found that teachers perceived the MP as easy to implement within the classroom it is possible to argue that a MP is a feasible approach within the primary school classroom and is beneficial for the development of self-regulation amongst pupils.

#### School readiness

The concept of school readiness was raised in the initial literature review as a key concern regarding pupils with SEBD. School readiness is defined as having the appropriate social, emotional and cognitive competencies needed to adapt and succeed within the classroom environment (Blair, 2002; Denham, 2006; Ladd et al., 2006; Liew, 2012; Nakamichi et al., 2021; Raver et al., 2007; Snow, 2006). Therefore the findings found within the studies used within this discussion suggest that the use of MPs can improve pupils' school readiness as pupils showed improvements in their social, emotional and cognitive competencies.

Behaviour regulation was raised within the initial literature review as a key aspect of school readiness as the development of SEC and EFs are seen to encourage a mindful awareness of reactions leading to better behavioural control (Brunzell et al., 2016; Bierman et al., 2008; Denham et al., 2003; Liew, 2012). Therefore, it was argued that if the MP are to be beneficial to pupils, especially those with SEBD, there must be an element of improved behaviour regulation (Brunzell et al., 2016). Four of the seven studies used within this discussion presented data which suggests that the MP led to an improvement in behaviour regulation as the pupils displayed more positive and



pro-social behaviours after the MP (Flook et al., 2015; Razza et al., 2020; Schonert-Reichl and Lawlor, 2010; Schonert-Reichl et al., 2015). As these four studies used a range of age demographics and took place in differing locations it is possible to suggest that this increase in behaviour regulation is a generalisable finding, although it is important to note that as this data is from only four papers this is perhaps a too small sample group to allow the findings to be generalisable.

Alongside a need for better behaviour regulation school readiness is reliant on pupils having a certain level of attention regulation as pupils are required to remain on task and engage with set learning (Liew, 2012). Two of the papers used within this study provided measures of attention regulation and both found an improvement in the pupils' attention to tasks and concentration post MP (Razza et al., 2020; Schonert-Reichl and Lawlor, 2010). This improvement in attention regulation can be linked to the development of EFs as several writers cited within the initial literature review stated that the development of EFs creates a foundation for school readiness and encourages better attention regulation due to an increase in inhibition control and improved working memory (Barkley, 2001; Bierman et al., 2008; Blair, 2002; Liew, 2012; McClelland et al., 2007). This increase in school readiness was shown through the findings highlighting increased academic attainment amongst the pupils who took part in the MP. Both Flook et al (2015) and Schonert-Reichl et al (2015) presented data suggesting that the pupils involved in their studies improved in academic attainment. This mirrors points within the initial literature review as many authors suggested that having improved self-regulation would allow pupils to be more ready for school leading to improved levels of motivation and more adaptive learning behaviour (Aguilar-Pardo et al., 2013; Diamond, 2012; Humphries et al., 2018; Liew, 2012; Viglas and Pelman, 2018). Furthermore, two studies provided follow up measures which suggested that the impact of the MP continued after the programme finished (Flook et al., 2015; Razza et al., 2020). Thereby suggesting that the impact of the MP on school readiness was both positive and lasting therefore meaning that it would be beneficial for pupils within the primary school.

### **Greater benefit to pupils with SEBD?**

The final point of discussion is whether the MP were of benefit to pupils with SEBD within the primary school setting. A number of studies presented data which suggested that pupils with the lowest levels of SEC and self-regulation ability were the pupils who improved the most post-test across several areas such as increased pro-social behaviour, higher levels of resilience, better emotional regulation and inhibitory control (Berti and Cigala, 2020; Flook et al., 2015; Kim et al., 2020; Schonert-Reichl et al., 2015). Suggesting that the MP were of benefit to pupils with SEBD. These studies used a wide sample demographic as pupils were collected from preschool age up to the age of eleven and the studies took place in a range of locations including Italy, Korea and the US. These findings are of importance in a discussion of pupils with SEBD as these pupils are most likely to be the pupils with the lowest levels of SEC and self-regulation ability. Therefore, the development of these competencies is necessary, and as it has been shown that the MP used within these studies had the greatest impact on pupils with the lowest baseline competencies it can be argued that these practices would be of the most benefit to pupils with SEBD.

## Conclusion

To conclude, this research project aimed to investigate whether mindfulness practices (MP) can be used as an effective tool within the primary school context to support the inclusion of pupils with SEBD by promoting the development of self-regulation. The first research question asked 'what changes in cognitive, social and emotional competencies are shown in studies investigating mindfulness practices using primary school pupils?'. The discussion surrounding this question drew on a number of articles from a range of locations and age groups and found an almost unanimous agreement amongst the studies that the use of MP led to improved overall self-regulation and SEC (Berti and Cigala, 2020; Flook et al., 2015; Jackman et al., 2019; Kim et al., 2020; Razza et al., 2020; Schonert-Reichl and Lawlor, 2010; Schonert-Reichl et al., 2015). Issues were raised within a small number of papers as some researchers found that the control group pupils decreased in certain elements of SEC and Schonert-Reichl and Lawlor (2010) highlighted an age-related issue in measures of self-concept (Berti and Cigala, 2020; Jackman et al., 2019; Razza et al., 2020). However, it is possible to suggest that as there was a general agreement across all papers that the use of MP can be used to encourage positive development in self-regulation and SEC. This research question also aimed to investigate what changes in cognitive competencies were found amongst the MP group pupils. This was a more complex area of discussion as there was no clear agreement that the use of MP led to better EF. Some studies found that the MP had little impact on aspects of EF such as cognitive flexibility and inhibitory control while others found a significant improvement in these areas (Berti and Cigala, 2020; Flook et al., 2015; Jackman et al., 2019; Schonert-Reichl et al., 2015). It was argued within this discussion that the type of MP and the age of the participants impacted whether the MP led to improved EF as it was found that the pupils within the younger cohorts showed smaller changes in EF than the older pupils. This was linked to the reported EF growth period which occurs between the ages of three and five which may be why the pre-school pupils did not develop the EF as clearly as the older pupils.

The second research question asked 'is there evidence to suggest the benefits of mindfulness practices found within adult studies can be replicated within the primary school environment?'. This was an important question as the initial literature review drew from a number of studies showing the positive impact of MP on adult and teenage populations but little was found investigating primary aged pupils. There was an overall agreement that the MP were easy to implement within the classroom and many teachers felt that there were clear and immediate benefits to using the MP (Flook et al., 2015; Kim et al., 2020; Razza et al., 2020; Schonert-Reichl and Lawlor, 2010; Schonert-Reichl et al., 2015). It can also be suggested that there was clear impact on school readiness, a concept raised within the initial literature review as key to participation and success within the current school environment, as many of the studies found that the pupils not only improved in terms of prosocial behaviour, attention regulation and academic attainment but that these improvements were long-lasting (Flook et al., 2015; Razza et al., 2020; Schonert-Reichl and Lawlor, 2010; Schonert-Reichl et al., 2015).

Finally, the most significant finding from this discussion was that there was an agreement across a number of studies that the pupils who started with the lowest levels of SEC and EF, and were therefore more likely to have SEBD, were the pupils who showed the greatest improvement post MP (Berti and Cigala, 2020; Flook et al., 2015; Kim et al., 2020; Schonert-Reichl et al., 2015). This is an important finding as it suggests that the pupils who are in greatest need of improvements in self-regulation are the individuals who receive the most support from MP. Therefore implying that the use of mindfulness is a practical and beneficial approach to supporting individuals with SEBD. Furthermore, it is possible to argue that the use of MP is an inclusive approach to supporting pupils with SEBD as it is shown that all the pupils involved in the MP benefited from the programme and therefore it is not necessary to remove the pupils with SEBD from the mainstream classroom to provide this support and no issues of identification and segregation arise. Therefore, it is possible to infer that the use of MP has been shown to positively benefit pupils self-regulation and can be used as an inclusive approach to supporting pupils with SEBD within the mainstream primary classroom.

## **Implications for practice**

It can be suggested that a key implication of this study is that there is a need to encourage regular mindfulness practices within the mainstream classroom in order to include and support all pupils and especially those with SEBD. Furthermore, Kim et al (2020) suggested that a 'key strength' of the MP used within their study was that the teachers and pupils completed the task together which they felt made this MP more effective as when the pupils saw their teachers completing the mindfulness meditation task they felt more motivated to participate (p.1070).

As these findings have shown that the use of MP has a clear impact on school readiness it can be suggested that MP should be introduced within the nursery setting in order to aid pupils to develop the necessary SEC and EF to improve levels of school readiness (Blair, 2002; Denham, 2006; Flook et al., 2015; Ladd et al., 2006; Liew, 2012; Nakamichi et al., 2021; Raver et al., 2007; Razza et al., 2020; Schonert-Reichl and Lawlor, 2010; Schonert-Reichl et al., 2015; Snow, 2006). Furthermore, the findings of Schonert-Reichl and Lawlor (2010), which suggested that the early-adolescent cohort used within their study struggled to increase in self-concept, indicate that the use of MP should be introduced from a young age in order to ensure that the pupils develop these positive SEC and EF early to create the 'building block' competencies needed to develop the more challenging competencies needed in adolescence and adult life (Jones et al., 2017). The MP also needs to be continued throughout primary school as the work of Flook et al (2015) found that the preschool pupils within their study showed a small change EF while those using older cohorts such as Schonert-Reichl et al (2015) found a significant change, suggesting that it is more beneficial to continue to encourage the development of EF after the significant EF growth period which occurs during the early stages of nursery and primary school (Bierman et al., 2008).

As the Scottish curriculum is a flexible approach which allows for a great deal of teacher choice it is possible to encourage Scottish practitioners to implement a set MP within their weekly routines in order to include and support pupils with SEBD (Scottish Government, 2008; Sutherland and Stack, 2014). However, there is a need for clear training to ensure that the tasks are meaningful and beneficial for the pupils. Therefore,

the Scottish government and Scottish General Teaching Council should promote opportunities for training for both established teachers and those within initial teacher training to ensure that all pupils are able to access the benefits of mindfulness practices in order to be more school ready and achieve positive outcomes.

### **Limitations**

Although this research project did answer the research questions it set out to answer, it was not without limitations. For example, as this research project was written during the Covid-19 pandemic it was decided that it would be unethical to undertake empirical research within the classroom as this would potentially put the participants at risk of harm by increasing opportunities to contract the virus, this was deemed the ethical choice as one of the core aspects of ethical research is to minimise any harm to participants (Cohen et al., 2018). Therefore, all data used within this discussion was secondary data as no primary data could be gathered by the researcher which does limit the research as secondary data is based on interpretations of others work rather than the raw data (Bell and Waters, 2014). However, as this research works within an interpretivist paradigm this is a less significant issue. Furthermore, as this research selected peer-reviewed journals a risk arose. As the work has already been assessed by researchers who already have an established perspective of the topic which can influence their understanding of the ideas and there is a risk of 'groupthink' as the authors are likely to be working within the same paradigm which means they are less likely to support new or unconventional views (Jesson et al., 2011). Finally as this was a solo project completed in one year by one researcher and gathered data from seven articles each with relatively small sample sizes the amount of data gathered was limited. Therefore, if this study were to be completed again in the future it would be beneficial to gather empirical data and have a greater number of researchers and a longer time frame in order to gather a greater amount of data.

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## Appendix A

### Grouping terms with similarities

Frequently found term	Terms found with similar meaning
Mindfulness	Mindfulness-based program Mindfulness-based practice
Self-regulation	Emotional regulation Self-awareness
Social emotional learning (SEL)	Social and emotional development Emotional intelligence
Nurture	Nurturing environment
Social and emotional behavioural difficulties	Pro-social behaviour Problem behaviour Externalising problems Internalising problems
Inclusion	
Self-esteem	Self-concept Mental health (?) Resilience (?)
School achievement	

## Appendix B

Key word search: (Self or Emotion*) N5 (regulation or control) AND Social emotional N5 (competencies or learning or development or intelligence) AND Mindful*						
	Found titles	Peer reviewed	2010-2021	Written in English	Relevant abstract	Age of participants 3-12
	Mindfulness-Based Practices for Schools	NO				
	Mindfulness in education for sustainable development to nurture socioemotional competencies: A systematic review and meta-analysis.	YES	YES	YES	YES	NO
	Mindfulness for preschoolers: Effects on prosocial behavior, self-regulation and perspective taking.	YES	YES	YES	YES	YES
	Effects of a mindfulness-based intervention for teachers: A study on teacher and student outcomes.	YES	YES	YES	NO	
	Get Smart about Social and Emotional Learning Measurement	NO				
	Exploring mindfulness benefits for students and teachers in three German high schools.	YES	YES	YES	YES	NO
	Feasibility, acceptability, and preliminary effectiveness of the OpenMind (OM) program for pre-school children.	YES	YES	YES	YES	YES
	Effectiveness of the mindfulness-based OpenMind-Korea (OM-K) preschool program.	YES	YES	YES	YES	YES

	Impacts of the CARE for Teachers Program on Teachers' Social and Emotional Competence and Classroom Interactions	YES	YES	YES	NO	
	Mindfulness-based social emotional learning and its impact on student achievement: An evaluation of the brain-focused mindfulness program.	NO				
	The feasibility and effectiveness of mindful yoga for preschoolers exposed to high levels of trauma.	YES	YES	YES	YES	YES
	Teachers' perceptions on the impact of a classroom-based mindfulness curriculum: A qualitative investigation.	NO				
	Mindfulness in the classroom: Mindful principles for social and emotional learning.	NO				
	Targeting self-regulation and disease resilience in elementary school students through a mindfulness-based social-emotional learning curriculum.	NO				
	Mindfulness-Based SEL Programming to Increase Preservice Teachers' Mindfulness and Emotional Competence	YES	YES	YES	NO	
	A selective review of mindfulness training programs for children and adolescents in school settings.	NO				
	Effect of a mindfulness intervention on early primary school children with subclinical ADHD.	NO				
	The effects of mindfulness-based intervention on self-compassion in incarcerated youth.	NO				



	How Self-Control Drives Student Achievement	NO				
	The design and implementation of the BEST self curriculum: Teaching emotion regulation to elementary school students.	NO				
	Mindfulness-based interventions in U.S. schools-a systematic review.	NO				
	Enhancing Cognitive and Social-Emotional Development through a Simple-to-Administer Mindfulness-Based School Program for Elementary School Children: A Randomized Controlled Trial	YES	YES	YES	YES	YES
	Promoting Prosocial Behavior and Self-Regulatory Skills in Preschool Children through a Mindfulness-Based Kindness Curriculum	YES	YES	YES	YES	YES
	Handbook of Positive Psychology in Schools, 2nd Edition	NO				
	Mindfulness for Teachers: A Pilot Study to Assess Effects on Stress, Burnout, and Teaching Efficacy	YES	YES	YES	NO	
	Maternal mindfulness during pregnancy and infant socio-emotional development and temperament: The mediating role of maternal anxiety.	YES	YES	YES	NO	
	The brain powers project: A quantitative efficacy study of a social emotional learning intervention.	NO				
	Exploring the impact of mindfulness on adolescents: A mixed methods approach.	NO				

Student-teacher attachment and the case for mindfulness.	NO				
Developing mindfulness with children and young people: a review of the evidence and policy context.	YES	YES	YES	NO	
Understanding children's self-regulation: An analysis of measurement and change in the context of a mindfulness-based intervention.	NO				
Reducing stress in school-age girls through mindful yoga.	YES	YES	YES	NO	
Mindfulness training in childhood.	YES	YES	YES	YES	YES
DBT® skills in schools: Skills training for emotional problem solving for adolescents (DBT STEPS-A).	NO				
The effectiveness of the Learning to BREATHE program on adolescent emotion regulation.	YES	YES	YES	YES	NO
The effects of a mindfulness-based education program on pre- and early adolescents' well-being and social and emotional competence.	YES	YES	YES	YES	YES
The use of time-out as a disciplinary intervention with children: A resource guide for child and family therapists.	NO				
Person-centered spiritual maturation: A multidimensional model.	YES	YES	YES	NO	
Early intervention for children/youth with Asperger syndrome.	NO				
Activities and programs that improve children's executive functions.	YES	YES	YES	YES	YES

	Interventions shown to aid executive function development in children 4 to 12 years old.	YES	YES	YES	YES	YES
	Mindfulness for teachers: A pilot study to assess effects on stress, burnout, and teaching efficacy': Corrigendum.	YES	YES	YES	NO	
	Sitting still in the midst of change: An exploration into the usefulness of group training in mindfulness meditation for adolescents.	NO				
Total number of titles selected	73 (- duplicates= 43)	22	22	22	13	10-3 literature reviews= 7