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***How does mindfulness – in particular yoga – impact
children’s self-regulation within KS1?***

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Submitted in accordance with the requirements for the degree of BA (Hons) Primary

Education (5 -11) with QTS

York St John University

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May 2024

The candidate confirms that the work submitted is her own and that appropriate credit has been given where reference has been made to the work of others.

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Word count – 6, 166

Table of Contents	
Acknowledgements	4

Introduction	5
Literature Review.....	5
Mindfulness	6
Self – regulation	8
Yoga.....	11
Methodology	12
Research Approach	12
Participants	13
Data collection	14
Ethical Considerations	15
Limitations	15
Findings	16
Observations.....	16
Cognitive self – regulation skills	16
Emotional self – regulation skills	20
Parent Questionnaire and Interview	22
Discussion.....	25
Enhance ability to learn.	25
Awareness of self and others	27
Emotional Regulation.....	28
Conclusion	29
Limitations.....	29
Future Implications	30
References:	31
Appendices:	45

Acknowledgements

I want to give a massive shout – out to my mum and dad. Dropping me off at university was an emotional rollercoaster – there were tears, hugs and probably some ugly crying (mostly me crying). I hope I have made you proud. Thank you for being my biggest cheerleaders. And to my dogs, who are probably wondering where their favourite human went – do not worry, I will be back soon!

To my amazing housemates at Markham Manor, living with you has been a wild ride of late – night cramming, impromptu dance parties, and enough inside jokes to last a lifetime. You have become my second family, and I would not trade our shared chaos for anything.

At the start of university, we were told we would change significantly over the next three years. I was sceptical, but now, as I approach the end of this journey, I see how true those words were. I am incredibly grateful for my university experience, the unwavering support, and the encouragement to strive for my best self. Thank you all for believing in me and challenging me to grow.

My biggest change came after I decided to embark on a 4-month journey abroad to work with children and adult with disabilities, raising eyebrows among family and friends. This experience has become the defining chapter of my life so far allowing me to meet some of the most incredible people and instilled a newfound resilience, curiosity and confidence. All of which I will use to embark on new adventures across the world in the future.

Life will always carry on no matter where you are, what you are doing or what is happening!

Introduction

The research project employed a mixed methods action research approach to address the research question: How does mindfulness, in particular yoga, impact children's self – regulation in KS1?

This study aimed to assess the extent to which a yoga intervention, using the Cosmic Kids platform, could alter children's self – regulation skills, considering both cognitive and emotional aspects individually. Data collection involved overt observations using the Child Behaviour Rating Scale (CBRS) aligned with the Likert scale, alongside parent and teacher perspectives gathered through a questionnaire and semi – structured interview.

Through thorough analysis, the findings were categorised into themes including enhancement of learning abilities, awareness of self and others, and emotional regulation. These themes are explored through relevant literature, detailed analysis, and critical evaluations. The research outcomes shed light on the potential of yoga as a mindfulness technique to foster children's self – regulation taking into account the cognitive and emotional aspects.

Literature Review

Mindfulness has been associated with increased self-esteem, emotional intelligence, life satisfaction, and inhibition of negative emotional and behavioural effects (Frieze and Hofmann, 2016). Based on literature in 2019 alone, 164 journal articles were published on the topic of mindfulness with youth, compared to 11 journal articles on the topic published in 2009 (Saunders and Kober, 2020). Despite extensive studies on mindfulness techniques, little research has focused on their impact on children

(Ardern, 2016). Additionally, the effectiveness of specific mindfulness techniques or interventions remains largely unknown (Schonert – Reichl and Roeser, 2016).

This literature review explores research on mindfulness, self – regulation, and yoga to determine how these components can be combined for best practice.

Mindfulness

Mindfulness originated in Buddhist psychology, where it is associated with understanding reality and awakening (Brown, Ryan, and Creswell, 2007).

Mindfulness can be defined as being present in the moment in an open and nonjudgemental manner (Kabat – Zinn *et al.*, 1992; Brown and Ryan, 2003) or as actively seeking out and creating new experiences in the present (Langer, Bashner, and Chanowitz, 1985). Current literature offers a range of definitions, leading to confusion. Mindfulness can be defined as a trait, state, process, meditation, or intervention (Acosta and Hall, 2018). For instance, state mindfulness is about being in the moment and acquiring new experiences, while trait mindfulness develops over time and becomes part of one’s personality (Kiken *et al.* 2015; Avery, 2022)

According to Dimidjian and Linehan (2003), the lack of an agreed definition has led to interventions that appear to be grounded in mindfulness but are more related to relaxation techniques. However, recent conceptualisations of mindfulness have moved away from its Buddhist roots and have clarified its intentions, focusing on mental elaboration and sense – making, which contrasts with Buddhist traditions of simply being present (Chiesa, 2012; Siegling and Petrides, 2014). This shift may explain why mindfulness has expanded beyond clinical contexts to promote well – being and positive functioning (Brown – Iannuzzi *et al.*, 2014; Khoury *et al.*, 2015). Therefore, the current definition of mindfulness aligns well with contemporary research, including this study.

Despite the fact that the Department of Education (2019) does not specifically mention mindfulness, they emphasise the importance of teachers discussing how students can support their mental well-being through simple self – care techniques. This focus likely stems from concerning statistics about children’s mental health, such as 66% of primary school children experiencing anxiety about school life (HR News, 2019). These concerns have only intensified, with The Children’s Society (2022) indicating that 5 children in a classroom of 30 are likely to suffer from mental health issues. In response to these worrying trends, the impact of mindfulness has been increasingly researched. Clinical evidence shows that mindfulness reduces stress, promotes self – compassion and empathy, and enhances attention and emotional regulation (Chiesa *et al.*, 2011; Zenner *et al.*, 2014; Bockmann and Yeong, 2022). Mindfulness works by enhancing emotional regulation, making it less likely for negative emotions to inhibit compassionate and behavioural responses to situations (Donald *et al.*, 2016; Condon, 2017).

The Mindfulness All – Parliamentary Group (2015) advocated for funding teacher training and testing mindfulness instruction in classrooms. As a result, the Mindfulness in Schools Project (2019) focuses on providing teacher training in mindfulness. However, a limitation is that only 500 teachers have received this training, and there is insufficient data on its implementation and effectiveness. This aligns with the findings of Weare and Bethune (2021), who suggests that various issues, including time constraints, funding, training, and a lack of awareness, contribute to the limited implementation of mindfulness in schools. Therefore, as the understanding and research in educational settings grow, addressing these barriers becomes crucial in supporting children.

Setting aside the highly contested discrepancies in definitions of mindfulness, most definitions highlight essential self – regulation mechanisms (Thera, 1998; Wallace, 1999). Recent research by Donald *et al.* (2016) discovered a link between mindfulness and behaviour that benefits both the individual and others. Similarly, Pepping *et al.* (2014) found that mindfulness can help with emotional dysregulation. Additionally, Tang, Holzel, and Posner (2015) demonstrated that mindfulness meditation impacts emotional regulation, attention control, and self – awareness. This combined research indicates how these components could work together to promote better self – regulation. By connecting the importance of mindfulness in promoting self – regulation to the Department of Education’s emphasis on mental well – being and the rising concerns about children’s mental health, it becomes clear why mindfulness research is crucial.

Self – regulation

Educational frameworks, such as those advocated by Vygotsky’s social development theory, emphasise the importance of self – regulation as a foundational skill for learning (Vygotsky, 1978). In many contexts, self – regulation falls under the umbrella of executive functioning skills, which enable to plan, initiate, and sustain activities (Hayes, Gifford, and Ruckstuhl, 1996; Denckla, 1998; Ackerman and Friedman – Krauss, 2017). Bandura (1991) defined self – regulation as a mediator between a stimulus and its effects. Over time, researchers have refined this concept by investigating the specific processes involved, describing it as the ability to delay gratification, conform to social norms, and manage impulses (Baumeister and Heatherton, 1996; Carver and Scheier, 2012; Van der Kolk, 2015).

Critics, however, argue that these definitions overly emphasise impulse control and neglect the physiological, emotional, and cognitive aspects of behaviour change

(Ochsner and Gross, 2008; Gratz and Tull, 2010; Pepping *et al.*, 2014; Blair and Raver, 2015; Shanker, 2016). In this study, we aim to explore changes in individuals' emotional and cognitive self – regulation, with a focus on understanding these changes holistically rather than solely emphasising impulse control.

Based on a meta – analysis of 24 studies implementing mindfulness interventions, Zenner, Herrnleben – Kurz, and Walach (2014) concluded that mindfulness appears to be associated with improvements in cognition. However, their conclusions may be weakened by sweeping generalisations, as they considered various outcomes for mindfulness, including cognitive performance, emotional problems, stress, coping, resilience, and third – party ratings. Additionally, some studies they examined did not exclusively focus on mindfulness – based interventions but also included relaxation techniques, reducing the reliability of their findings. Nevertheless, Maynard *et al.* (2017), in a meta – analysis of 35 studies, found that mindfulness – based interventions improved cognitive regulation by increasing attention and emotional regulation by reducing stress, regulating behaviour, and enhancing self – esteem. However, they noted that these interventions had no significant impact on academic performance. This contrasts with findings from Janz, Dawe, and Wyllie (2019), who observed the impact of a specific mindfulness – based intervention, 'Calmspace,' on young children's behaviour and executive functioning. They suggested that improved attention and regulation of behaviour could lead to better academic success.

A key difference between these studies lies in the samples from which the data was collected. Early studies included adolescents or adults, whereas the research by Janz, Dawe, and Wyllie (2019) focused specifically on young children. Furthermore, while Posner, Rothbart, and Tang (2015) support the idea that mindfulness and exercise can improve attention, Mak *et al.* (2018) examined the effectiveness of

mindfulness – based improvements in attention, with only one showing improvements in sustained attention.

Recent research suggests that early childhood is a critical period for the development of self – regulation (Anderson *et al.*, 2011). During the ages of 3 to 7, there is increased prefrontal brain development, which supports the growth of higher order thinking skills like self – regulation and empathy (Zelazo and Lyons, 2012; Murray and Rosanbalm, 2017; Razza *et al.*, 2020). This trend is reflected in the literature. For instance, a study conducted by Acosta and Hall (2018) found no significant difference in self – regulation among a group that received yoga as a mindfulness – based intervention. This result surprised researchers due to contradictory findings in the literature. However, it's worth noting that Acosta and Hall's study involved college students, while much of the contradictory evidence focused on younger children. Recent research has highlighted the importance of early self – regulation for long term outcomes in adolescence and adulthood (Thomson *et al.*, 2019; Ruan *et al.*, 2023). Therefore, suggesting that implementing interventions promoting self – regulation early on may lead to better outcomes in the future.

Preliminary evidence has suggested that training self – regulatory skills through various methods, including contemplative practices such as yoga, can be effective (Davidson *et al.*, 2012). Contemplative practices, rooted in Eastern traditions, have become increasingly prominent focus in meditation research (Zelazo and Lyons, 2012; Dorjee, 2016). In their conclusions, some researchers have suggested that mindfulness techniques, which are a subset of contemplative practices, may be valuable for enhancing the development of self – regulation in early childhood classrooms (Diamond and Lee, 2011; Greenberg and Harris, 2011; Zelazo and

Lyons, 2012). Research indicates that contemplative practices strengthen self – regulation by focusing on movement and engaging cognitive processes that activate specific brain areas responsible for attention, body awareness, emotion regulation, and sense of self (Kerr *et al.*, 2013; Schmalzl, Crane – Godreau, and Payne, 2014). This body of research suggests that contemplative practices, including yoga, may be beneficial for regulating both cognitive and emotional processes, highlighting their potential usefulness in promoting self – regulation in early childhood education settings.

Yoga

Yoga, originating from the Sanskrit word ‘Yuj,’ meaning ‘to unite’, embodies the integration of mind, body, and spirit (Chong, Tsunaka, and Cheung, 2011). As a contemplative practice, yoga encompasses physical postures, breathing exercises, relaxation techniques, and meditation (Gard *et al.*, 2014). Its emphasis on sensory – motor coordination has been associated with self – regulation (Collins, 2015), and yoga methods have been shown to heighten awareness of the influence of thoughts and emotions on behaviours, potentially enhancing children’s self – regulation, learning and social interactions (Lawlor, 2016; Semple *et al.*, 2017).

Numerous studies have explored the correlation between various contemplative practice, including yoga, and self – regulation among young children (Mendelson *et al.*, 2010; Razza, Bergen – Cico and Raymond, 2013; Flook *et al.*, 2015; Poehlmann – Tynan *et al.*, 2016; Zelazo *et al.*, 2018; Schonert – Reichl, 2019; Jarraya *et al.*, 2019; Sun *et al.*, 2021). However, current research exhibits limitations and gaps, with few studies focusing solely on mindfulness – based interventions or specific target audiences, and many neglecting to explore changes in self – regulation over time.

Razza, Bergen – Cico and Raymond (2013) found that yoga enhanced key self – regulating skills, particularly emotional regulation, but was less effective for problem – solving. They noted its impact within school setting but not outside of them. Conversely, Moreno (2017) suggested that yoga not only manage emotional regulation but also bolstered problem – solving abilities. A notable difference between these studies lies in intervention implementation, with Moreno (2017) utilising a structured program compared to Razza, Bergen – Cico and Raymond (2013) employing a more flexible approach led by teachers, potentially impacting study replicability.

Similarly, Jarraya *et al.* (2019) reported positive effects of yoga on attention and hyperactivity in kindergarten children with attention deficit hyperactivity disorder (ADHD), with improved academic performance following a 12 – week intervention. Qualitative studies also highlighted the social and emotional benefits of contemplative practices observed by teachers (Mendelson *et al.*, 2013; Dariotis *et al.*, 2017; Wolff and Stapp, 2019). However, research has often overlooked the fidelity of yoga interventions, such as video materials which may impact outcomes (Feagans Gould *et al.*, 2015; Sun *et al.*, 2021).

In summary, while existing research highlights the potential benefits of yoga for children’s self – regulation further studies addressing limitations and gaps are necessary to fully harness the potential for educational settings.

Methodology

Research Approach

This study adopted an action research approach to investigate the impact of mindfulness techniques, specifically yoga, on children’s self – regulation (Robson

and McCartan, 2016). Initially, a case study approach was considered due to the class's prior exposure to yoga implementation. However, inconsistent implementation led to the adoption of an action research approach, better suited for assessing change within the school context (Townsend, 2012; Sinclair, 2017). Action research involves testing a theory (yoga implementation) to evaluate its practical outcomes (impact on self – regulation) (Schön, 1991; Herr and Anderson, 2005; Ellis and McNicholl, 2015; McNiff, 2017). Two cycles of action research were conducted: one without the intervention to establish baseline self – regulation levels and one with the intervention in place.

To ensure robust data collection, a mixed methods approach was employed, reflecting the increasing interest in mixed methods research for comprehensive understanding (Johnson and Christensen, 2017). Following an explanatory design, quantitative data was initially gathered, complemented by qualitative data to enrich, and validate numeric findings. This approach not only provides depth to the analysis but also strengthens the theoretical underpinnings of the study (Creswell and Plano Clark, 2017; Coe *et al.*, 2021).

Participants

Data was collected from a convenience sample comprising a mixed year 1/2 class of 24 children, including 2 English as an Additional Language (EAL) students. All participants were involved in the data collection process with consent obtained from the school. While non – probability samples are often deemed non – representative and biased (Hedges, 2013; Cohen, Manion, and Morrison, 2017), involving the entire class in this small – scale research project aimed to enhance the reliability and validity of the findings (Stratton, 2021).

Data collection

Data collection involved overt observations of the children, a semi – structured interview with the class teacher, and a questionnaire administered to the parents. The research aimed to assess the impact of yoga on children’s self – regulation, thus utilising the Child Behaviour Rating Scale (CBRS) to identify and rate behaviour using a Likert scale across various aspects of self – regulation. The CBRS, a teacher – report measure, employs a 5 – point scale from 1 (never) to 5 (always) to gather information about a child’s behaviour socially and academically (Bronson *et al.*, 1990; Bronson, Tivnan, and Seppanen, 1995; Schmitt, Pratt, and McClelland, 2014). This scale, consistent with the literature review, allows for observation of both cognitive and emotional impacts on self – regulation (Blair and Raver, 2015; Shanker, 2016).

The research utilised a modified version of the CBRS with 12 items for data collections (Ponitz *et al.*, 2009 and Wanless *et al.*, 2013) compared to the original 17 items (Matthews *et al.*, 2009) to maintain construct validity, as some items overlapping could affect validity (Kumar, 2019). Overt observations were chosen to minimize bias, as children were observed in their natural environment, reducing the likelihood of behaviour changes (Marshall and Rossman, 2016). A paper survey with open and closed questions was provided to parents (see Appendix A) to gather qualitative data on their perspectives regarding mindfulness, considering the school context and potential technology access limitations (Coe *et al.*, 2021).

After the intervention, a semi – structured interview was conducted with the class teacher (see Appendix B). This approach allowed for in depth responses through probing, enhancing data richness (Punch and Oancea, 2014; Seidman, 2019). Building rapport during the interview helps reduce socially desirable responses that

could bias the data (Kitwood, 1977). Furthermore, to minimise researcher bias, the participant was asked to review responses (Coe *et al.*, 2021).

Ethical Considerations

Throughout this research project, ethical considerations were diligently followed. Initially, the researcher's supervisor approved the proposal before receiving ethical approval from York St. John School of Education, Language and Psychology Ethics Committee. Additionally, consent was obtained from the gatekeeper at the school to conduct the research (see Appendix C). Parents were provided with a letter outlining the study's purpose and their right to withdraw their child's participation if desired, ensuring compliance with ethical guidelines (British Educational Research Association, 2018).

Furthermore, the principle of protection from harm was strictly followed in accordance with the school's safeguarding policy. Measures were taken to ensure confidentiality and anonymity by anonymizing names and promptly destroying any identifiable data post – analysis (Nutbrown, 2011). To respect the sensitivity of parental responses, questions regarding their child's self – regulation were written to be specific yet non – intrusive (Hammersley, 2015; Van den Hoonaard, 2018).

In terms of data security, all gathered data was stored on a password – protected laptop, adhering to protocol for safeguarding sensitive information.

Limitations

It is crucial to address the constraints that impacted the research, particularly concerning the validity and reliability. Validity refers how accurately the research design addresses the research question (Kumar, 2019). Researcher bias can potentially influence internal validity, as observations may be inadvertently shaped

by preconceived notions, impacting interpretations (Denscombe, 2014; Pring, 2015; Coe *et al.*, 2021).

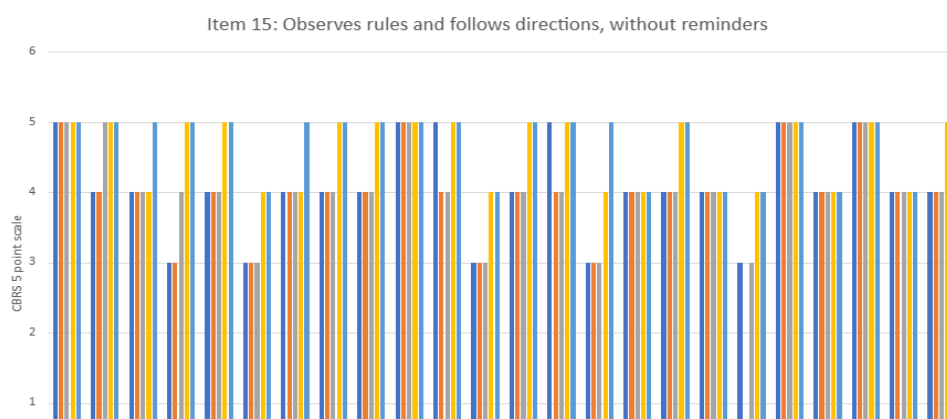
Reliability, on the other hand, assesses whether the study would yield consistent results if repeated (Moser and Kalton, 1989; Kumar, 2019). Factors affecting children’s self – regulation pose challenges, making it difficult to attribute changes solely to the mindfulness technique of yoga. To address this, only one cycle of action research was conducted, allowing for observation of changes over a sufficient period to enhance reliability (Trochim and Donnelly, 2007).

Findings

Observations

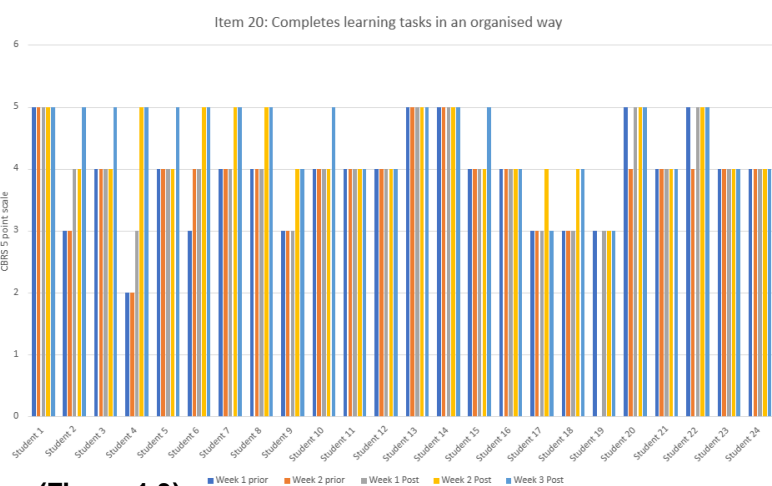
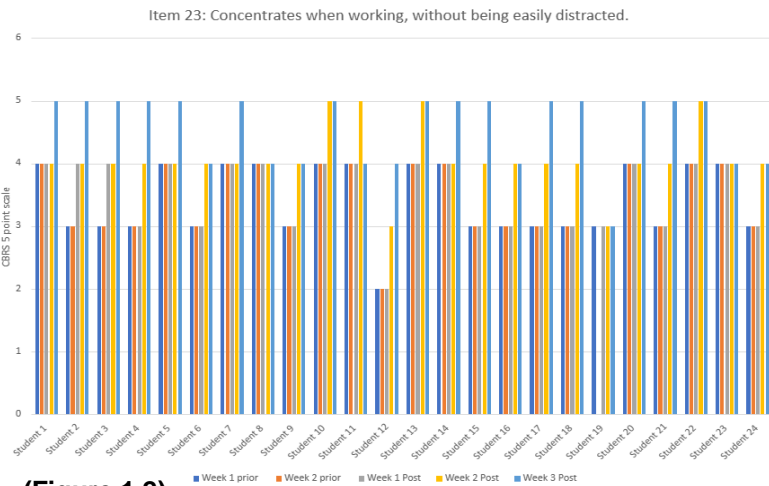
In this study, observations were collected over a period of five weeks. During the first two weeks of the action research cycle, data was collected before the intervention to establish a baseline for assessing its impact. For the following three weeks, the intervention took place daily after break time. Children were guided through Cosmic Kids Yoga videos, each lasting about 15 to 20 minutes. To increase reliability, the researcher monitored five different children daily, rotating the groups each week to avoid observing the same children on the same day every week. Notes were made throughout the day, and observations were recorded on the CBRS at the end. The CBRS allowed the researcher to consider both cognitive and emotional impacts by evaluating specific items related to self – regulation.

Cognitive self – regulation skills



(Figure 1.1)

Figure 1.1 illustrates the increase in concentration and attention of the children, with 70% observing rules and following directions at the end of the intervention as opposed to 25% before the intervention. The impact of these changes was significant, especially during week 3 of the intervention, as the level of disruptions decreased significantly, leading to a calmer classroom environment, particularly as routines were more consistent after a week of the intervention taking place.



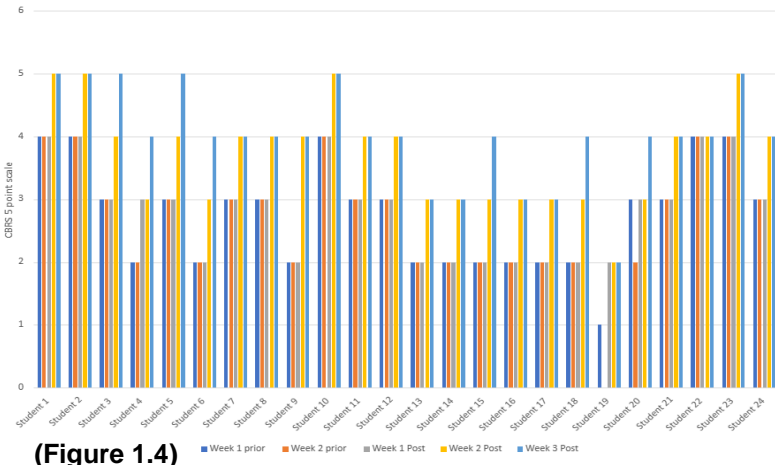
(Figure 1.2)

(Figure 1.3)

Figures 1.2 and 1.3 complement each other, indicating that children's increased focus as a result of the intervention. Notably, a comparison of these figures reveals that children do not necessarily need to concentrate intensely to produce organised work. For example, student 8, especially in the latter two weeks, did not always show high levels of attention, yet their work remained organised. Similarly, student 20 did not consistently exhibit the highest level of concentration before the last week, but their work was almost always organised. This suggests that not all children thrive in

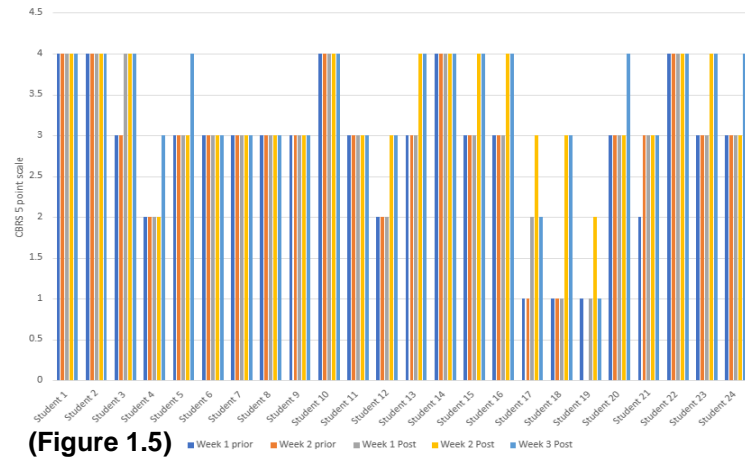
hyper – focused situations, though this applies to only a small percentage of children.

Item 22: Attempts new and challenging tasks.



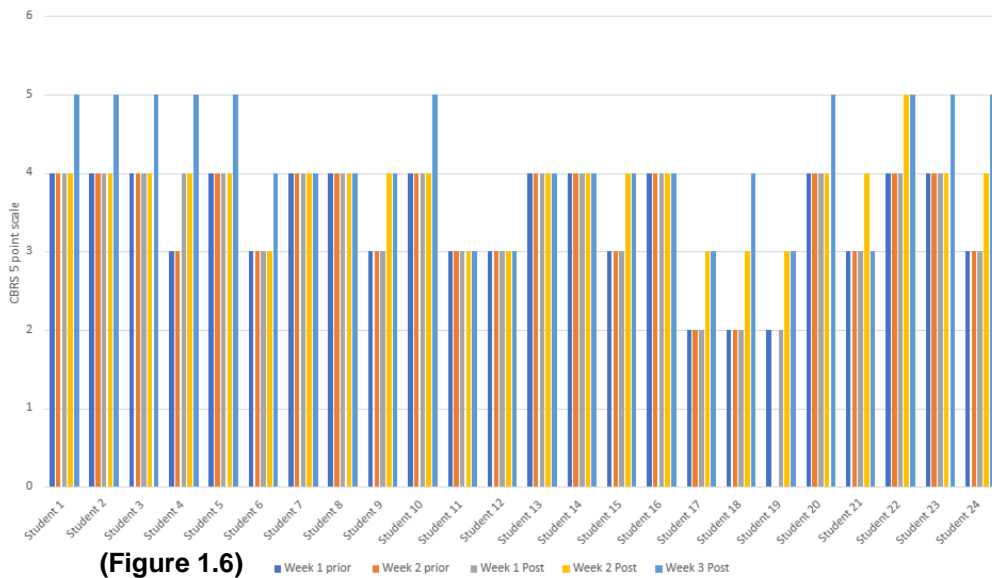
(Figure 1.4)

Item 28: Sees own errors on tasks and corrects them.



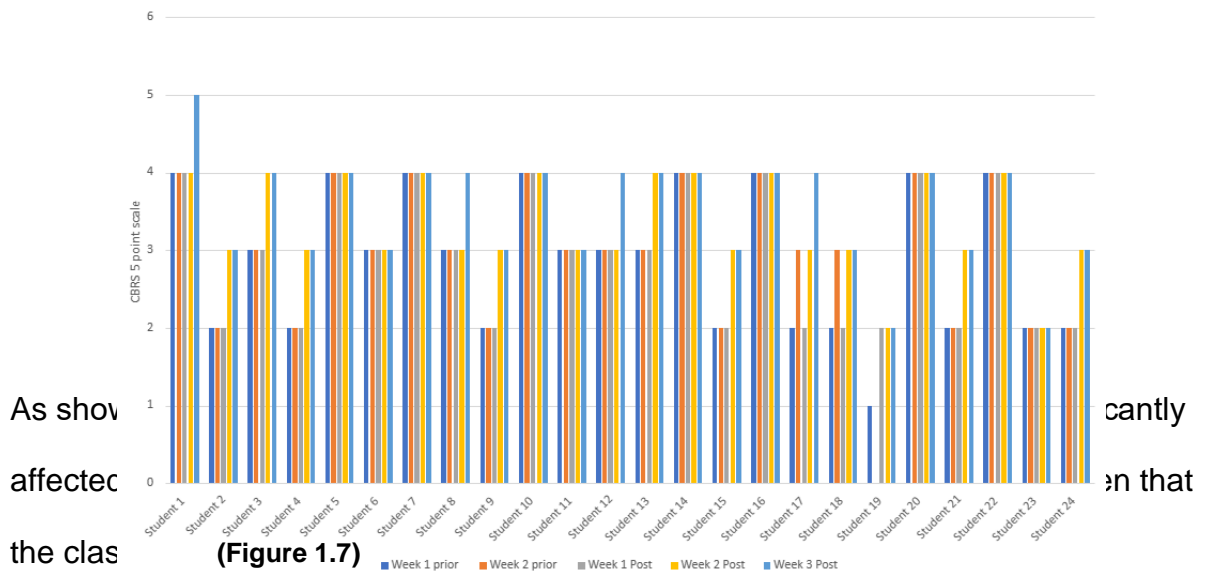
(Figure 1.5)

Figure 1.4 and 1.5 complemented each other throughout the intervention, demonstrating the resilience children gained and the self – assessment skills they developed to enhance their capabilities. Before the intervention, 21% of the children frequently attempted new tasks, compared to 80% after the intervention. This substantial increase reflects the children’s growth in self – esteem. However, despite their desire to learn and satisfy their curiosity, the children did not consistently seek to correct their own errors. Only 54% often or always attempted to recognise and correct their mistakes, highlighting a gap between their willingness to tackle new challenges and their consistency in self – correction.



(Figure 1.6)

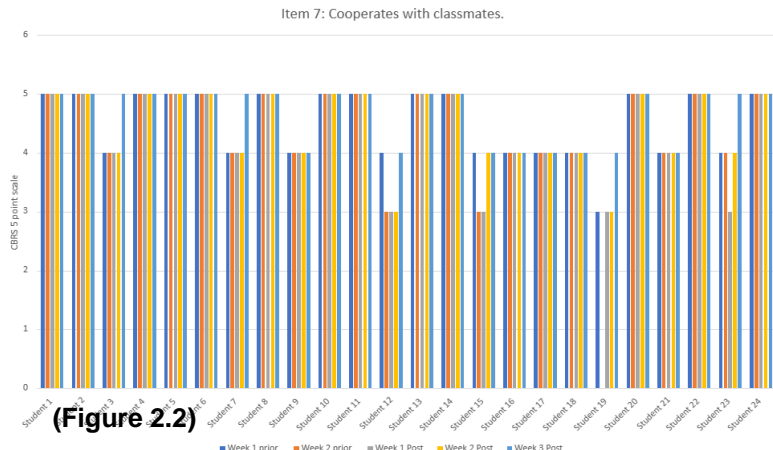
As previously mentioned, the children were eager to move on to the next task, and this graph supports that observation. Figure 1.6 illustrates the time children took to do their best work and the efforts to instil the importance of quality over quantity. The focus varied depending on the task; for example, when writing, children prioritised quantity over quality. Consequently, on the CBRS, their effort was often marked as 4 (often) rather than 5 (always). These items are subjective to teacher opinion, so the work was judged based on how well the children met the success criteria.



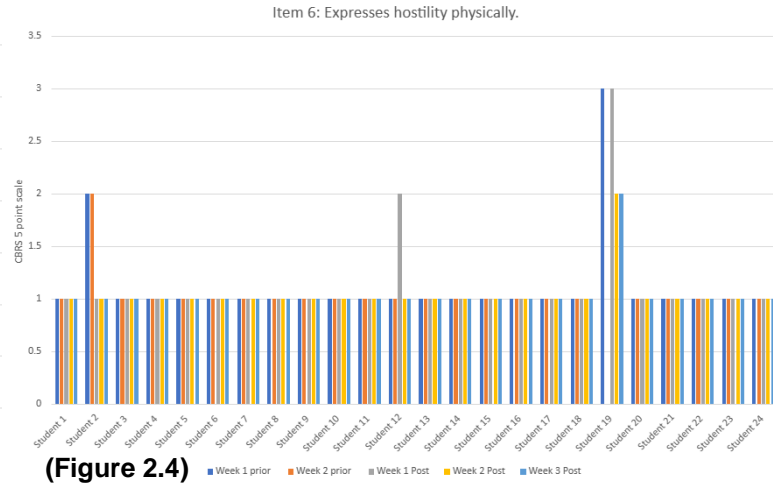
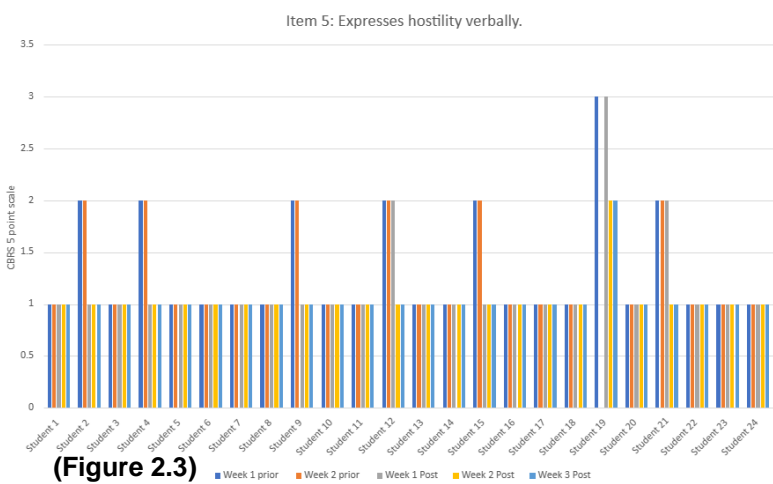
(Figure 1.7)

Additionally, the yoga interventions specifically focused on helping the children organise their learning through tasks and activities, rather than encouraging them to arrange items.

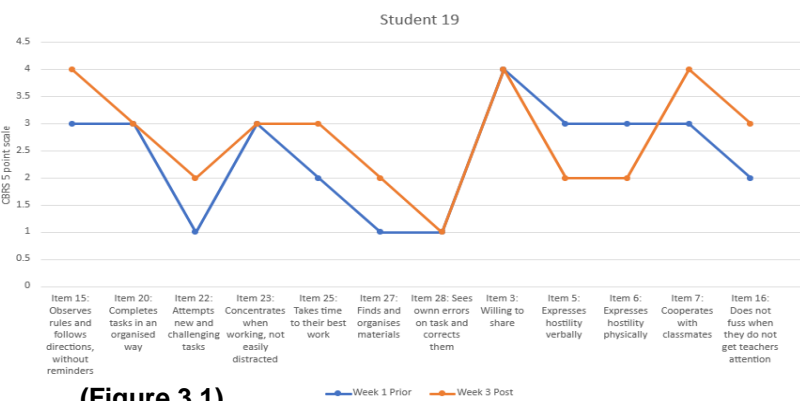
Emotional self – regulation skills



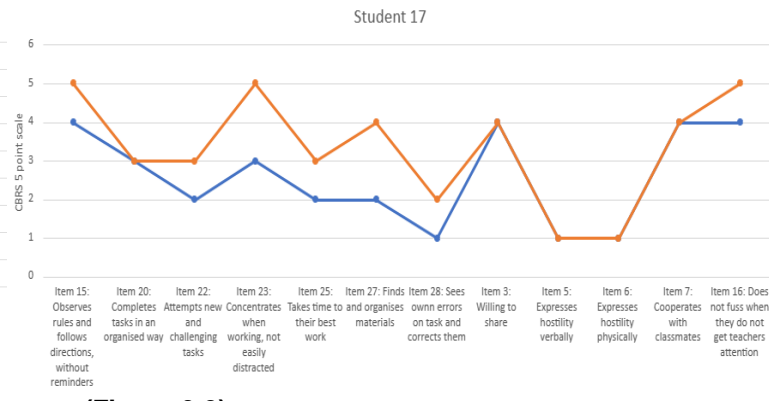
Figures 2.1 and 2.2 are related, illustrating a link between children’s willingness to share and their cooperation with classmates; the more children are willing to share, the better they cooperate. This connection is particularly evident in week three of the intervention. The readiness to share includes both sharing items and expressing thoughts during activities like circle time. Observations showed that sharing experiences significantly impacted children with English as an Additional Language (EAL), specifically students 18 and 19, fostering compassion and empathy throughout the entire class.



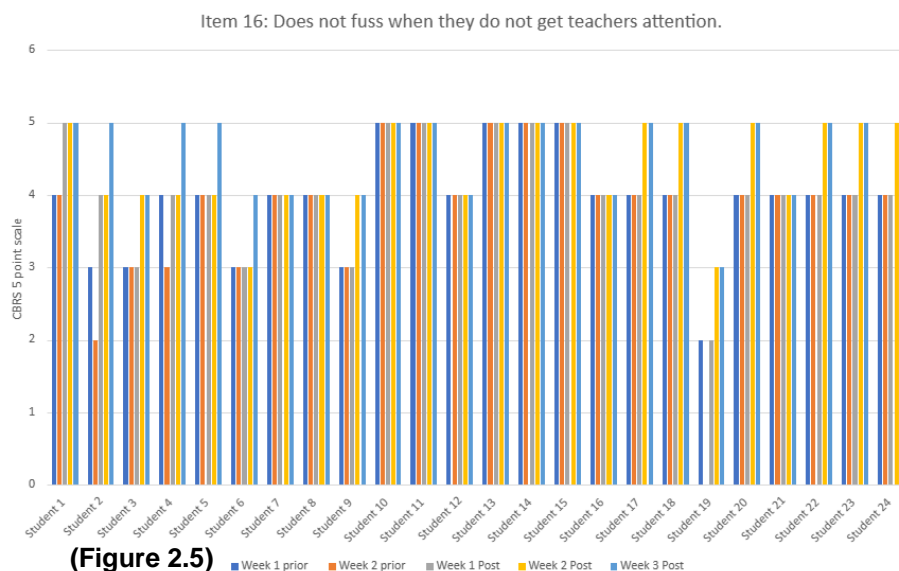
The data presented in Figure 2.3 reveals that a higher percentage of children engaged in verbal aggression (23%) compared to physical hostility (12%). However, after the intervention, only student 19 continued to demonstrate anger verbally and physically, albeit less frequently, occurring rarely instead of sometimes during the day. It is worth noting that this student, who was new to the school and an EAL learner, may have experienced frustration due to feeling misunderstood and overwhelmed. Nonetheless, the subsequent graphs demonstrate significant improvement in both cognitive and emotional self – regulation skills for both EAL children, indicating the positive impact of the yoga intervention.



(Figure 3.1)



(Figure 3.2)



(Figure 2.5)

Figure 2.5 demonstrates the impact of the yoga intervention on children's emotional regulation. They showed improved ability to manage their emotions and control their reactions, even when the teacher's attention was not directly on them. At the end of the intervention, 63% of the class never fussed, showcasing the independence and skills they acquired. Even among those who did fuss, the intensity was notably reduced compared to the first week.

Parent Questionnaire and Interview

Employing a mixed methods approach, qualitative data was gathered through a parent questionnaire and a semi – structured interview with class teacher. Six responses were received from the parent questionnaire. The subsequent data is organised below using coding, exploring three significant themes derived from the responses.

Theme 1: Enhance ability to learn.

When parents were asked, "What is your understanding of mindfulness?" four parents responded by highlighting its role in improving a child's capacity to learn, mentioning enhancements in concentration, focus, and attention. This sentiment was echoed in the interview, where the class teacher noted that students appeared "more ready to learn" after engaging in the intervention.

Regarding the questions, "How effective do you believe mindfulness techniques have been?" three parents expressed confidence in its effectiveness, while one parent described it as having a positive influence. However, three parents selected a rating indicating uncertainty, suggesting they were unsure of any noticeable differences.

Interestingly, in response to the question, “Do you believe that mindfulness should be part of the school curriculum?” all six parents unanimously answered yes. This collective agreement suggests a shared belief in the long-term benefits of integrating mindfulness practices into the school curriculum.

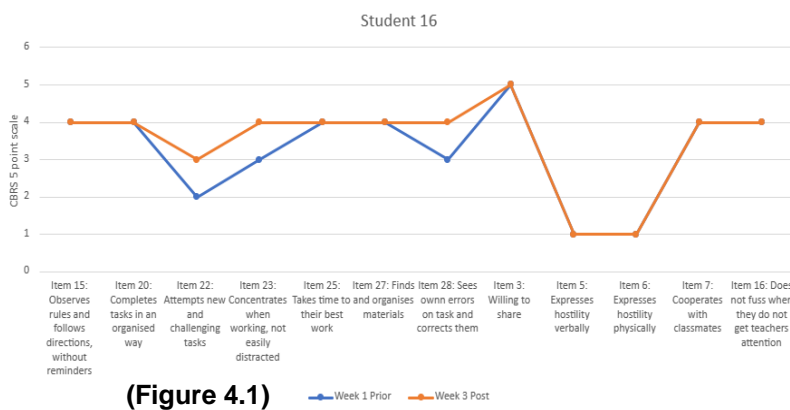
Theme 2: Awareness of self and others

Another response to the question, “What is your understanding of mindfulness?” emphasised the importance of self – awareness and awareness of others, particularly in recognising differences and being present in the moment. This suggests a nuanced understanding of mindfulness beyond its basic definition.

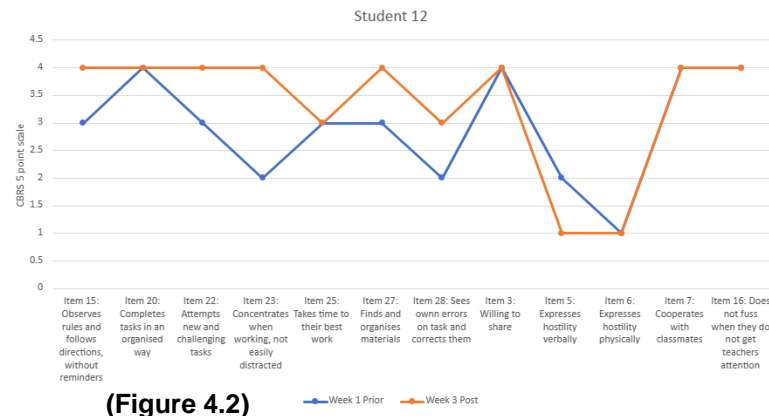
Regarding the use of mindfulness practices at home, all six parents indicated they incorporated such practices into their routines. They mentioned various activities such as watching Cosmic Kids Yoga videos, breathing exercises, sensory activities, and music. These responses highlight the diverse ways in which parents integrate mindfulness practices at home with one parent even mentioning its role as a substitute for screen time.

However, the class teacher’s perspective contradicts some aspects of the parent responses. The teacher expressed reservations about implementing yoga practices as a whole – school strategy, citing concerns about varying student responses and practical challenges, particularly in a KS2 classroom with time constraints. This highlights the complexity of introducing mindfulness interventions in schools and emphasises the importance of considering practical constraints and individual student differences.

Observational data collected during the study corroborate these perspectives, demonstrating the limited impact of the mindfulness intervention on certain aspects of student behaviour. Figures 4.1 and 4.2 below support the idea that not all children respond uniformly to mindfulness practices, and intervention effectiveness may vary based on individual and contextual factors.



(Figure 4.1)



(Figure 4.2)

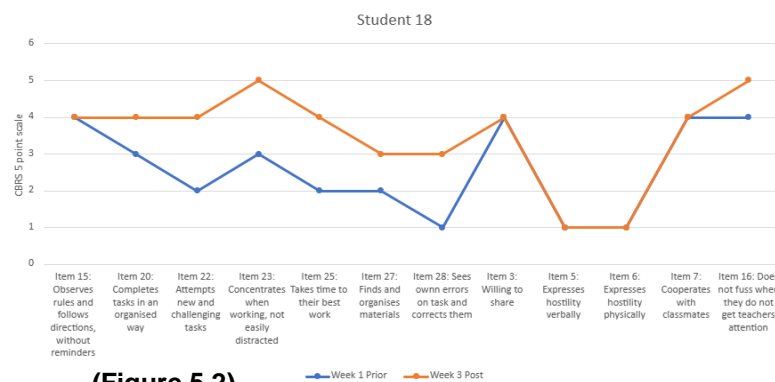
Theme 3: Emotional regulation

A notable theme emerging from the qualitative data was emotional regulation, particularly in response to children’s physical and verbal aggression as depicted in Figure 2.3. Parents discussed the pressures their children face in school and how mindfulness could potentially alleviate these stressors. They expressed a desire for their children to have the tools necessary to cope with the demands of school life. The interview provided further insight into this theme, highlighting the importance of children recognising and managing their emotions effectively. This emphasis on emotional regulation was supported by quantitative data, such as Figure 2.5, which showed that children exhibited better control over their emotions after the intervention. This improvement in emotional regulation likely contributed to enhanced cognitive self – regulation abilities, such as increased self – esteem and motivation to excel.

Figure 5.1 and 5.2 presented below depict the children the intervention had the most impact on. These figures show the significant impact this intervention had on two children in particular and shows how the children were better able to navigate their emotions and better apply themselves cognitively.



(Figure 5.1)



(Figure 5.2)

Discussion

Overall, the findings support the conclusion that mindfulness particularly the contemplative practice of yoga may result in probable changes in young children's cognitive and emotional self – regulation skills. These findings illustrate how yoga impacts children's ability to learn, how they gain awareness of themselves and others, and how they regulate their emotions. The discussion will explore these themes drawing upon limitations and the potential impacts for future implications in practice.

Enhance ability to learn.

The first theme to be explored is the notion that mindfulness interventions, particularly the contemplative practice of yoga, can enhance children's ability to learn. This concept, highlighted during the parent questionnaire and interview, aligns with existing literature emphasising mindfulness's potential to increase attention and focus by promoting present – moment awareness and a calming atmosphere

(Chiesa, 2012; Siegling and Petrides, 2014). The observed improvement in children's attention to teacher instructions throughout the intervention (Figure 1.1) further supports this idea. These findings resonate with prior research, such as that of Maynard *et al.* (2017), which suggests that mindfulness practices can enhance children's cognitive learning.

However, while Maynard *et al.* (2017) concluded that mindfulness interventions did not necessarily lead to gains in academic achievements, the observed improvements in children's academic performance, as indicated by Figures 1.3 and 1.4, suggest otherwise. These changes, reflected in enhanced work presentation, responsibility – taking, and willingness to challenge themselves, may stem from the confidence and determination fostered by the intervention. Such findings are consistent with the research of Janz, Dawe and Wyllie (2019), which suggests that focusing on a single contemplative practice, like yoga, may yield more significant improvements in children's self – regulation and academic performance.

Moreover, Figure 1.2 suggests that children did not always require high levels of attention to complete learning tasks effectively, which aligns with Döpfner *et al.* (2008)'s observation that sustained attention can be a persistent developmental challenge. While there may have been an increase in attention and focus during the intervention, it remains debatable whether this attention was sustained over time. This finding resonates with previous research by Mak *et al.* (2018), highlighting the need for longer – term studies to evaluate the sustained effects of mindfulness interventions on children's attention and academic performance. Therefore, future research could benefit from implementing mindfulness interventions over an extended period to assess their long – term impact on children's cognitive skills.

Awareness of self and others

When thinking about mindfulness, parents emphasised its role in fostering self – awareness and empathy among children, consistent with findings by Lawlor (2016) and Semple *et al.* (2017). Figures 2.1 and 2.2 further support this notion by illustrating how children’s willingness to share and their collaborative behaviours with peers, indicative of enhanced empathy and interpersonal skills. This aligns with the findings of the literature review, which emphasised the importance of mindfulness in fostering children’s sense of self and their understanding of others’ emotions (Lawlor, 2016).

However, it is crucial to acknowledge that the mindfulness intervention did not uniformly impact all children, as evidenced by the data depicted in Figures 4.1 and 4.2. The study’s small – scale nature and time constraints suggest that longer and more consistent interventions may yield greater impacts over time, aligning with Emerson (2020) and Weare and Bethune (2021). Moreover, the developmental trajectory of self – regulation skills, as discussed by Anderson *et al.* (2011) and Razza *et al.* (2020), highlights the importance of continuous practice and time for observable changes.

Furthermore, the study highlights the critical role of training in effectively implementing mindfulness practices in educational settings, echoing the sentiments of Weare and Bethune (2021). By addressing training gaps and leveraging video – based interventions such as Cosmic Kids Yoga, educators can bridge implementation barriers and promote student well – being more effectively, as suggested by Feagans – Gould *et al.* (2015) and Sun *et al.* (2021).

Emotional Regulation

The theme of emotional regulation highlights the pivotal role of children's self – awareness and empathy towards others, attributes that significantly influence their cognitive and emotional development (Donald *et al.*, 2016; Condon, 2017). This aspect is particularly critical in educational settings, given the concerning statistics regarding children's mental health (Good Childhood Report, 2022). This study shows the impact of yoga on children's emotional regulation, as evidenced by Figures 2.3 and 2.4, which demonstrates how children managed their actions in response to their emotions.

The results of this study suggest that mindfulness practices, particularly yoga, contribute to enhancements in children's learning abilities, self – awareness, and emotional regulation skills. These findings are consistent with prior research emphasising the advantages of contemplative practices in improving self – regulation among children (Diamond and Lee, 2011; Greenberg and Harris, 2011). Moreover, the observed improvements in children's emotional regulation have been associated with improved academic performance (Thomson *et al.*, 2019; Ruan *et al.*, 2023).

However, existing research often overlooks specific groups of children, leaving gaps. This study contributes by focusing on young children and examining the influence of yoga on their evolving self – regulation, including student with EAL. Recent studies have concentrated on specific populations, such as individuals with ADHD (Jarraya *et al.*, 2019) or economically disadvantaged students (Poehlmann – Tyanan *et al.*, 2016). While these studies have shown positive developments in self – regulation, they also highlight the need for further research.

In terms of findings for students with EAL, mindfulness appears to have had a more significant impact on student 17 than on student 19. However, their different

circumstances and backgrounds upon joining the school could have influenced these outcomes. This highlights a limitation of the study: the inability to conclusively attribute the improvements in self – regulation solely to the yoga intervention.

Conclusion

To conclude, despite being a small-scale study, this research demonstrates the influence yoga has on young children's cognitive and emotional self-regulation. Furthermore, while this study is not generalizable to the target population, several crucial findings, such as the speed with which the impact occurred, the correlations that were investigated, and the impact on children with EAL, can be taken into consideration and drawn on in practice to enable more comprehensive research.

Limitations

The study has several limitations that impact its reliability and validity. The small – scale nature of the study, with a limited number of participants, makes it difficult to generalise the findings to a broader population. The sample size restricts the statistical power of the results and may not accurately represent diverse student populations. Additionally, the study can not conclusively determine that the observed improvements in self – regulation were solely due to the yoga intervention. Other variables, such as individual differences and external factors, may have influenced outcomes. There were also potential biases in data collection and interpretation, impacting the reliability of the data collected. However, some steps were taken to address these limitations. The involvement of the class teacher in clarifying and verifying the data helped to ensure accuracy and provided a consistent perspective on the children's behaviours and progress. Despite these efforts, further research

with larger sample sizes and diverse participant groups is needed to validate the results.

Future Implications

The study's outcomes carry significant implications for classrooms teachers, especially regarding the integration of mindfulness practices. One of the key takeaways is that the yoga intervention enhances children's learning ability, self – awareness, and emotional regulation. Teachers can leverage these insights to foster better focus, empathy, and emotional management in their students, thereby creating a more enriching learning environment.

A crucial aspect of this study is its demonstration that video – based interventions, such as Cosmic Kids Yoga, can be effective without requiring extensive teacher training. This is particularly valuable given that training is often a barrier to implementing mindfulness practices within schools (Weare and Bethune, 2021). By utilising structured video resources, teachers can introduce mindfulness into their classrooms with minimal preparation, making it accessible and manageable across educational settings.

The findings also highlight the need for personalised approaches, recognising that not all children will respond similarly to yoga. For instance, the varied impact on students with EAL suggests that mindfulness interventions may need to be tailored to address the unique circumstances and backgrounds. In this instance, communication with parents to understanding their approaches such as those suggested by the parents within this study would be essential for maximising benefits of mindfulness practices and ensuring inclusivity in the classroom.

Moreover, the immediate positive effects observed in young children's emotional and cognitive self – regulation suggest that starting mindfulness practices early can be beneficial. Teachers should consider incorporating these practices consistently over longer periods to observe more significant impacts, as long – term engagement is crucial for sustained benefits (Razza *et al.*, 2020).

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Appendices: Appendix A: Questionnaire given to parents.

1. What is your understanding of mindfulness and how do you think it can benefit children in the classroom?

2. How effective do you believe the mindfulness techniques have been for your child? 1 – not effective (no impact seen) 5 – very effective (you have seen a positive impact on your child)

1 2 3 4 5

Please elaborate on the scale you have chosen, why?

3. Has your child's behaviour changed at home?

Yes No I don't know/not sure.

If so, how?

4. Do you implement yoga or any mindfulness strategies at home?

Yes No I don't know/not sure.

If yes, what techniques do you use and in what capacity?

5. How does the school inform you of these mindfulness techniques?

6. *Has the school modelled mindfulness techniques to you?*

7. Do you think mindfulness practices should be a part of the school curriculum?
Why or why not?

Appendix A: Semi - structured interview questions.

1. Why did you choose to implement the mindfulness technique of yoga in the past, what was your rationale?
2. How did you implement the mindfulness strategies?

- Was the same approach implemented across the whole school? Should it be?
3. Would you implement any other mindfulness techniques?
 - If so, what?
 4. What impact has it had on children's self – regulated learning?
 - What effect has this had on children's learning and progress?
 5. How has an individual child changed, what has the impact been on them?
 6. Is there a mindfulness technique that you think has less impact on children's self – regulation?
 7. If you were to take a yoga intervention into a KS2 classroom, what would you change and why?
 8. Have you collected data before about the impact of any mindfulness techniques?

Appendix C: Head teacher (gatekeeper) permission form

QTS6004M Research Project Permission form

Student name: _____

SE3 School: _____

Headteacher permissions:

I have read this student's ethical clearance form and give my permission for the conduct of this small-scale research project.

Additional parental passive consent is not required/has been obtained (please delete as applicable)

Headteacher's name: _____

Headteacher's signature: _____

Date: _____