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The Impact of Mindfulness on Preschoolers

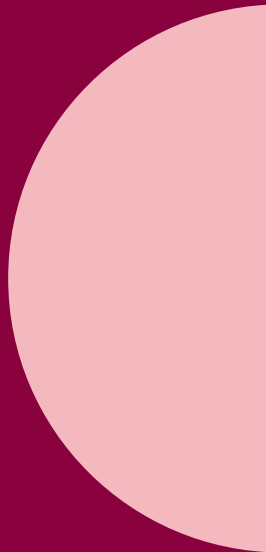
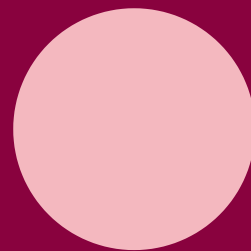
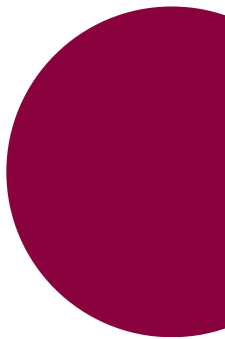
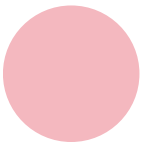




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An extended thank you to our preschool participants who inspire us everyday, we hope to continue learning from and with you to make our world a kinder place.



Introduction

In recent years, practicing mindfulness has gained significant recognition in its ability to support one's physical and mental wellbeing. The benefits of mindfulness have included 3 reduction in stress, improved sleep quality, and fostering of coping mechanisms for various health conditions (Hoffman et al., 2010), thus increasing the overall wellbeing of an individual by cultivating positive behavioral changes (Donald et al., 2016) and self-regulationskills (Kaunhoven & Dorjee, 2017).



This study aimed to examine the impact of mindfulness on preschoolers' ability for developing self-regulation skills, particularly through the implementation of co-regulation techniques with educators in the classroom environment.

Within licensed childcare settings, the integration of mindfulness in educator's daily programming and lesson plans has gained prominence as a strategy in nurturing self-regulation skills (Hughes et al., 2016).

Considering that critical brain development occurs from infancy to the first six years of a child's life, these early learning years serve as a crucial period for the development of self-regulation skills.



During this time, children begin to acquire vital self-regulation skills through experiences within their immediate environment, such as co-regulation with adults. While existing research in school-based settings has primarily focused on children aged four and older (Tarrasch, 2018), there has been limited exploration of the relationship between mindfulness practices and self-regulation skills among preschoolers in licensed early learning childcare settings.

This study draws upon existing developmental frameworks, highlighting the insights of Urie Bronfenbrenner and Lev Vygotsky. Bronfenbrenner's Ecological Systems Theory emphasizes the significance of the microsystem, composed of immediate environmental settings including family, school, friends, neighbours, and work, in a child's development (Krishnan, 2010). Interactions within the microsystem are highly personal and directly influence a child's beliefs and actions. Therefore, given that children spend a significant portion of their time in these classrooms, the child-care setting becomes a pivotal context for developmental learning.

While preschoolers are in the early stages of developing these skills, they are gradually learning to develop emotional self awareness, and regulate their emotions and behaviors. Therefore, it's crucial to account for their current cognitive and social capabilities, acknowledging that preschoolers may have shorter attention spans, struggle with impulse control, and are still learning to identify and express their emotions. The concept of co-regulation underscores the role of adults in providing a nurturing and supportive environment to help preschoolers practice and develop these essential skills, aligning with Vygotsky's sociocultural theory of cognitive development (Horn & Kincheloe, 2006).





Methodology

Sampling

The proposed study was conducted at Humber Child Development Centre (HCDC). The study was carried out in two preschool classrooms each having a licensed maximum capacity of sixteen participants between the ages of two and a half to four years.

Two Registered Early Childhood Educators (RECEs) support each classroom and the ratio includes one staff member to eight participants. The total sample included thirty-two children and four Registered Early Childhood Educators. The two classrooms were labelled as intervention classroom A and non-controlled classroom B. Consent was required for all participants (N) before the study commenced. Thirty-two informed consent ($N=32$, $N_{\text{intervention}} = 16$, $N_{\text{noncontrol}} = 16$) forms were signed (intervention, one participant did not consent to obtain pictures and videos ($N_{\text{intervention}} = 16$)).

Materials

Researchers conducted their observations using the observation deck located on top of the preschool classrooms at the HCDC. This research design provided an unobtrusive method to view the participants at play and allowed researchers to observe the intervention protocol without disturbing the classroom. Microphones hung in each classroom, connected to headphones in the observation deck allowed researchers to capture conversations between participants and educators to collect accurate data. Data was transcribed and secured on a Humber OneDrive folder encrypted by the Principal Researcher.

Observation tools were used to support the researchers in documenting the cause of behaviour, types of behaviour and educator intervention observed. An ABC (Antecedent, Behaviour, and Consequence) chart (see Appendix B & C) was used for both the intervention and non-controlled classrooms.



Researchers chose to use a deep breathing mindfulness video as past research has found that regular engagement in mindful breathing exercises was associated with a reduction in cortisol levels, a physiological marker of stress, in preschool-aged children and a significant decrease in stress-related behaviours such as tantrums and restlessness (Zeidan et al., 2010).

Intervention classroom A received the additional intervention research tool (see Appendix B) which allowed the researchers to observe specific actions and discussions for the mindfulness session. As participants and educators engaged in their daily routines, pictures and videos were taken throughout the research study as a data collection tool to supplement the written observations. The Principal Researcher provided educators with an iPad placed near the book centre to record the participants' engagement during the mindfulness session starting week three.

Quality of measurement

The observation deck was used to oversee both intervention classroom A and non-controlled classroom B. The facility is considered for lab purposes and serves as a valuable tool for Early Childhood Students and Faculty. During the observational study, two members of the research team observed the intervention classroom A and two observed the non-controlled classroom B. In week four, the researchers switched their observation groups to continue collection of data. ABC charts were chosen as a data collection tool as both Principal Researcher and Co-Investigator use this method within their work as Resource Consultants. This tool is widely implemented in the Early Childhood Education (ECE) field to collect data and form analysis.

Data Management

After each observation period, all pictures and videos stored on the password protected iPad were uploaded to Humber's encrypted OneDrive folder and deleted from the iPad. Written observations were uploaded to the OneDrive folder, which was only accessible to the research team. Written observations were shredded once the notes were uploaded to the OneDrive.

Procedure

Data collection

This study followed a cross-sectional design, classrooms A and B were observed taken over a period of six weeks, two days a week on varying days using an observation checklist. Observations lasted approximately forty-five minutes per day followed by a debrief with the research team.

Consent/Storing of Pictures and Videos

Before the start of each observation day, the Principal Researcher went to each classroom and asked the designated RECE if any parent/legal guardian had withdrawn consent for pictures and videos. All data was stored on Humber's OneDrive.

Intervention Protocol

Intervention Protocol Classroom A

The intervention protocol was provided to classroom A. The participants started their morning inside the classroom with free exploration play for approximately twenty to thirty minutes. Observations during free exploration play included conflicts that arose among participants, type of conflict and educator intervention. The participants had the option of sitting on the carpet, couch or chair. The educator began the protocol by asking each child, “how are you feeling today?” using a feelings chart to assist the participants with their responses to the question. Next, the participants were given the option to select as many fidget toys as they wanted, without restriction.

They then participated in a two-minute and forty-second “Mindful and Calming Breathing Technique” video with calming toys accessible throughout the duration of the video. After the video, the educator asked the same question, “how are you feeling now?”. Transitions to the cubby area were observed and any conversations that persisted there were noted and the intervention protocol was concluded.





Non-Controlled Classroom B

The non-controlled group proceeded with their standard morning routine consisting of free exploration indoor play followed by transitions to clean up and washroom breaks. During large group time, a Registered Early Childhood Educator read a story book to the participants or played a phonics nursery rhyme 'ABC' video before transitioning to the cubby area.

Educator Interviews

Two consecutive thirty minute semi-structured virtual interviews were conducted with two RECEs for each classroom following the conclusion of the observational period. Interviewees were informed on the content of the questions, duration of the interview, and verbal consent was obtained.

The educators from non-controlled classroom B explored their perspectives on emotional behaviours of participants in the classroom . Educators from the intervention classroom A shared their perspectives on implementing the protocol beyond the duration of the study, changes in behaviour, participants's capability for emotional understanding, long term impacts of mindfulness, as well as, teaching strategies and training for supporting emotional understanding.

Data Analysis

To evaluate the mindfulness session in intervention classroom A, and the large group time in non-controlled classroom B, an ABC chart was used to track engagement by observing the Antecedent, Behaviour and Consequence of the situations the participants were involved in.



Results

Classroom Observations Results (COR) - Intervention Classroom A

N=Day 1 & 2. It represents the number of observations conducted per week. Day 1 & 2 added together are the number of children participated and were present during observation days.

Week 1-3: July 18 - August 4 2023

Week 1

n	Free Exploration Play		Mindfulness Sessions
	Cause of conflicts	Educator Intervention	Intervention Protocol
24	<p>Type of play: Child-child interrupted play Functional play: skills/ play expectations when engaging with other</p> <p>Sharing: participants taking toys/items from each other</p> <p>Following Directions: Educators providing directions and participants did not follow through</p>	<p>Redirection - Verbal Verbal instruction, redirection</p> <p>Redirection - Physical: Modeling positive behaviors, redirection to another activity</p> <p>Regulation: Co-regulation Sitting with a participant as they were upset, verbal reassurance (it's okay to be angry), physical reassurance (hugging, rubbing their backs), singing songs.</p>	<p>Fidget toys: participants who took fidget toy: 23</p> <p>Fidget toys used: 7</p> <p>Use of Self-Regulation Techniques during intervention: Sitting upright on couches, chairs, teacher's lap, on the floor. Use of hand and head gestures along with breathing technique.</p> <p>Feelings Chart Used: No</p>

(Figure 1.1)



Week 2

n	Free Exploration Play		Mindfulness Sessions
	Cause of conflicts	Educator Intervention	Intervention Protocol
17	<p>Following Directions: Educators providing directions and participants did not follow through</p> <p>Sharing: Participants taking toys/items from</p>	<p>Redirection (Verbal): Verbal instruction, redirection</p> <p>Redirection (Physical): Modelling desired behavior, physical redirection</p> <p>Regulation: Co-regulating Sitting with a participants they were upset, verbal reassurance (it's okay to be angry), physical reassurance (hugging, rubbing their backs), singing songs.</p>	<p>Fidget toys: participants who took fidget toy: 16</p> <p>Fidget toys used: 6</p> <p>Use of Self-Regulation Techniques during intervention: Used different toy, placing fidget toy behind back. Sitting on couches, chairs, leaning against the couch. Using up and down hand motions and “o” expression during breathing</p> <p>Feelings Chart Used: No</p>

(Figure 1.1)



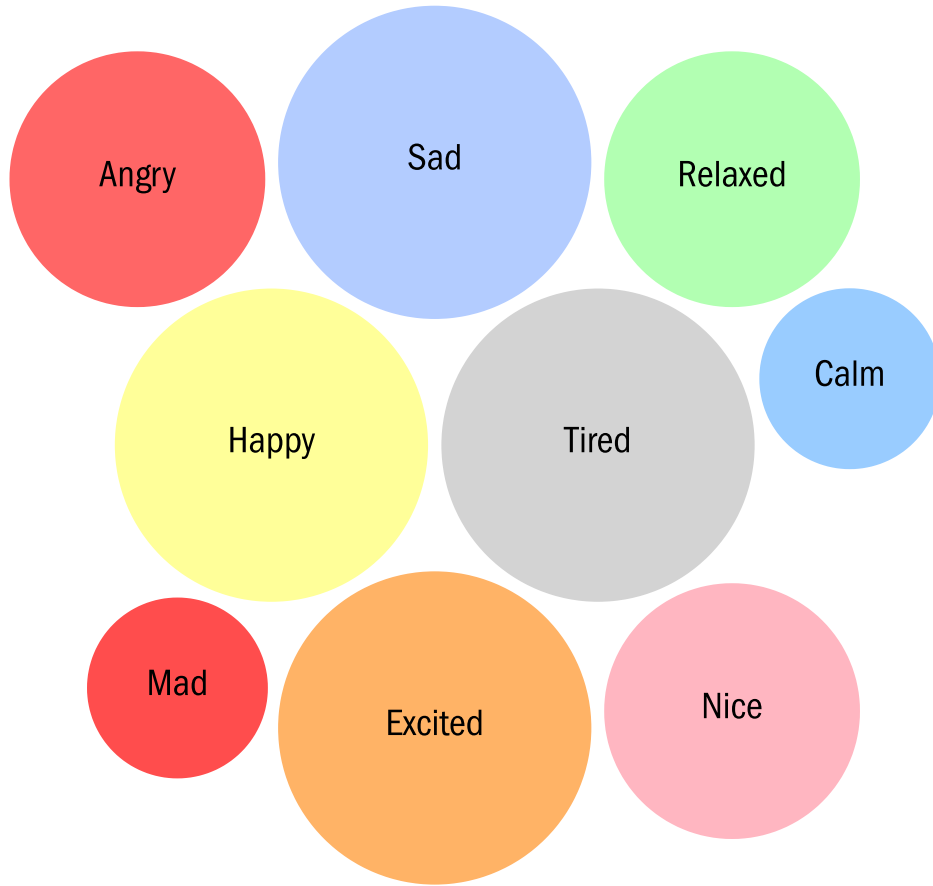
Week 3

n	Free Exploration Play		Mindfulness Sessions
	Cause of conflicts	Educator Intervention	Intervention Protocol
23	<p>Type of play: child-child interrupted play</p> <p>Sharing: Sharing toys/items</p> <p>Following Directions: Following through with direction (play instruction/routines/transitions)</p>	<p>Redirection (Verbal): Verbal redirection</p> <p>Regulation: Co-regulating Sitting with a participant as they were upset, verbal reassurance (it's okay to be angry), physical reassurance (hugging, rubbing their backs), singing songs.</p>	<p>Fidget toys: participants who took fidget toy: 22</p> <p>Fidget toys used:16</p> <p>Use of Self-Regulation Techniques during intervention: Used a pillow, playing with a fidget toy, touching their own body. Sitting on the couch, chairs, floor, teacher's lap. Eyes closed during breathing technique. Use hand gestures and "o" expressions, fully expanding and compressing the body.</p> <p>Feelings Chart Used: Yes (Day 1)</p>

(Figure 1.1)

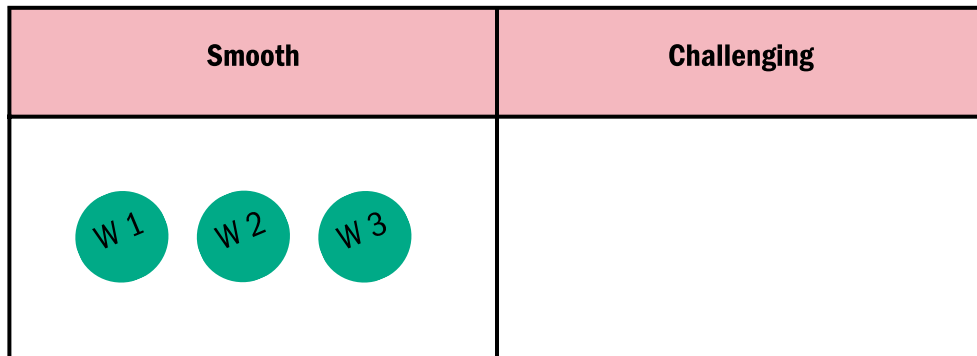


Emotions Diagram



(Figure 1.2)

Transitions Diagram



(Figure 1.3)



Week 4 -6: August 8 - August 25 2023

Week 4

n	Free Exploration Play		Mindfulness Sessions
	Cause of conflicts	Educator Intervention	Intervention Protocol
17	<p>Type of play: child-child physical conflict</p> <p>Sharing: Sharing toys/items</p> <p>Following Directions: Following through with direction (play instruction/routines/transitions)</p>	<p>Redirection (Verbal): Verbal redirection Verbal reassurance</p> <p>Redirection (Physical): Physical redirection</p> <p>Regulation: Co-regulating Sitting with a participant as they were upset, verbal reassurance (it's okay to be angry), physical reassurance (hugging, rubbing their backs), singing songs.</p> <p>Child intervention: Using verbal and physical techniques to stop unwanted peer-peer behaviour</p>	<p>Fidget toys: participants who took fidget toy: 15</p> <p>Fidget toys used: 10</p> <p>Use of Self-Regulation Techniques during intervention: Sitting on the chair, sitting on the floor,</p> <p>Feelings Chart Used: No</p>

(Figure 1.4)



Week 5

n	Free Exploration Play		Mindfulness Sessions
	Cause of conflicts	Educator Intervention	Intervention Protocol
11	<p>Sharing Sharing toys/items</p> <p>Following Directions Following through with direction (play instruction/routines/transitions)</p>	<p>Redirection (Verbal): Verbal instruction</p> <p>Redirection (Physical): Physical redirection Modelling desired behaviours</p> <p>Child intervention: participants using verbal and physical techniques to stop unwanted peer-peer behaviour</p> <p>participants asking educators for support</p>	<p>Fidget toys: participants who took fidget toy: 11</p> <p>Fidget toys used: 8</p> <p>Use of Self-Regulation Techniques during intervention: Sitting in a chair/floor.</p> <p>Some participants had their fidget toys on their heads.</p> <p>Using hand motions for the inhale and exhale prompts.</p> <p>Refused fidget toy by shaking head no.</p> <p>A pillow used instead of a fidget toy</p> <p>Feelings Chart Used: No</p>

(Figure 1.4)



Week 6

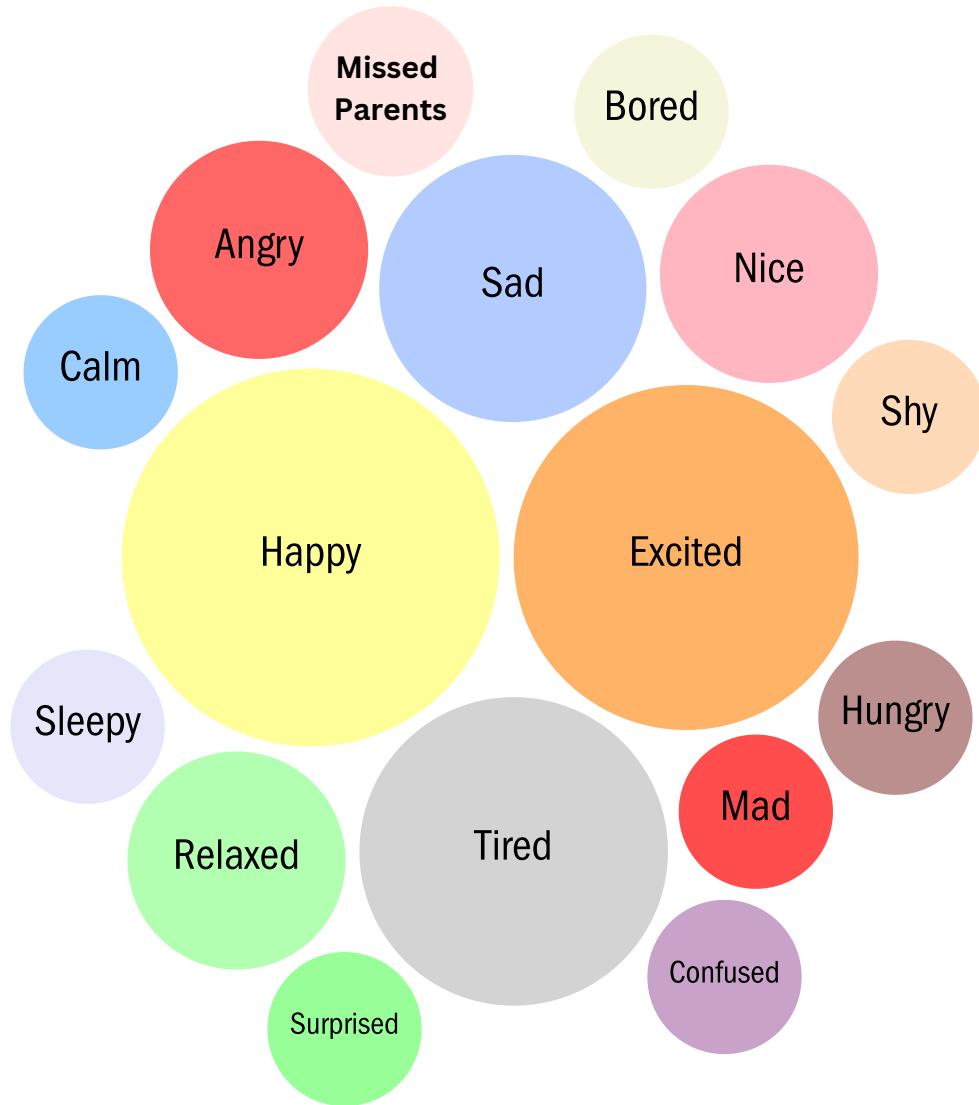
n	Free Exploration Play		Mindfulness Sessions
	Cause of conflicts	Educator Intervention	Intervention Protocol
12	<p>Type of play child-child play conflict</p> <p>Following Directions Following through with direction (play instruction/routines/transitions)</p>	<p>Redirection (Verbal): Verbal redirection</p> <p>Redirection (Physical): Physical redirection</p>	<p>Fidget toys: participants who took fidget toy: 12</p> <p>Fidget toys used: 10</p> <p>Use of Self-Regulation Techniques during intervention: Sitting on the floor, sitting on the chair Child lied on the floor when offered by educator, fussy bodies</p> <p>Feelings Chart Used: No</p>

(Figure 1.4)






Emotions Diagram



(Figure 1.5)

Transitions Diagram

Smooth	Challenging
	

(Figure 1.6)



Classroom Observation Results (COR)

Non-Controlled Classroom B

Week 1 -3: July 18 - August 4 2023

Week 1

n	Free Exploration Play		Mindfulness Sessions
	Cause of conflicts	Educator Intervention	Intervention Protocol
29	<p>Sharing Sharing toys/items</p> <p>Type of play child-child play conflict</p>	<p>Redirection (verbal)</p> <p>Regulation (co-regulation) Sitting with a participant as they were upset, verbal reassurance (it's okay to be angry), physical reassurance (hugging, rubbing their backs), singing songs, guided breathing techniques</p> <p>Redirection (physical) Hand over hand redirection</p>	<p>Regulation (self-regulation)</p> <p>Self-regulating by putting thumb in mouth or touching their ear</p> <p>Shifting and fidgeting with body</p>

(Figure 2.1)



Classroom Observation Results (COR)

Non-Controlled Classroom B

Week 2

n	Free Exploration Play		Mindfulness Sessions
	Cause of conflicts	Educator Intervention	Intervention Protocol
23	<p>Sharing Turn taking</p> <p>Type of play challenges with group cooperative play</p> <p>child-child play conflict</p>	<p>Redirection (Verbal)</p> <p>Physical redirection Hand over hand support</p> <p>Regulation (co-regulation) Sitting with a participant as they were upset, verbal reassurance (it's okay to be angry), physical reassurance (hugging, rubbing their backs), singing songs, guided breathing technique, verbal encouragement</p> <p>No intervention proximity control. Educator not within distance to observe and problem-solve conflict.</p> <p>Following Directions: Child has yet to follow instructions and walked away from the educator</p>	<p>Regulation (self-regulation) Jumping up and down and flapping arms alongside the body when their toy is removed during transition.</p> <p>Challenges with attention regulation during large group time by moving their bodies back and forth while sitting on carpet.</p>

(Figure 2.1)



Classroom Observation Results (COR)

Non-Controlled Classroom B

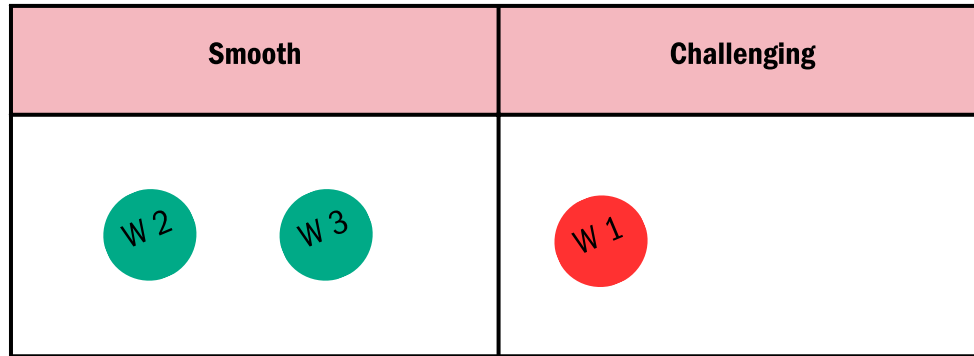
Week 3

n	Free Exploration Play		Mindfulness Sessions
	Cause of conflicts	Educator Intervention	Intervention Protocol
26	<p>Sharing Sharing toys/items</p> <p>Type of play child-child play conflict</p>	<p>Redirection (physical) Hand over hand redirection.</p> <p>Redirection (verbal) Verbal redirection to another play area during conflicts.</p> <p>No intervention proximity control. Educator not within distance to observe and problem-solve conflict</p> <p>Regulation (co-regulation) Sitting with a participants they were upset, verbal reassurance (it's okay to be angry), physical reassurance (hugging, rubbing their backs), singing songs, guided breathing technique Positive verbal reinforcement “it's good taking turns”</p>	<p>Following Directions: (shaking their head and saying “no”)</p> <p>Regulation (self-regulation) Crying and pointing at other participants</p> <p>Fidgeting and moving around during storytime</p> <p>Self-regulating by putting fingers in mouth</p>

(Figure 2.1)



Transitions Diagram



(Figure 2.2)

Classroom Observation Results (COR) Non-Controlled Classroom B

Week 4 -6: August 8 - August 25 2023

Week 4

n	Free Exploration Play		Mindfulness Sessions
	Cause of conflicts	Educator Intervention	Intervention Protocol
13	<p>Type of Play Rough and tumble play</p> <p>Sharing sharing activity</p> <p>Following directions has yet to follow teacher directions</p>	<p>Redirection (verbal)</p> <p>Redirection (physical) With hand over hand support or, redirecting child to another activity.</p>	<p>Regulation (self-regulation) Fidgeting or movement with hands while maintaining eye contact with educators.</p> <p>Sitting on couches and floor in the book centre</p>

Figure 2.3



Classroom Observation Results (COR) Non-Controlled Classroom B

Week 5

n	Free Exploration Play		Mindfulness Sessions
	Cause of conflicts	Educator Intervention	Intervention Protocol
17	<p>Sharing Sharing toys</p> <p>Type of play Rough and tumble play child-child play conflict</p> <p>Following directions has yet to follow directions cleaning up</p>	<p>Redirection (verbal) verbal, redirecting child to another activity.</p> <p>Redirecting behaviours</p> <p>Redirection (physical) Modelling positive behaviour</p> <p>Regulation (self-regulation) physically self-regulating</p>	<p>Regulation (self-regulation) Fidgeting in place: rocking back and forth, kicking legs up.</p> <p>Touching ankles/feet placing hands on head, face.</p> <p>Yawning Stretching Sitting on the floor cross legged position legs stretched out laying down</p> <p>Shifting between different seating positions</p>

Figure 2.3



Classroom Observation Results (COR) Non-Controlled Classroom B

Week 6

n	Free Exploration Play		Mindfulness Sessions
	Cause of conflicts	Educator Intervention	Intervention Protocol
23	<p>No conflicts during free exploration play.</p> <p>Cooperative, positive play/interactions</p>		<p>Regulation (self-regulation) Laying on the floor</p> <p>legs stretched out in front of them</p> <p>criss cross position shifting between sitting upright and laying out.</p> <p>Holding arms, ankles/legs, hands on head/face.</p> <p>Regulation (co-regulation) During ABC video: Participants shifting between being engaged with video to distraction by environment/participants in environment</p>

Figure 2.3

Transitions Diagram


Smooth	Challenging
	

Figure 2.4



Summary Findings

Intervention Group Classroom A

The results of our study were structured around the major categories for the intervention classroom A including, causes of conflict, educator intervention, intervention regulation, emotions, and transitions.

Causes of conflict

Causes of conflict were categorized by types of play, sharing, and following directions. Sharing emerged as a prominent conflict when participants took items from another peer or were taken from them. Conflicts occurred when educators provided redirection to participants and they had yet to follow through with the direction (see figure 1.1).

Educator Intervention

Within weeks one to three, educators used two types of interventions to respond to conflicts. These included: redirection which expanded into verbal redirection (i.e., through verbal instruction) and physical redirection through means of modeling positive behaviours and/or guiding/redirection the child to another activity (see figure 1.1). Regulation interventions were also observed through co-regulation (support of educator) techniques. From weeks four to six, more child-initiated interventions were observed, these included using verbal and physical techniques (see figure 1.4).

Emotions

Four core emotions were commonly shared during each session starting from week one where the words “happy”, “tired”, “excited”, “angry” were used. By the second to sixth week, words such as, “mad”, “relaxed”, “sad”, “calm”, “nice”, “sleepy”, “hungry”, “shy”, “missed parents”, “bored”, “confused”, and “surprised” began to emerge (see figures 1.2 & 1.5).



Intervention Regulation

There was an overall increase in the use of fidget toys. Participants used body movements and other resources as a form of self-regulation (see figure 1.1). There was a steady trend in the types of breathing techniques the participants used to inhale and exhale for the duration of the mindfulness video. From week one we saw hand motions and then by week three we noticed participants using their mouths in the form of an “O” to demonstrate the inhale and exhale technique.



Transition

Transitions after the mindfulness intervention remained consistently smooth. Transitions began with participants receiving an instruction to line up and prepare to go to the cubby area before outdoor time (see figures 1.3 & 1.6). Smooth transitions were characterized by participants following through with the direction, walking from the classroom to the cubby area where they were supported by an educator in getting dressed and walking out the door.

Summary Findings

Non-controlled Classroom B

The major categories for the non-controlled classroom B were primarily similar as the intervention classroom A such as causes of conflict, educator intervention, transitions, and child intervention instead of intervention regulation.



Causes of conflict

Similar causes of conflict were also observed in the non-controlled classroom B and included types of play , sharing and following directions (see figure 2.1 & 2.3) .

Educator Intervention

Similar interventions were observed in non-controlled classroom B. Proximity control emerged as an obstacle for educators' responsiveness to conflicts in the classroom where educators were not in distance to observe, and problem solve conflicts.

Self-Regulation Techniques

In comparison to the intervention classroom A where regulation was observed during mindfulness sessions, child intervention was observed during large group time. In the absence of fidget toys, participants were observed engaged in self-regulation through body movements (see figure 2.1 & 2.3) .



Transitions

In week one it was observed that the transition from large group time to outdoor time was challenging (see figure 2.1 & 2.3) . Conversely from weeks two to six, transitions appeared to be smooth, where participants followed through with educators' direction (see figure 2.2 & 2.4) .

Educator Testimonials

Intervention Classroom A

Interviews with Registered Early Childhood Educators provided valuable insights into the effects of the mindfulness sessions. Educators highlighted particular aspects of the protocol:



Educators expressed that participants seemed to enjoy the video, and they would expect to see continued use of it beyond the study. Another important aspect was how the use of fidget toys aided participants through the sessions:

“At the beginning they weren’t using the toys but, I felt that they supported the children, and they were able to focus more with a toy, something small. I thought it was a great addition.” – JC, RECE

The protocol seemed to help with the timing of transitions from free exploration play to large group time:

“It can be overwhelming with free exploration play and having the down time to come together and reflect as a class it helped bring down the energy level. ” – JC, RECE

Impacts of the mindfulness sessions on emotions was consistently mentioned when discussing the effects on participants’s behaviours.

“They were able to explain their feelings and why they were feeling that way. Some of the children would ask the instructors how they’re feeling. ” – AS, RECE

“We always encourage the children to identify emotions... so we’ve noticed them starting to do that a little bit more. ” – JC, RECE



The importance of these emotions were recognized in the role they played during the participants morning free play observations.

“We’ve noticed, they are identifying their emotions, and it supports them with self-regulation, like they’re able to stop, think about what’s going on and use an emotion to identify it. ” – JC, RECE

“It helps with us too as educators, cuz we noticed that they’re able to also support themselves with their own conflict resolution. ” – JC, RECE

Educators also shared their perspectives on the participants’s overall ability for comprehending emotions:

“A lot of the children were saying happy or sad, but we were also seeing a lot of different emotions being used and I feel like that just comes with once they get a little older, a lot of those kids are going off to school, they were about four years old. ” – JC, RECE

Educators were asked to describe the life-long impact of mindfulness amongst preschoolers:

“When they go off to school, they already have that going forward. Instead of saying “Hi teacher, I need help” they’re able to first solve it on their own and then if they need help. They go ask for it. It’s good for them with self-regulation and having that redirection on their own. ” – JC, RECE

“They have some sort of understanding “okay I don’t like something, I’m gonna identify emotions and we’re gonna talk about it. ” – JC, RECE



While the study was aimed at exploring the effects on preschoolers, it was also important to explore how mindfulness can impact early childhood educators:

“Being able to take a few minutes for mindfulness to think about how we’re doing as educators, as a class dynamic.” – JC, RECE



The interviews concluded with a discussion highlighting a need for more resources on mindfulness:

“It’s so important as educators, we’re dealing with a lot of children on a daily basis, how we can support ourselves, how could I support my team member. I think it could definitely be beneficial.” – JC, RECE

Non-Controlled Classroom B

Educators in the non-controlled group shared their insights regarding the behaviours observed in their classrooms and the strategies they could potentially employ to support their preschoolers:

“They do want to be there, it’s just how do we grab them back into the small circle experience?” – AG, RECE

“They are preschoolers, sometimes the time that they are sitting for in one space is too long for them and they need to be re-engaged in something else” – PS, RECE



Educators discussed the strategies they implement during small group time to enhance preschoolers' engagement and improve the overall function of the sessions:

“In a story book, we try to relate the story to other things. For example, if we have a story that has to do with the outside, we like to take the kids to the arboretum. Relating the things that the children like doing outside and bringing those things into the small circle time” – AG, RECE

Educators shared their practice of utilizing mindfulness techniques in the classroom:

“Strategies we like to use like blowing out the birthday cake candle because it grabs the children's attention by saying birthday candle, and then telling them to take a breath in and blow it out to get them to breathe and to relax and take that time to cope with that emotion and that behaviour” – AG, RECE

When asked about techniques used to assist participants in conflict resolution, attention management and co/self-regulation,

“The clean up song ... a lot of preschoolers are very good with helping each other, like they will help the younger ones clean up. ” – PS, RECE

Discussion

The present pilot study sought out to analyse the effects of how a mindfulness based intervention influences self-regulation in preschool-aged children. Researchers looked to assess preschoolers' capacity for self-regulation and emotional well-being by implementing a co-regulated mindfulness intervention supported by their immediate educators.



Cause of conflict & educator intervention

Utilising the observation deck, researchers identified causes of conflicts. These were categorised into three groups: Types of Play, Sharing, and Following Directions. These appeared to be consistent across both classrooms and among the participants. As depicted in the COR (see figure 1.1, 1.4, 2.1, 2.3) from week one to six, both classrooms encountered comparable challenges during morning free play, where sharing emerged as the most significant play challenge between participants. Screaming, crying and chasing was observed when participants took items from each other without verbally expressing their interest in the item. All educators responded to conflicts using verbal and physical redirection, or a mindfulness intervention. In weeks three to six, the COR (see figure 1.4) shows that the intervention classroom A saw an increase of child initiated interventions where participants used techniques to help solve their conflicts before calling for an educator. Mindfulness techniques modelled by educators daily and practised may lead to an increase in expressive communication and individual use of the mindfulness interventions.

Large group time

Large group time was used as a shared setting for examining differences in self regulation approaches between the intervention and non-controlled classrooms. During large group time, the intervention classroom was presented with the mindfulness intervention each day while the non-controlled classroom participated in a different activity concurrently, i.e., reading a storybook or watching an educational video on the iPad. Both groups gathered in a large group setting as an effective means of grounding everyone in one standard location before transitioning to outdoor play. Large group time underlines the importance of resetting and refocusing before transitioning to outdoor play.

Researchers noticed from the COR (see figure 1.1 & 1.4), classroom A had intentional time and multiple co-regulation techniques to support participants' self-regulation skills through the implementation of the mindfulness video, discussing emotions and offering fidget toys. In comparison to classroom B, there were less co-regulation techniques offered as we noticed participants resorting to finding these techniques through themselves (see figure 2.1 & 2.3).



Transitions

Transitions in figure 1.3, 1.6, 2.2 & 2.4, were broken down in one category of smooth or challenging transitions. The researchers identified a “smooth” transition as participants complying with the educator’s instructions and “challenging” transitions were determined if a child showed signs of being upset through physical or emotional movements. There was a consistent trend of smooth transitions in the intervention classroom from week one to six and one outlier of a challenging transition in the non-controlled classroom (see figure 2.2 & 2.4). The expectation of practising mindfulness and taking a moment as a class to share and discuss emotions gives preschoolers an opportunity to express, regulate their emotions, regroup, and allows them to ease into a bigger transition.

Fidget toys and Self-Regulation Techniques

Researchers observed that fidget toys appear to support emotional expression and self-regulation skills amongst preschoolers. In the intervention classroom A, fidget toys seemed to provide the opportunity for exploring tactile stimuli, self-regulation and refocusing skills. Literature that focuses on the concept of ‘embodied cognition’ highlights the link between the body and cognition (Wilson, 2000) and has been previously explored in a study that found an association between mind wandering and fidgeting; whereas fidgeting increased as attention decreased (Carriere, Seli, & Smilek, 2013). This may help explain the emergence of self-regulation techniques during large group time where participants in both the intervention and non-controlled classrooms engaged in physical expressions in response to shifts in attention or other cognitive processes.

The differing use of fidget toys and use of other self-regulation techniques may align with Dunn’s Model of Sensory Processing which is that each individual has a unique threshold and strategies for responding to stimuli and their environment; those with lower thresholds and passive responses may be more easily activated by sensory stimuli and may respond internally to control for the sensory input (2007). This understanding highlights the various ways participants support themselves in their self-regulation, promoting further exploration of implementing mindfulness as a way to support preschoolers self-regulation skills by resetting and re-grounding, making it a favourable time to implement this intervention.



Feelings chart

The intervention protocol included the implementation of a feelings chart pre and post mindfulness session. It was observed that there was an inconsistent use of the feelings chart among the educators in the intervention classroom. Researchers assume that a consistent use of the feelings chart may have shown an increasing trend in preschoolers ability to identify and articulate their emotions, therefore expanding their emotional awareness and vocabulary when conflicts arose during free play. Researchers believe the use of a feelings chart could have led to improved interactions with adults and participants in their classrooms. If the proposed feelings chart was consistently implemented during the intervention protocol, researchers assumed there would have been a shift in self-regulation, empathy and an increased child-to-child conflict resolution skills.

Emotions

During the investigation of emotional responses of preschoolers within the intervention protocol following the mindfulness video, a consistent expression of four core emotions were observed in the initial week. However, subsequent weeks showed notable changes, with the participants incorporating new emotional vocabulary such as "calm" and "relaxed" (see figures 1.2 & 1.5). This expansion of emotional expression may suggest the correlation between mindfulness practices and the development of emotional intelligence in preschoolers.

The emergence of this vocabulary may indicate that participants are becoming more self-aware, enhancing their ability to reflect on their own emotional states and communicate them effectively. In intervention classroom A, educators probed preschoolers about the reasons behind their emotions, this allowed them to have their emotions acknowledged, explore them further and differentiate between various emotional states.

Researchers believe that mindfulness practices hold the potential to promote emotional awareness and regulation in preschoolers. The continued expression of new emotions throughout the sessions underscores the ongoing development of the participants's ability to recognize and manage their emotional states.



Strengths and Limitations

Strengths

Having a diverse set of participants in each classroom for this study strengthened the generalizability of our findings, making it likely that the findings could be replicated in various samples. Further, it reduces the chances that cultural factors acted as a sole mediator underlying the behaviors observed. Another strength was having a consistent sample and environment throughout our observations. Conducting our research via an observation deck allowed for non-intrusive data collection and provided a realistic perspective of how participants would behave in their natural environment. Additionally, halfway through the observation period, researchers switched between intervention and non-controlled classrooms for data collection. This ensured the consistency of our findings, by validating results, decreasing researcher bias and increasing overall inter-rater reliability.

The prior knowledge and experience of the Principal Researcher, Co-Investigator, and Research Assistants proved to be a strength in this study. Furthermore, Research Assistants contributed their knowledge in research methodology, offering support in decision-making in research activities. Research Assistants had prior experience working with children. Investigators incorporated the use of an iPad during mindfulness sessions to provide a better view of participants and their engagement, thus supplementing our written observations. Conducting qualitative interviews with educators strengthened our study as it allowed us to consolidate our research findings and provide new perspectives not gained from naturalistic observations.

Limitations

The overall sample of sixteen participants were not consistently present across observation periods, impacting the representativeness of the samples and the ability to accurately compare observations across both classrooms. The varying days and times of the observation period, could have impacted the participants behaviour in terms of their capacities for regulation, focus and their window of tolerance.



The intervention classroom provided limited visibility of the bookcentre, where the mindfulness sessions were held, potentially affecting the number of participants observed being engaged in the practice. An iPad was supplemented halfway throughout the total observation period to support written notes; future research may implement this into future protocols to assist in validating findings from the beginning of the observations. The feelings chart that had been included in the study's intervention protocol was consistently implemented as it may have explored and expanded the emotional vocabulary of the participants.

Recommendations and Future Implications

Further studies are encouraged to explore a design that follows the participants over a longer period of time to get a better scope of the effects of the mindfulness session in early years environments. Incorporating a series of educator interviews prior to the observation period would be beneficial in understanding any potential changes in the participant's emotional competencies before, during, and after the study. Research may explore how Registered Early Childhood Educators pre-training for mindfulness would compare against our findings. Specifically exploring how emotional competence training among educators for preschoolers emotional competencies would affect the types of conversations educators engage in with children in preschool classrooms, and whether it supports children's abilities to explore emotions. Children's home environment may greatly impact their engagement in mindfulness and thus it may be helpful to explore how mindfulness impacts children outside of the classroom.

Conclusion

This pilot study provided valuable insight on the impact of mindfulness interventions and why its incorporation into early years settings. The research team hopes to move forward into phase two of the pilot project by advocating for the importance of mindfulness and incorporating these interventions in preschool classrooms utilizing the insights gained from this initial study.



References

- Adriansyah, M., & Rahayu, D (2018). The influence of hug therapy to increase children's emotional intelligence. *Advances in Social Science, Education and Humanities Research*, 173, 234-237. <https://doi.org/10.2991/icei-17.2018.61>
- Berti, S., & Cigala, A (2020). Mindfulness for preschoolers: effects of prosocial behaviour, self-regulation and perspective taking. *Early Education and Development Journal*, 33 (1), 1-20. <https://doi.org/10.1080/10409289.2020.1857990>
- Carriere, J.S.A., Seli, P., & Smilek, D. (2013). Wandering in both mind and body: individual differences in mind wandering and inattention predict fidgeting. *Canadian journal of experimental psychology*, 67(1), 19-31. <https://doi.org/10.1037/a0031438>
- Creswell, J. D., Lindsay, E. K., Villalba, D. K., & Chin, B. (2019). Mindfulness Training and Physical Health: Mechanisms and Outcomes. *Psychosomatic medicine*, 81(3), 224-232. <https://doi.org/10.1097/PSY.0000000000000675>
- Donald, J. N., Atkins, P. W. B., Parker, P. D., Christie, A. M., & Ryan, R. M. (2016). Daily stress and the benefits of mindfulness: Examining the daily and longitudinal relations between present-moment awareness and stress responses. *Journal of Research in Personality*, 65, 30-37. <https://doi.org/10.1016/j.jrp.2016.09.002>
- Dunn, W. (2007). Supporting Children to Participate Successfully in Everyday Life by Using Sensory Processing Knowledge. *Infants and & Young Children*, 20(2), 84-101. <https://doi.org/10.1097/01.IYC.0000264477.05076.5d>
- Farley, J., Risko, F. E., & Kingstone, A. (2013). Everyday attention and lecture retention :the effects of time, fidgeting, and mind wandering. *Frontiers in psychology*, 4, 619. <https://doi.org/10.3389/fpsyg.2013.00619>
- Hofmann, S. G., Sawyer, A. T., Witt, A. A., & Oh, D. (2010). The effect of mindfulness-based therapy on anxiety and depression: A meta-analytic review. *Journal of consulting and clinical psychology*, 78(2), 169-183. <https://doi.org/10.1037/a0018555>



- Horn, R., & Kincheloe, J. (2006). *The Praeger Handbook of Education and Psychology*. Bloomsbury Publishing USA. <https://www.bloomsbury.com/ca/praeger-handbook-of-education-and-psychology-4-volumes-9780313014802/>
- Hughes, K., Bellis, M. A., Hardcastle, K. A., Sethi, D., Butchart, A., Mikton, C., Jones, L., & Dunne, M. P. (2017). The effect of multiple adverse childhood experiences on health: a systematic review and meta-analysis. *The Lancet. Public health*, 2(8), e356–e366. [https://doi.org/10.1016/S2468-2667\(17\)30118-4](https://doi.org/10.1016/S2468-2667(17)30118-4)
- Kaunhoven, R.J. and Dorjee, D. (2017) ‘How does mindfulness modulate self-regulation in pre-adolescent children? an integrative Neurocognitive Review’, *Neuroscience & Biobehavioral Reviews*, 74, pp. 163–184. [doi:10.1016/j.neubiorev.2017.01.007](https://doi.org/10.1016/j.neubiorev.2017.01.007)
- Krishnan, V. (2010, May 7-9). Early child development: A conceptual model [Paper presentation]. Early Childhood Council Annual Conference 2010, Edmonton, AB, Canada. [ecd-conceptualmodel.pdf \(ualberta.ca\)](http://www.ualberta.ca/~ecd-conceptualmodel.pdf)
- Setia M. S. (2016). Methodology Series Module 3: Cross-sectional Studies. *Indian journal of dermatology* , 61 (3), 261–264. <https://doi.org/10.4103/0019-5154.182410>
- Smilek, D., Carriere, J. S., & Cheyne, J. A. (2010). Out of mind, out of sight: eye blinking as indicator and embodiment of mind wandering. *Psychological Science*, 21(6), 786–789. <https://doi.org/10.1177/0956797610368063>
- Tarrasch, R. (2018). The effects of mindfulness practice on attentional functions among primary school children. *Journal of Child and Family Studies*, 27(8), 2632–2642. <https://doi.org/10.1007/s10826-018-1073-9>
- Thierry, K., Bryant, H. L., Nobles, S. S., & Norris, K. S. (2016) Two-year impact of a mindfulness-based program on preschoolers’ self-regulation and academic performance, *Early Education and Development*, 27(6), 805–821. <https://doi.org/10.1080/10409289.2016.1141616>
- Wilson M. (2002). Six views of embodied cognition. *Psychonomic bulletin & review*, 9(4), 625–636. <https://doi.org/10.3758/bf03196322>
- Zeidan, F., Johnson, S. K., Diamond, B. J., David, Z., & Goolkasian, P. (2010). Mindfulness meditation improves cognition: evidence of brief mental training. *Consciousness and cognition*, 19(2), 597–605. <https://doi.org/10.1016/j.concog.2010.03.014>



Appendices

A: Intervention Protocol Research Tool

Location: Classroom A: Bookcentre

Transition: free exploration play to mindfulness session	<ul style="list-style-type: none">• Children instructed to tidy up before meeting in the intervention location• Given the option to sit on the carpet, couch, chair prior to starting intervention
Question: <i>How are you feeling today?</i>	<ul style="list-style-type: none">• Prompted by early childhood educator leading mindfulness session• Feelings chart used to assist children in responses• Option to answer given to each child
Access to Fidget Toys	<ul style="list-style-type: none">• Option to choose as many fidget toys as desired given to each child
Mindfulness Video Exercise	<ul style="list-style-type: none">• “Mindfulness and Calming Breathing Technique” video (2 minutes and 40 seconds)• Calming toys still available for children until completion of video
Question: <i>How are you feeling now?</i>	<ul style="list-style-type: none">• Prompted by early childhood educator leading mindfulness session• Feelings chart used to assist children in their responses



B: ABC Research Tool (Intervention Classroom A)

Date:

Observation Day:

Start Time:

End Time:

Research Assistant Initials:

Researchers Research Tool

Participation of children		<p>Number of children who have consent? Classroom A: Classroom B:</p> <p>Number of children that have withdrew from research study? Classroom A? Classroom B?</p>
Before mindfulness session (While playing)	Observations	Comments
	Did a child(ren) engage in a conflict?	Yes or No
	<p>If yes, document on an ABC (antecedent, behaviour, consequences) chart</p> <p>Antecedent: What happened right before the behaviour that may have triggered the behaviour.</p> <p>Behaviour: what the behaviour looked like.</p>	



Before mindful ness session (While playing)	Observations	Comments				
	Did a child(ren) engage in a conflict?	Yes or No				
	Consequences: what happened after the behaviour/result of the behaviour. Please refer below for examples of A, B&C	Use ABC Chart				
		Date/ Initials Setting	Antecedent Description of the environ ment and what occurre d prior to the behavior	Behavior What the child did or said and how long the behavior lasted	Consequence What the responder did immediate ly following the behavior or how the environme nt changed	Child's response Upon receiving the consequenc e, how did the child respond?



<p>During mindfulness session</p>	<p>How are you feeling?</p> <p>Verbal responses?</p> <p>How many children used the feelings chart?</p> <p>How many children chose not to use feelings chart?</p> <p>How many children didn't respond to feelings question?</p>	<p>Indicate which feeling child chooses i.e., happy, tired, angry, worried</p> <p>Write down the verbal responses here:</p> <p>1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16</p> <p>1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16</p> <p>1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16</p> <p>1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16</p>
	<p>How many children participated in the mindfulness practice video with a fidget toy?</p>	<p>1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16</p>



During mindfulness session	Children have access to 'calming toys' in the book centre, how many children took a fidget toy while participating in the video?	How many children took a fidget toy and engaged by following the video? How many children took a fidget toy and did not engage in following the video?
	Ways of participation	How many children sat on the chair while following the video? How many children sat on the floor while following the video? How many children were laying down while following the video?
	How are you feeling? Verbal responses? How many children used the feelings chart? How many children chose not to use feelings chart?	Indicate which feeling child chooses I.e., happy, tired, angry, worried Write down the verbal responses here: 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16



During mindfulness session	How many children didn't respond to feelings question?	1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16
	How was transitioning from the classroom to the cubby?	Smooth (add observations) Challenging (add observations)
	How are you feeling? Verbal responses? How many children used the feelings chart? How many children chose not to use feelings chart?	Indicate which feeling child chooses i.e., happy, tired, angry, worried Write down the verbal responses here: 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16



	How was transitioning from the classroom to the cubby?	Smooth (add observations) Challenging (add observations)
	How many children continued the conversation in the cubby area about mindfulness?	Write responses of children here

Child Name:

Date:

Location/Setting:

Time:



Antecedent What was happening before the behaviour occurred?	Behaviour	Consequences What happened after?
<ul style="list-style-type: none">• Given direction/task/activity• Asked to wait• New activity• Difficult activity• Preferred activity interrupted• Activity/item denied (told “no”)• Loud, noisy environment• Given assistance/correction• Transition time• Attention not given when wanted• Left alone (no attention)• Left alone (no appropriate activity)• Other: _____	<ul style="list-style-type: none">• Refusing to follow directions• Crying• Screaming/ yelling• Scratching• Biting• Spitting• Kicking• Flopping• Running away/bolting• Hitting self• Hitting others• Flopping body onto ground• Making body limp (low tone)• Other: _____	<ul style="list-style-type: none">• Verbal redirection• Physical assistance/prompt• Ignored problem behaviour• Used proximity control• Removed from activity• Given another task/activity• Redirected• Left alone• Calming/soothing (verbal/physical)• Other:_____



C: ABC Research Tool

Non-Controlled Classroom B

Date: 2023

Classroom: B

Time IN:

Time OUT:

Initials:

Transitions/Time/ Antecedent Description of the environment and what occurred before the behaviour	Behaviour What the child did or said and how long the behaviour lasted	Consequence/ Child's Response What the educator did immediately after the behaviour. How did the child respond upon receiving the consequence?