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What's in a Dog? Children Learn and Apply Mindfulness Similarly With and Without a Dog

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Offering early interventions to address mental health disorders in school settings may minimize long-term consequences and increase accessibility for a non-clinical sample. The aim of this study was to qualitatively explore children's experiences of learning mindfulness in school, with and without a dog. Forty-four primary school students aged 8 to 12 years were cluster randomised into one of two conditions: Mindfulness Only (n = 18) or Dog Assisted Mindfulness (n = 26) and participated in an in-school 20-minute guided mindfulness session once a week for 6 weeks. Thematic content analysis revealed that both groups experienced *positive emotions* and feelings of *relaxion or calm* during and after the sessions. *Dog related activity* was the most frequently noted favorite aspect of the sessions for the dog-assisted group, and participants from both groups favoured *mindfulness activity*, *quiet and stillness*, and *breathing* at approximately equal frequencies. Students also experienced *increased attention and mindfulness*, *quiet or stillness* and *increased agency of own feelings*, with both groups commonly using mindfulness techniques outside of sessions to aid the onset of sleep and for emotion regulation. Overall, the participants in both intervention groups shared similar positive experiences, learnings, and applications, suggesting that learning mindfulness with and without a dog may have similar benefits.

Keywords: Dog, Mindfulness, AAI, School, Children.

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Australian adolescents have identified mental health as one of their top three important issues, along with coping with stress and school or study problems (Carlisle et al., 2019). Further, one third of children aged 6 to 16 years reporting that they were usually not happy and one in five that they were worried most of the time, with "worry" increasing steadily with age (Blumer, 2015). Lawrence et al. (2015) found that one in seven Australian children aged 4 to 17 have a mental health disorder, with anxiety and major depressive disorder two of the three most common. These disorders are often comorbid and if left untreated tend to persist into adolescence and have been shown to be strong indicators of future psychiatric illness in adulthood (Australian Bureau of Statistics [ABS], 2008; Essau, 2003; Merikangas et al., 2010). Those who suffer from serious mental illness are reported to have poorer educational outcomes and higher rates of unemployment, homelessness and general physical ill-health, when compared with the general population (Morgan et al., 2011). To reduce these negative impacts, it is imperative to find effective and implementable interventions that will address childhood mental health issues.

One proposed approach to early intervention of mental health problems in children is mindfulness, a practice that involves deliberately bringing awareness to the present moment, paying attention to what is happening inside the body as well as in the outside world, without making any judgements on the experience (Kabat-Zinn, 1994). Originating in Eastern meditation practice, mindfulness was brought into mainstream secular practice partly by Kabat-Zinn's Mindfulness-Based Stress Reduction (MBSR) program, an 8-week stress reduction program focused on intensive mindfulness training, first used in 1979. Mindfulness practice is believed to reduce stress and anxiety by interrupting the mental process of ruminating on the cause and consequences of the stress-triggering event as well as by changing the individual's relationship to the event itself. Indeed, higher symptoms of anxiety and depression have been found to correlate with lower mindfulness levels (Cash & Whittingham, 2010; Soysa & Wilcomb, 2013). Meta-analytic studies support MBSR in improving the mental health, particularly stress, anxiety and symptoms of depression in clinical and non-clinical children and adolescents (Kallapiran et al., 2015) and in non-clinical populations of adults (Khoury et al., 2015).

Mindfulness in Educational Settings

Schools can be a convenient and safe environment to offer MBSR programs to students. Indeed, MBSR programs run in schools have been shown to be beneficial not only for anxiety, stress, and depression symptomology, but for enhanced wellbeing and academic attainment in adolescents (Bennett & Dorjee 2016; Gouda et al., 2016; Kang et al., 2018; Kuyken et al., 2013). Similar benefits have also been observed in university students (e.g., Rojiani et al., 2017). Although mindfulness research in children is less abundant, Hooker and Fodor (2008) suggest that children can reap the same benefits of mindfulness by adapting the practice to more child-friendly activities (i.e., using simpler language and shorter activities) and introducing it to everyday activities that children are already engaging with (e.g., brushing one's teeth). Further, researchers indicate that introducing mindfulness practice early in life is more powerful due to the increased "plasticity" of the brain during this period (Lyons & DeLange, 2016).

The "Mindful Schools" (mindfulschools.org) program was founded in 2007 in the USA, with the vision of delivering mindfulness sessions in the classroom. The program is currently being used in over 100 countries, including Australia, and has reached an estimated 3 million children worldwide (mindfulschools.org). Two studies have shown that the "Mindful Schools" program can have positive impacts on children's symptoms

of depression, reaction time and teacher-rated skills (Liehr & Diaz, 2010; Biegel & Brown, 2010). However, several studies have not been able to demonstrate any statistically significant increases in mindfulness, attention and mood scores over time (Fernando, 2013; Kielty et al., 2017; Smith et al., 2012). Despite these null findings, feedback from students and teachers revealed that they rated the programs very positively, with respondents reporting that, for example, they would continue using mindful breathing (92%) or that they had gained personal benefit from the program (92%) (Fernando, 2013; Smith et al., 2012). In addition, teacher observations of student behavior suggest improved focus and attention, reduced stress, as well as increased classroom participation and respect for others (Black & Fernando, 2014; Rix & Bernay, 2014). Hence, taken together findings suggest that mindfulness practice has the potential to make schools more enjoyable and productive environment by adjusting students' psychological conditions in positive ways. These findings also speak to the importance of considering qualitative and ethnographic findings in mindfulness research for gathering information that could be missed when relying only on quantitative measures.

Dog-Assisted Mindfulness

Dog owners have reported enhanced awareness and mindfulness through interactions with their dog (Garcia, 2020). It has recently been shown that using pet dogs as an object of focus during mindfulness meditation practices evokes similar positive experiences for dog owners as interacting with their pet dog in a mindful way, these include: enhanced owner-dog connection, feelings of relaxation, happiness and engagement (Oliva & Green, 2021). This is also supported by Shearer et al. (2016) who revealed that similar reductions in state anxiety and depression levels can be achieved from both a mindfulness intervention and a dog interaction intervention, as compared to a control group. Furthermore, Henry and Crowley (2015) also investigated the benefit of including a dog in a mindfulness intervention, and while no significant differences were observed between a MBSR only group and a dog assisted MBSR combined group, both groups reported increased mindfulness skills and decreased anxiety. Additionally, the dog assisted MBSR group reported higher ratings of therapist efficacy, recommendation of treatment to others, and participation in future treatment, than the mindfulness only group. With only a small body of work and inconsistency in results to date, further research is needed to investigate whether the assistance of a dog has any impact on teaching mindfulness techniques and, ultimately, the associated mental health outcomes.

The Present Study

The aim of the current study was to understand students' qualitative experiences of two variations of in-school mindfulness interventions to determine how children learn and apply mindfulness in a school setting, and whether this differs with the assistance of a dog. To address these questions, two separate groups of students engaged in a 6 week, 20 minute mindfulness intervention delivered once per week, one in the presence of a dog (henceforth referred to as Dog-Assisted Mindfulness (DAM)), and the other without a dog (henceforth referred to as Mindfulness Only (MO)).

Method

Participants

A total of 44 students enrolled in grades three (n = 12), four (n = 11), five (n = 13) and six (n = 8) from a Victorian government primary school took part following the return of parental/guardian consent forms and informed assent after an explanatory statement was read aloud to them in class. Ages ranged between 8 and 12 years (M = 9.5 years, SD = 1.2 years) and gender distribution was 57% male and 43% female. Ethical approval was

granted by the Monash University Human and Animal (MARP/2018/020) Research Ethics Committees. Approval to conduct research in a Victorian government school was received from the Department of Education and Training (2017_003594).

Participants were cluster randomised into one of two conditions based on the class they were in, which was one of two multi-grade three and four classes, and two multi-grade five and six classes. Children were pre-allocated into their classes by the school via a distribution of social compatibility, behaviour, academic achievement, friends, and gender. As classes had already been balanced according to a series of individual factors it was decided to run the intervention groups according to class allocation as this was logistically easier for the school and was unlikely to result in group allocation bias. This resulted in the following groups: DAM group (n = 26) and MO group (n= 18). The age of participants in the DAM group ranged from 8 – 12 years (M = 9.7, SD = 1.2) and gender distribution was 65% male and 35% female. The MO group participants ages ranged from 8 – 11 years (M = 9.3, SD = 1.1) and gender distribution was 44% male and 56% female. The majority of participants in both groups did not have a pet dog, with ownership rates of 27% in the DAM group and 28% in the MO group. Most participants indicated that they liked dogs "very much", including 88% of the DAM group and 67% of the MO group.

Procedure

Data were collected between 21st May, 2018 and 29th June, 2018. Sessions ran once per week for six consecutive weeks, which ran on separate days depending on the intervention (i.e., MO or DAM). Students who agreed to participate were asked to complete an assent form and demographic data form taking approximately 10 minutes to complete. A description of each session for the MO and DAM groups can be seen in Table 1. These approximate 20-minute sessions were held by the researcher (JN) in an allocated classroom on school grounds under the supervision of a teacher who was responsible for escorting the students to and from class.

Following the completion of the final session both groups were invited to provide feedback on the sessions in private with the researcher (JN). Interviews took approximately two minutes per participant and responses were recorded by JN.

Table 1

Six Week Session Activity Description for MO and DAM Groups

Week	MO group	DAM group
Week 1 Mindful Bodies and Listening	Mindfulness introduction followed by practicing turning "mindful bodies" on (staying still) and off (moving around freely). Students were instructed to get into mindful bodies with their eyes closed while the instructor rang the "singing bowl". The instructor asked participants to indicate when the sound of the bowl was no longer heard. This was followed by listening to sounds in the environment, a discussion of what was heard, and instances when they could use mindful bodies and listening e.g., during a conversation.	Brief dog-safety discussion*, followed by the same "Mindful Bodies and Listening" session, with the researcher using the dog's behavior to demonstrate stillness and listening. The researcher instructed the therapy dog to position into a "drop" prior to and during the brief mindful bodies activity as an example of a still and quiet body. Students were also directed to the movement of the dog's ears with the sound of the singing bowl to demonstrate listening prior to closing their eyes and listening to sounds.

	Students were advised that each session would begin and conclude with mindful bodies whilst the researcher rang the singing bowl to practice being in the present moment.	
Week 2: Mindfulness of Breathing	As students got into mindful bodies the researcher rang the singing bowl to indicate the start of the session. Deep breathing practice was followed by normal breathing with eyes closed and hands placed on the stomach. The researcher and students discussed where the breath was most felt e.g., nose, chest, belly and how mindful breathing can be applied daily when our mind is distracted. Mindful bodies and singing bowl concluded the session.	Brief dog-safety discussion*, followed by the same "Mindfulness of Breathing" session. The therapy dog was instructed to lay on its side and participants were directed to pay attention to the movement of the dog's stomach rising and falling as it breathed. Each willing participant was invited to spend some time with their hand on the dog's stomach, matching its breathing to theirs before being guided to focus on their own breathing.
Week 3 Kind and Caring on the Playground	After mindful bodies and singing bowl, the researcher encouraged students to notice feelings that arose from two fictional scenarios where they/others are treated badly or with kindness and group discussions followed to explore feelings associated with the scenarios. Mindful breathing was used to try work through these emotions. The group also discussed whether any differences were observed before and after the mindful breaths. Mindful bodies and singing bowl concluded the session.	Brief dog-safety discussion*, followed by the same "Kind and Caring on the Playground" session. Following two playground scenarios, participants were guided to use mindful breaths to work through bodily sensations and feelings that may have arisen. As per the previous week, participants were given the opportunity to match their breathing with the dog's to assist with focusing back on the breath.
Week 4 Body Awareness	Following the singing bowl activity, students were encouraged to remain in their mindful bodies and bring attention to their feet e.g., temperature, movement, sensations. The researcher guided students through a body scan where they were able to shift their focus towards different parts of the body whilst in a sitting or lying position. The group discussed how they felt and if there were any differences noted between the left and right side of the body. Mindful bodies and singing bowl concluded the session.	Brief dog-safety discussion*, followed by the same "Body Awareness" session. The researcher instructed the therapy dog to stay still in a standing position and used their hands and voice to touch and identify parts of the dog's body to demonstrate what a body scan activity may sound like, and the parts of the body that attention will be guided towards.
Week 5 Thoughts	After the mindful bodies and singing bowl activity, the researcher and students discussed how their minds can either be in the present moment, or move to past or future events. This was followed by a mindful bodies and breathing activity where students were asked to notice their mind wandering to the past or future by saying phrases in their heads to label the nature of their thoughts e.g., "thinking", "worrying" etc. The nature of thoughts and why it is important to be mindful of them was discussed e.g., letting go more easily,	Brief dog-safety discussion*, followed by the same "Thoughts" session. The researcher discussed the nature of thoughts which can wander to the past or the future to be like that of a puppy, who needs to be gently guided back when it runs away, just like we sometimes need to be guided back to the present moment. Each participant had the opportunity to move themselves around the dog, for example, stand in front of the dog to represent the present moment or stand to the left or right side of the dog to represent past or future events. The aim

	dealing with them, bringing focus back on task at hand such as listening to teacher. Mindful bodies and singing bowl concluded the session.	was to notice where their mind was focused before being guided to pay attention to their breath.
Week 6 Mindful Seeing	Students were guided to remain in their mindful bodies following the singing bowl activity and asked to focus their eyes on the floor in front of them followed by carefully scanning the room. The group discussed things that they had not noticed in the room prior to the activity. Mindful bodies and singing bowl concluded session.	Brief dog-safety discussion*, followed by the same "Mindful Seeing" session. The researcher guided participants to focus their eyes on the dog, who was either eating, playing or resting, by visually scanning all aspects of the dog before being directed to notice their environment.

Note: all sessions were approximately 20 minutes in length.

*Dog safety discussion: dog body language communication was discussed with students. Participants were informed that the dog would remain close to the handler at all times and that if the dog's body language indicated that it was under distress, she would be placed on her mat to allow uninterrupted rest, or removed from the room if necessary. Participants were able to identify when the noise in the room was too loud by observing the dogs ears starting to slightly point backwards on numerous occasions and responded by reducing noise, therefore there were no instances where the dog was placed on the mat or removed from the situation. Overall, the dog appeared content and relaxed in the sessions and regularly interacted with the students.

Measures

Demographic Data. Demographic data questions included: age, gender, year level, pet ownership, and the degree to which they liked dogs, which was rated on a 5-point scale (1 = *not at all* to 5 = *very much*).

Mindful Schools (MS). MS (www.mindfulschools.org) was established in 2007 by Grossman et al. Mindful Schools provides educators with training to develop personal mindfulness practice and teach mindfulness techniques to students aged between five and 17 years. The student curriculum uses mindfulness techniques based on Kabat-Zinn's MBSR (1979) practices with language and exercises adapted to be developmentally appropriate. Mindful Schools content is designed to be facilitated by graduates of the training program. The first author of this paper who facilitated the sessions completed the six-week online MS "Mindful Educator Essentials" course, and an eight-week MBSR course, prior to facilitating these sessions. This study used the MS K-5 curriculum (Mindful Schools, 2014) targeted to children aged five to 12 years. Six out of the 16 core classes from the curriculum were selected for the study: mindful bodies and listening, mindfulness of breathing, heartfulness - kind and caring on the playground, body awareness, thoughts and mindful seeing. These specific classes were chosen because they aim to provide foundational mindfulness skills suitable for beginners. Permission was received from MS to use the curriculum to conduct this research.

Dog and Handler. A tan coloured, mixed-breed rescue dog (female, three years old) named Chachka, was certified by Lead the Way (leadthewayinstitute.com.au) as a Therapy Dog and Handler Team with the first author of this paper in December 2016. The therapy dog and handler had two years' experience working together delivering animal assisted education group programs in primary and secondary schools as well as working individually with children on the autism spectrum at the time the intervention was delivered. The therapy dog had also worked alongside the handler in a community

mental health setting providing companionship, comfort and motivation to exercise for adult residents.

Qualitative Questions. Feedback on the intervention was obtained from responses to seven structured interview questions, including: "Did you look forward to the mindfulness sessions?", "How did you feel *during* the mindfulness sessions?", "How did you feel *after* the sessions compared to how you feel on any other day?", "What was your favourite part about the mindfulness sessions?", "How could the mindfulness sessions be improved?", "What did you learn in the mindfulness sessions?", "Have you tried using the mindfulness techniques that you learned? Examples?". Participant responses were documented on an audio recording device and interviews were transcribed by the first author of the paper.

In order to reduce research bias, all qualitative responses were independently analysed by the authors of the paper (JN and JLO) to identify themes in participant responses to each of the questions. This was done separately for each group. Agreement of theme names and definitions was achieved through discussion among the two researchers post coding. A content analysis was then conducted to compare frequency of theme endorsement across the two groups. Participants could endorse more than one theme if their responses were made up of more than one idea, and theme endorsement was calculated as the number of participants who endorsed a theme divided by the total number of participants. Themes were retained when there was 10% participant endorsement in one or both of the groups.

Results

Overall, sessions were well received by students, with 91% of the DAM group and 88% of the MO group affirming that they positively anticipated the sessions, including comments such as *"Yeah I always looked forward to spending time with Chachka and doing the sessions"* and *"Yes it was really fun"*. Attendance rates across the 6-week intervention were 89% for the DAM group and 91% for the MO group. A total of 40 recorded interviews (average of 2-3 minutes per participant) were transcribed verbatim, 23 from the DAM group and 17 from the MO group. Themes which emerged from the interview questions were used to understand the participants' subjective experience of learning mindfulness with and without a dog.

Identified themes, example quotations and endorsement frequencies are presented separately for each question in Tables 2 to 7. Participants could endorse multiple themes in their responses and this is reflected in final percentages.

Overall, the sessions were well received in both cohorts with *Positive Emotions* being the most commonly endorsed theme, consisting of responses including words such as "good" and "happy", followed by the theme *Relaxed or Calm*. Most participants did not elaborate on the reason why they felt positive emotions, however, in the DAM group, four were explicit that this was induced by the presence of the dog e.g. *"I feeled happy because I got to spend time with Chachka"*. In addition to the themes presented in Table 2, three DAM participants and two MO participants provided unique responses. The DAM responses included *"nervous", "alright"* and "*okay"*. The MO group responses indicated confusion and boredom.

Table 2
Question 1. How did you feel during the mindfulness sessions?

Theme	Example Quotes	Frequency DAM Group (n = 23)	Frequency MO Group (n = 17)
Positive Emotions	"I felt happy that I got to play with Chachka and we got to relax" "Excellent, really happy"	15 (65%)	11 (65%)
Relaxed or Calm	"Calmer, safer" "Relaxed, calm"	6 (26%)	6 (35%)

Both groups reported feeling relaxed or calm after the sessions at similar rates. Positive emotions following sessions were also experienced by both groups, however this was more common in the MO group. This may be partially explained by the fact that a small percentage of participants in the DAM group experienced negative emotions due to having to leave the dog at the end of the session that may have eclipsed the positive experience they felt during the sessions. For example, two participants responded with *"I felt sad, no dog", "Sad coz leaving Chachka".* Additionally, one participant experienced feeling "nervous" and another experienced feeling "bored". Similar to question 1, in the DAM group three participants who expressed positive emotions were explicit that these were induced by the therapy dog, with responses including *"Happy because I was with Chachka", "Glad, (school name) was special coz like they let us have dogs"* and *"Really happy that I got to spend time with Chachka".* In addition to the themes presented in Table 3, five DAM participants and three MO participants provided unique responses. The DAM responses included *"umm I felt like less tired and other days I would be like more tired", "cool", "same", "different"* and *"okay"* and the MO group responses included *"didn't start feeling good", "move my body"* and *" normal".*

Table 3
Question 2. How did you feel after the sessions compared to how you feel on any other day?

Theme	Example Quotes	Frequency DAM Group (n = 23)	Frequency MO Group (n = 17)
Positive Emotions	"Little more happier" "Great"	10 (43%)	12 (71%)
Relaxed or Calm	"Very calm" "More calm"	5 (22%)	4 (24%)
Negative Emotions	"Nervous" "I felt sad no dog"	4 (17%)	-

The four most commonly identified favourite aspects of the sessions included *Mindfulness Activity, Quiet and Stillness, Breathing* and *Singing Bowl*, with similar response rates for each activity across the two groups. One additional theme, *Dog Activity,* was evident in the DAM group, with dog related activities as the highest endorsed preferred component of the sessions. Figures 1 and 2 include images of the DAM group participants interacting with the therapy dog during mindfulness activities. In addition to the themes presented in Table 4, five DAM participants and four MO participants provided unique responses. Two DAM participants were unable to identify any favourite parts of the sessions, while other responses included *"learning", colouring/colouring in".* The MO group responses included "*nothing", "talk about like how we feel", "spend time with our friends" and "I like all of the sessions, it's really fun".*

Table 4

Question 3. What was your favourite part about the mindfulness sessions?

Theme	Example Quotes	Frequency DAM Group (n = 23)	Frequency MO Group (n = 17)
Dog Activity	"Spending time with Chachka"	10 (43%)	-
Mindfulness Activity	"Mindful listening" "Body scan and mindful listening"	7 (30%)	5 (29%)
Quiet and Stillness	"Sit still" "That you can be relaxed and chill"	5 (22%)	4 (24%)
Breathing	"My favourite part was how we could just breath" "Breathing"	4 (17%)	4 (24%)
Singing Bowl	"Hitting the bell" "Ringing the bell"	1 (4%)	2 (12%)

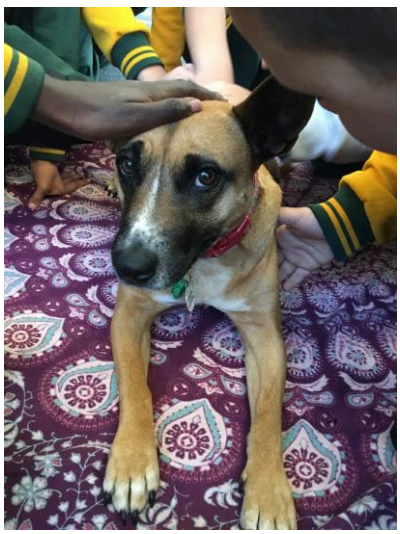

Figure 1

Therapy Dog with Students during Mindful Breathing

Note. Students practicing mindful breathing by placing their hand on the therapy dog before being guided to focus on their own breathing.

Figure 2
Therapy Dog Sitting on a Student during Mindful Seeing
Note. Therapy dog voluntarily sits on a student's lap during a mindful seeing exercise.

The majority of participants from both groups did not offer any suggestions for improving the sessions, although this frequency was slightly higher in the DAM group than in the MO group. Both the DAM and MO groups recommended more animal activity in sessions at similar rates, with the MO group suggesting that a dog or other animal be included in the mindfulness sessions and the DAM group suggesting that more therapy dog activity would improve their experience of the sessions. Both groups also suggested that better behaviour from others could improve sessions and this was proposed more commonly in the MO group. In addition to the themes presented in Table 5, five DAM participants and one MO participant provided unique responses. The DAM group responses included *"making it more funner, TV", bit longer", "having games", "doing it in other places",* and *"by practicing"* and the MO group response included *"move our body a little more".*

Table 5
Question 4. How could the mindfulness sessions be improved?

Theme	Example Quotes	Frequency DAM Group (n = 23)	Frequency MO Group (n = 17)
No Suggestion	"To be honest, nothing" "Don't know, pretty good the way it is"	10 (43%)	5 (29%)
More Animal Activity	"More activities with Chachka" "Bringing the dog, I wanna see the dog"	6 (26%)	6 (35%)
Improved Behaviour of Others	"If everybody was more responsible" "People not screaming and always chatting every time"	2 (9%)	5 (29%)

The DAM and MO groups shared three similar learnings with some differences in frequencies. The two most common learnings, *Increased Attention or Mindfulness* and *Quiet or Stillness* was experienced at similar frequencies across groups. The *Increased Agency of Own Feelings* theme was somewhat more common in the MO group. An additional theme in the DAM group included *Dog Related Learnings*. In addition to the themes presented in Table 6, four DAM participants and one MO participant provided unique responses. The DAM group responses included two dog related learning (e.g. *"mindful seeing, when Chachka was eating food"), "don't wanna answer", "I dunno"* and *"absolutely nothing" and the* MO group response was *"happy things, good things"*.

Table 6
Question 6. What did you learn in the mindfulness sessions?

Theme	Example Quotes	Frequency DAM Group (n = 23)	Frequency MO Group (n = 17)
Increased Attention or Mindfulness	"Focusing on you instead of focusing on everyone else can really help" "Focus on your thoughts… I used to focus on my umm what's it called…past"	14 (61%)	11 (65%)
Quiet or Stillness	"Mindfulness is a quiet peace" "Stay still"	5 (22%)	4 (24%)
Increased Agency of Own Feelings	"how you control it, your body" "Technically what to do when you're stressed or just wanna relax, calm down"	2 (9%)	4 (24%)

Mindful breathing was the most commonly practiced mindfulness technique used to aid the onset of sleep for the DAM group and MO group with similar frequencies evident between groups. Participants from both groups also reported using mindfulness for emotional regulation, again with similar frequencies between groups. Differences between the groups included the application of mindfulness techniques at school in the MO group, a theme which was not evident in the DAM group. The DAM group had one additional theme of using mindfulness techniques in nature. In addition to the themes presented in Table 7, seven DAM participants and two MO participants provided unique responses. The DAM group responses included *"not really", "no", "Yeah", "Yes", "I always used it…mindful breathing…while I was in my bedroom I always do mindful breathing", "mindful listening as well, yeah, probably nearly every day"* and *"yes, tried it at home"*. Unique MO group responses included *"at home, mindful bodies",* and *"you taught us a lot of stuff and now I can use all of those strategies like when I'm at different places"*.

Table 7

Question 7. Have you tried using the mindfulness techniques that you learned? Examples?

Theme	Example Quotes	Frequency DAM Group (n = 23)	Frequency MO Group (n = 17)
Used for Sleep	"I had trouble sleeping so then like I laid there, umm, and then I kept on breathing and then suddenly I fell asleep" "I don't really sleep when I get in my bed, so then I do mindful breathing and it helps me sleep"	12 (52%)	11 (65%)
Used for Emotion Regulation	"I was feeling upset, so I was looking at my hands and my stomach and I thought what Jovana said I'll practice. So I put my hand on my belly and I started breathing and I forget it as well" "One time I was stressing a lot and so I just closed my eyes and started breathing in and out slowly. Tried to like think about what we learned"	4 (17%)	4 (24%)
Used at School	"When I did a test I didn't know like the answer, like 100 plus 100, so I take a deep breath and I knew it was 200"	-	3 (18%)
Used in Nature	"Body scan in the water, in the swimming pool. I was just floating and then I was thinking of my feet how it was feeling and then I was going up to my hands how it was feeling and yeah like the body how it was cold or warm"	4 (17%)	-

Discussion

The purpose of this study was to explore participants' experience of learning mindfulness in a school setting, with and without a dog, by identifying common and unique themes among the MO and DAM groups. Qualitative insights into the students' experiences of the mindfulness sessions revealed that the MO and DAM groups shared similar experiences with some differences in frequencies and themes. These findings will now be further examined in comparison to past research and theories.

A large percentage of participants from both groups reported that they looked forward to attending the sessions, 91% for the DAM group and 88% for the MO group. Supporting these positive reports, there were high rates of attendance across the 6 weeks, 89% for the DAM group and 91% for the MO, with the most absence recorded in the final week of term which happened to coincide with the final week of the intervention. It is possible that apart from genuinely anticipating the sessions other factors may have influenced students' choice to attend the sessions as well, for example, time away from regular class.

The most frequently reported feelings during sessions were *Positive Emotions* (65% DAM group, 65% MO group) followed by *Relaxed or Calm* (26% DAM group, 35% MO group), with similar response rates across the two groups, as presented in Table 2. Although most participants did not specify why they felt positive emotions, four DAM group participants reported that these emotions were induced by the presence of the dog which aligns with previous research on dogs being associated with improved mood (Grajfoner et al., 2017). It is unclear whether the remainder of the DAM group were feeling positive emotions due to the mindfulness practice (Nadler et al., 2017), the dog (Marcus et al., 2012), or the combined effect of practicing mindfulness and interacting with a dog, as participants did not elaborate and both have been associated with positive emotions. Feelings of relaxation and calm is consistent with findings from children aged 7 to 10 after 10 minutes of mindfulness practice (Nadler et al., 2017), but is also a reported sensation following dog interactions, possibly associated with a neurophysiological response involving the release of oxytocin (Papotto & Oliva, 2019; Odendaal & Meintjes, 2003).

The same two themes, *Positive Emotions* and *Relaxed or Calm* were experienced across groups following the completion of the sessions (refer to Table 3), however, positive emotions were experienced more commonly in the MO group (71%) than in the DAM group (43%). This may be partly due to an additional theme, *Negative Emotions,* evident only in the DAM group which saw a small proportion of these respondents' experience sadness due to having to leave the dog, potentially overshadowing the positive experiences had during sessions. Similar reports were made by an elderly cohort following sessions of a "*Must Love Dogs"* program (Papotto & Oliva, 2019). This raises an important potential issue when using therapy dogs and/or when attempting to quantitively measure intervention effects on measures of mood. However, similar to positive emotions experienced during session in the DAM group, three participants stated that positive emotions experienced after the sessions were explicitly induced by having the opportunity to spend time with the therapy dog. This suggests that the cessation of dog interaction might have an opposing or divergent influence of difference people, with some people saddened by the ending of the experience and others happy to have had the experience.

The presence of the dog in the DAM group, did appear to be the "stand out" feature of the sessions (refer to Table 4), with 43% of participants reporting *Dog Activity* as their favourite aspect. However, both groups favoured *Mindfulness Activity* (DAM 30%, MO 29%), *Quiet and Stillness* (DAM 22%, MO 24%), *Breathing* (DAM 17%, MO 24%) and *Singing Bowl* (DAM 4%, MO 12%) at relatively equal rates. As such, in terms of acquiring mindfulness skills, the presence of a dog seems to offer little additive value, apart from that of a novelty aspect. Indeed, while a large minority of participants in both groups did not offer suggestions as to how to improve the sessions (DAM 43%, MO 29%), this was slightly more common in the DAM group. Given that the MO group knew about the presence of the dog in the other group, and given that 35% of this cohort recommended more animal activity to improve their experience in session, this might reflect a "fear of missing out". Interestingly, both the DAM (26%) and MO (35%) groups recommended more animal activity, with the DAM group suggesting more activities with the dog, and the MO group suggesting that a dog or other animal be included in session. The MO group would likely not have suggested this if they had not known of the dog assisted group, however, because participants were randomly allocated following parent and child consent, it was not possible to hide the existence of the groups from each other, and this may have influenced participant responses. The presence of a dog may also be a more

tangible concept for the children to like (or think they would like) about the intervention, than the subtleness of attending to the present moment, and indeed this may have proved challenging in the classroom environment with several students commenting that the sessions could be improved by the improved behaviour of others (29 % MO group, 9% DAM group, refer to Table 5).

One aspect where the presence of a dog may prove valuable in the running of children's mindfulness sessions is in improving their behaviour. Indeed, the researcher regularly observed participants in the DAM group asking others to reduce the volume in the room, worrying that it was too loud for the dog. Students who were disruptive were seen to settle and quiet down relatively quickly after being reminded by others that the dog may be aroused by the noise in the classroom. Therefore, perhaps the dog group was more concerned about problematic behaviour but it was dealt with in a quicker manner due to the presence of the dog and therefore less of a concern when interviewed post intervention. This may partially explain the difference in perceived problem behaviours between groups (refer to Table 5), as children are able to develop empathy and positive social behaviours through interaction with animals (Komorosky & O'Neal, 2015). Nevertheless, the identification of a need for others' behaviour to improve may have impacted on learnings, especially in the early stages of practicing being in the present moment, where it is important for practice to occur in a controlled environment before it can be generalized or applied to other situations (e.g., a noisy classroom) (Thompson & Gauntlett-Gilbert, 2008). This may also explain differences in the application of mindfulness techniques between the two groups, with endorsement from some DAM groups that they applied this in nature but no endorsement for application of mindfulness technique in the classroom, and the reverse being true for the MO group (refer to Table 7).

The two groups shared three similar learnings including *Increased Attention or Mindfulness* (DAM 57%, MO 65%), *Quiet or Stillness* (DAM 22%, MO 24%) and *Increased Agency of Own Feelings* (DAM 9%, MO 24%) (refer to Table 6). Hence, it appears that the dog did not facilitate mindfulness learning any more than the facilitator alone for the MO group, as both groups learned similar techniques. This result is in line with recent findings (Henry & Crowley, 2015) where both the MBSR and dog assisted mindfulness MBSR groups increased mindfulness ability equally following intervention. The only difference was that a small number of children in the DAM group reported learning mindful seeing (13%) while the MO did not. This finding may point to the entertaining nature of practicing this skill in the dog group by carefully observing the animal eating or engaged in play, supporting the notion animals have the potential to help students' learning by engaging, motivating and making the experience fun (Gee et al., 2017).

Perhaps the most important findings are related to the application of mindfulness to everyday life. While the facilitator encouraged participants to practice the activities that they learned during the session, outside of the sessions, it was not possible to ensure that this happened, however, results presented in Table 7, seem to suggest that at least some students were engaging in this. Using mindfulness techniques to aid sleep was evident in the DAM group (52%) and MO group (65%) and these findings are in line with similar research which found that young people that practiced mindfulness reported improvements in sleep (Wootten, 2016). Participants from both groups also reported using mindfulness for emotion regulation, again with similar frequencies between groups (DAM 17%, MO 24%). Differences between the groups included the application of

mindfulness techniques at school in the MO group (18%), and the application of mindfulness techniques in nature in the DAM group (17%).

Strengths, Limitations and Future Directions

Unique to the current study was a qualitative comparison of a sample of non-clinical school children involved in mindfulness with and without a dog. A strength of the current study was that we attempted to mitigate the potential bias of having participants self-allocate into the DAM or MO intervention group (McClelland, 1997), by including participants in the dog group randomly, according to their classroom allocation, which was based on distribution of social compatibility, behaviour, academic achievement, friends and gender and regardless of whether they indicated that they liked or disliked dogs. However, this may have also resulted in a "fear of missing out" for children placed in the MO group.

Using just one dog ensures that each participant has the same experience, eliminating the variability that would come from using multiple animals. However, having the same dog handler and facilitator from every session also conduct post-intervention interviews could have led to participants to give answers that they intended would please the researcher/handler, and not necessarily their honest responses. Additional information could have been collected through interviewing the teachers of the student participants rather than solely subjective first-person data, as was collected in previous studies by Biegel and Brown (2010) and Kielty et al. (2017). There has been no follow up to see if participants continued to use mindfulness techniques in their everyday lives and future longitudinal studies would be additive in this respect. Future studies could also consider the inclusion of quantitative measures of mindfulness, stress, depression, and/or anxiety, to see how these quantitative indicators may change over time.

Conclusion

This study explored children's experiences of learning mindfulness, in the presence and absence of a dog. Individual interviews with participants indicated that for both the MO and DAM groups, the interventions had positive effects with the majority of participants reporting that the intervention made them feel good, calm, and happy. Most students enjoyed the mindfulness-based activities, were able to identify that they gained mindfulness skills and that they applied mindfulness in their everyday lives especially for sleep and emotional regulation. However, as both intervention groups reported similar experiences, there does not seem to be any added benefit of the dog in the mindfulness sessions, despite children suggesting an increase in the dog's presence as an important factor in improving the sessions. However, the dog's absence at the end of the sessions may overshadow these positive benefits for some students. Hence, the presence of the dog seems to have had a limited impact on the ability of students to learn or practice mindfulness techniques, however, the opportunity to interact with a friendly dog appeared to improve children's behaviour in session, provide motivation and pleasure for the students involved in this group, and a desire for the same experience for those who missed out.

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