

Using yoga to enhance behavioral self regulation in kindergarteners

Megan Lane

St. Mary's College of Maryland

Abstract: Kindergarteners in a rural southern Maryland school have shown difficulty with focusing during whole group instruction. This negatively interferes with delivery of curriculum. To address this, a yoga intervention was designed to increase self regulation and decrease problematic behaviors. Results show that two weeks of yoga instruction for 10 minutes a day significantly increased self regulation. Behavioral results were mixed, with behaviors during reading instruction getting significantly worse and behaviors during math instruction getting significantly better. Future research with stronger observational methodology should be conducted to further validate the results of this study. Teachers can use yoga in their classrooms to increase self regulation in students and potentially decrease occurrences of problem behaviors.

Introduction and Justification

Self regulation is the act of being aware of one's physical, mental, or emotional state and making conscious efforts to control that state and cope with it appropriately (Compagnoni & Losenno, 2020; Hutchinson et al., 2021). In my experience as a student intern in a kindergarten class, students struggle to stay engaged for longer than a few minutes. Several students experience consistent outbursts, and even the quietest of the students have moments where they seem to lose control of their actions. In my observation, some of the students do not seem to be aware that they are acting out, verbalizing, or losing focus. Since the curriculum in our classroom requires a significant amount of whole group instruction, the students would benefit greatly from acquiring self regulation skills, as the skills will enable them to remain engaged in their learning. This study aims to explore the concept of self regulation and determine whether an intervention increasing self regulation will be beneficial to students. Further, this study measures the effectiveness of a yoga intervention in raising self regulation and decreasing occurrences of problematic behaviors.

Literature Review

Self Regulation

Self regulation can be defined as deliberately acting a certain way based on or in response to an emotion or environmental cue (Compagnoni & Losenno, 2020; Hutchinson et al., 2021). One model proposes that overall self regulation consists of socially responsible self regulation, self regulated learning, and emotional regulation (Hutchinson et al., 2021). Self regulation is a component of executive function, which is a cognitive tool that assists

the development of academic skills (Beery & Beery, 2010 as cited in McClelland & Cameron, 2019). Executive function includes attention, working memory, and inhibitory control, which are all key functions for self regulation (Skibbe et al., 2019).

Children have relatively poor self-concepts and do not have the self-evaluating abilities needed to self regulate independently (Compagnoni & Losenno, 2020). This means that in school, students need their teachers' feedback and guidance to learn how to self-regulate. This is especially important as teachers may have the most valid assessments of a child's abilities due to the fact that they witness the students using self-regulatory strategies in their daily life (Finders et al., 2021). It is crucial for teachers to understand their students' development to best design classroom management and instruction. This way, their students will be set up for success both academically and cognitively.

Self regulation begins to develop during early childhood. The earliest signs of emotional regulation appear at around 6-12 months of age (Hutchinson et al., 2021). Children who attend preschool demonstrate higher levels of self regulation, suggesting that these skills develop as children become socialized (Rimm-Kaufman et al., 2009; Johnson et al., 2022). Five-six year old children are capable of the metacognitive skills required to develop regulatory skills (Hutchinson et al., 2021). As students develop their cognitive skills, they become a unique individual, specifically, they develop their own way of processing information and responding to it. This affects them for the rest of their lives.

Self regulation is an important skill for kindergarteners as it is crucial for long-term development. Self regulation is considered a key predictor of successful adaptation and performance in school (Compagnoni et al., 2019; Hutchinson et al., 2021; Rimm-Kaufman et al., 2009; Skibbe et al., 2019). Stronger self-regulatory abilities are associated with developing a growth mindset and motivational beliefs, thus setting children up for success in their development and learning (Compagnoni et al., 2019). Children with higher self regulation follow similar academic trajectories to those with intermediate or low skills, but consistently score higher on literacy assessments and develop automaticity skills sooner (Skibbe et al., 2019).

There are several ways to promote the development of self regulatory skills. In a study that focused on patterned movement games, such as "Simon says," increased student self regulation was demonstrated by participants (Shiu et al., 2020). Specifically, these games increase attention, working memory, and inhibitory control. This can be explained by the fact that executive functioning develops in conjunction with motor function (McClelland & Cameron, 2019).

Classroom Management

Classroom management has been ever changing throughout history, and has been described as experiencing "dichotomization" due to the differences between educational theory and practice (Caruso, 2022, p. 197). In recent years there has been a push to implement research based strategies into the classroom. Several researchers have explored various types of classroom management approaches and their outcomes. Student-centered strategies focused on social-emotional learning (SEL) have demonstrated the best outcomes for academic, behavioral, social-emotional, and motivational domains of development (Korpershoek et al., 2016). It's important to note that the general consensus of research is that some approach is better than no approach, and typically students benefit

in some capacity from any type of active attempt at classroom management (Owens et al., 2018).

Some of the best strategies for classroom management include movement integration, using proactive approaches, giving behavior specific praise and feedback, creating highly structured and predictable environments (routines), presenting students with frequent opportunities to respond, and providing clear outlines of expectations. (Gage et al., 2015; Moon et al., 2022; Owens et al., 2018; Rimm-Kaufman et al., 2009;). Student problem behavior has a large moderating effect on literacy development, such that students who display more problem behavior also display more struggles with reading later on (Gage et al., 2015). Problem behavior also directly interferes with effectiveness of literacy interventions (Gage et al., 2015). When in classrooms with adequate classroom management, students perceive better outcomes in their education (Korpershoek et al., 2016). Classroom management is an integral part of a student's education, as it allows them to develop the foundational skills of literacy and math.

Self regulation, one of the many cognitive components of behavior, is in its earliest stages of development in the primary grades of elementary school (Rimm-Kaufman et al., 2009). During this time, behavior-specific praise is not only effective for promoting self regulation, but extremely common (Owens et al., 2018). By guiding students through appropriate classroom conduct, teachers are also setting the stage for the development of behavioral self regulation. Students rely on their teachers to teach them what they should and should not do, and begin to self regulate accordingly (Rimm-Kaufman et al., 2009). Thus, it is imperative that teachers practice appropriate classroom management to best support their students' development and academic success.

Yoga

Several studies have found yoga interventions to be effective for strengthening self regulation and cognitive function in children (Rashedi et al., 2021; Sun et al., 2021; Telles et al., 2013). Some of the benefits of yoga include an increase in attention and focusing, facilitation of learning processes, enhancement of body awareness, decreased intrusive thoughts, decreased physiological/emotional arousal, decreased behavioral difficulties, increased emotional and cognitive regulation, improved spatial awareness, and improved executive function (Jarraya et al., 2019; Rashedi et al., 2021; Reid & Razza et al., 2021; Viglas et al., 2018; Sun et al., 2021). These programs can also increase prosocial behavior and promote attributes such as helpfulness, kindness, and likeliness to share, which all contribute to a more positive classroom environment (Viglas et al., 2018). Telles et al. (2013) compared yoga to physical exercise on cognitive outcomes and found that both interventions increased performance on cognitive function and behavioral analog scales. This suggests that physical movement may improve cognitive abilities and the mindfulness aspect of yoga can improve the social-emotional aspects of self-regulation (Jarraya et al., 2019).

Longer duration interventions are typically more effective, perhaps due to the sleeper effect, which states that skills take time to develop (Rashedi et al., 2021; Sun et al., 2021). The results of a meta analysis find that yoga interventions are most effective when they last longer than six weeks (Sun et al., 2021). It is also important to note that these interventions benefit the students who need them most, namely those with attentional and regulatory difficulties (Reid & Razza et al., 2021; Sun et al., 2021).

This study addressed two research questions:

- 1) How does yoga affect self regulation in kindergarten students?
- 2) How does yoga affect behavioral outbursts in kindergarten students?

Methods

Sample / context

Twenty-two Kindergarten students participated in this study. Of these students, 13 were male, and nine were female. Additionally, 12 were Black, eight were White, and one was Hispanic. They are all either five or six years old. They attend a Title 1 elementary school in a rural area of Maryland. No students have IEPs and none are identified as ELLs, though a few students are likely going to be identified for an IEP by the end of the school year. Being that they are kindergarteners, there hasn't been ample time to go through the process of determining special education eligibility. Several students display inappropriate behaviors, with two students having frequent crying episodes and bouts of frustration. Inappropriate behaviors are those that are off-task and detract from the content being presented in class (Gage et al., 2015).

Intervention (for Action Research)

This intervention spanned two school weeks (10 days). Each day, approximately 10 minutes were spent doing yoga with the students. Several yoga poses were taught and rotated throughout the intervention. The poses include: Surya Namaskara (sun salutation), Balasana (child's pose), Padmasana (lotus pose), Vajrasana (diamond pose), Bhujangasana (cobra pose), Tadasana (palm tree pose), Vrikshasana (tree pose), Konasana (angle pose), Ardha Ustrana (half camel pose), Paschimottanasana (back stretch pose), and Singhasana (lion's pose). All students were brought to the carpet and made two lines facing each other. One minute was spent doing a deep-breathing warmup (Pranayama) where students inhaled for five seconds and exhaled for five seconds, while they were instructed to be aware of their body while breathing. Then, eight minutes were spent rotating through roughly five poses each day. Table 2 details which poses were used on which days. The last minute of the intervention was another round of Pranayama. On occasion, students were asked to leave the carpet if they were being excessively disruptive, like making loud noises or large movements out of turn. They were told to return when their bodies felt calm. In the classroom, it is called "taking a break" and students were familiar with this protocol.

Methods and Measures

Self Regulation

Operationally, self regulation can be defined as a cognitive process that combines the following four constructs: working memory, attention, cognitive flexibility, and inhibitory control to enable an individual to monitor their emotions and surroundings, then react accordingly (McClelland & Cameron, 2019; McClelland et al., 2014; Skibbe et al., 2019). To measure self regulation, many researchers use the Head Toes Knees Shoulders (HTKS) task (McClelland et al., 2014). In this task, children are first instructed to respond to a prompt (e.g.,: touch your head). Then, they are instructed to act opposite to the prompt (ex: touch your head, then students touch their toes). The instructions and opposites are given in pairs

to decrease confusion. Pairs may be switched around from one section to the next to increase difficulty (ex: section one pairs head/toes, section two pairs head/shoulders, section three pairs toes/knees). The test items are scored 0 (incorrect), 1 (self-correct), or 2 (correct). A self correction is when a student initially responds to the prompt incorrectly, then does the correct action as their final answer. Higher scores indicate higher self regulation. A Cronbach's alpha (which measures how consistent a measure is) of 0.92 and 0.94 have been found, meaning this test is a reliable measure of self regulation. This task measures all four operational constructs of self regulation as defined above. In a meta-analysis, Sun et al. (2021) concluded that the HTKS task adequately measures the impacts of a yoga and mindfulness intervention. I selected the HTKS task as my measure of self regulation.

Problem behaviors

Problem behaviors include a variety of behaviors that are considered inappropriate for the context in which they occur (Korpershoek et al., 2016; Gage et al., 2015). In this study, a behavior checklist was created to monitor outbursts. The checklist includes the following behaviors as outbursts: moving out of place when expected to sit still, talking out of turn during whole group instruction, talking out of turn during small group instruction, stepping out of line, leaving seat during table time, leaving the carpet during whole group lesson, talking during quiet time, and touching another student. I chose these behaviors to monitor as they commonly disrupt instruction in my class, and I have noticed that students tend to struggle to control these behaviors in particular. All of these behaviors demonstrate a lack of self control, as a student with self control would be aware of the expectations and attempt to meet those expectations (Rimm-Kaufman et al., 2009; Compagnoni et al., 2019; Korpershoek et al., 2016; Owens et al., 2018). If they are not using their working memory or paying attention to their surroundings, these behaviors may occur without them realizing that they are acting out. Authors of one study found that 60 minutes of observation is sufficient to accurately measure disruptive behaviors and 140 minutes to measure off-task behavior (Owens et al., 2018). Since I am looking at both types of behavior, two 90 minute sections of a school day were measured (180 minutes total). On day one of data collection, the math portion of the day was observed, and, on day two, the literacy portion of the day was observed. This also helps combat potential inaccuracies due to student absences.

Data Collection

Before the intervention began, two days were spent observing and charting behavioral outbursts. A behavior chart was developed to identify which behaviors are considered as outbursts. Both my mentor teacher and I completed the observations and charts. The charts were completed while students were at our respective tables during small group rotations. On the first day, the afternoon math small group rotations were observed, and the following day the morning reading small group rotations were observed. Throughout those two days, the HTKS game was played with each student individually. I took each student into the hallway, one at a time, to collect their data. After the 2-week intervention concluded, these data collection procedures were repeated.

Table 1:

Research Questions and Data Sources

	Data source 1	Data source 2
How does yoga affect self regulation in kindergarten students?	Head Toes Knees Shoulders task	Behavior checklist
How does yoga affect problem behavior in kindergarten students?	Behavior checklist	

Data Analysis

Students can score a maximum of 52 points on the HTKS task. Higher scores indicate higher self regulation. Students' composite scores on the pre-intervention test and the post-intervention test were analyzed with a paired samples t-test. Likewise, the composite scores of the behavior charts were compared from before and after the intervention with a paired samples t-test.

Validity Concerns

Inter-rater agreement will be established by providing my mentor teacher an identical copy of the observational checklist with each behavior pointed out to her ahead of time. We will both be collecting data during our own respective small group rotations to ensure no overlap. Potential confounding variables will be noted and addressed, so data will be collected at different times during the day to control for differences in behavior due to time and energy levels. There may be some issues with construct validity as I am not a licensed yoga practitioner so my intervention may not align with interventions previously measured with similar designs. This will be considered during analysis of results.

Results

Table 2:

Results

	Pre	Post	Change	p value	Cohen's d
HTKS	32.52	39.79	+8.4	0.005	0.5
Reading behavior	2.21	4.47	+2.55	0.02	0.64
Math behavior	4.81	2.91	-1.86	0.01	0.47

How does yoga affect self regulation in kindergarten students?

The HTKS was used to measure self regulation in students ($N = 21$). Self regulation was significantly lower before the yoga intervention ($M = 32.52$, $SD = 16.3$) than it was after the intervention ($M = 39.79$, $SD = 12.79$), $t(20) = -3.18$, $p = 0.005$, $d = 0.5$. This means that students were better able to control impulses and make conscious decisions after the intervention compared to before.

How does yoga affect problem behavior in kindergarten students?

Behaviors were measured at two different times during the day. Once in the afternoon, another time the following morning. The data were collected on both of the two days before the intervention, and the two days immediately following the conclusion of the intervention. During reading instruction, students showed significantly fewer problem behaviors before the intervention ($M = 2.21$, $SD = 2.34$) than they did after the intervention ($M = 4.47$, $SD = 4.4$), $t(20) = -2.63$, $p = 0.02$, $d = 0.64$. Meaning, students showed more problem behaviors after the conclusion of the intervention.

Unlike reading, during math instruction, students showed significantly more problem behaviors before the intervention ($M = 4.81$, $SD = 4.3$) than they did after the intervention ($M = 2.9$, $SD = 3.73$), $t(20) = 2.8$, $p = 0.01$, $d = 0.47$. Meaning, problem behaviors decreased after the conclusion of the intervention.

Discussion of Results

The first research question asked how yoga affects self regulation in kindergarten students. Data collected from the HTKS task suggests that the yoga intervention significantly increased self regulation in students. Each student showed improvement in scores, except one who showed no change in either direction. The second research question asked how yoga affects behavioral outbursts in kindergarten students. From before to after the intervention, behavioral outbursts significantly increased during reading time, but

significantly decreased during math time. These mixed results are unexpected, but there are several reasons why this could happen. Math instruction is in the afternoon and is after students return from specials (music, media, art, or physical education depending on the day). They have also already had lunch and recess. In general, energy levels appear to be lower at this point in the day. Students also have a designated play time at the end of the day, which the mentor teacher has established as a motivator for good behavior in the afternoon. Reading instruction is directly between an hour of whole group instruction and lunch, so restlessness runs high at this time of day. Though the behavioral results are mixed, the HTKS task results are strong evidence that suggest that yoga increases self regulation in kindergarten students.

Conclusions and Implications

Open this section by returning to the big problem you laid out back in the intro. Restate the claims you can make in answer to your research questions. Try, for the sake of your readers, not to be too repetitive; figure out how to use this first part of your conclusion to extend rather than restate your findings & interpretations. Be sure the claims you make are tempered by the limitations of your research; don't over-generalize.

Limitations

This study has several limitations. The measure of problem behaviors was not likely a reliable measure. I created the measure based on my observations, as I wanted to see whether specific behaviors increased or decreased after the intervention. However, I had my mentor teacher also complete this measure. In our classroom, there are four small groups that rotate one station at a time. She and I both filled out the same chart during the same time, only with our respective groups, and observations of transitions between groups. In hindsight, I do not believe I was clear enough when explaining what specific behaviors I was looking for. I should have made the criteria much more precise and detailed. After data collection, my mentor teacher told me that she was confused about the criteria and informed me that her scoring may not have been accurate. Had I discussed in greater detail prior, this inter-rater reliability issue could have been prevented. Due to this problem, the data collected to measure behavioral outbursts is not trustworthy and I do not believe meaningful conclusions can be drawn from the data, despite the statistical significance and effect size.

There is potential that the data from the HTKS is also unreliable. The students completed the task before and after the intervention, only two weeks apart. Previous literature suggests a longer duration is needed for any significant changes in self regulation (Owens et al., 2018). Other studies that found significant results had spent longer amounts of time on their interventions, both in duration and time each day. This study had several time constraints. I was only able to implement the intervention for 10 days, or two school weeks. Likewise, due to curriculum requirements, I was unable to take more than 15 minutes to complete the intervention each day- 10 minutes for the actual intervention, and 5 minutes allotted for transition. So, this intervention was shorter than most other effective yoga interventions. I suspect that since the students potentially remembered the HTKS game from the first time they had played it, they may have scored higher due to practice effects and memory of the rules. However, the increase was significant and this finding does align with the previous literature.

Implications

For future studies, researchers should consider comparing the same intervention occurring over different intervals of time. Since previous literature suggests that yoga interventions are effective when taking place over X weeks, (Owens et al., 2018), but this intervention yielded significant effects after just 11 days, degrees of effectiveness based on duration could be compared.

When observing behavior, teachers and researchers should be sure to explicitly define what behaviors do and do not count as problem behaviors, and whether the severity of the behavior affects how problematic it is. This will make data analysis more meaningful and reliable. Likewise, it prevents any confusion during data collection. This factor in particular has negatively affected the current study. If researchers and teachers wish to replicate or build off of this study, they must improve the behavioral observation aspect of data collection.

Overall, the data provides evidence that yoga may be effective in increasing self regulation among kindergarten aged children. This has several practical implications. Elementary school teachers may see several benefits from implementing daily yoga into their classroom routine, even if they only spend 8 minutes a day doing so. Besides the intervention's effectiveness on increasing self regulation, their students could also benefit from a fun activity. Anecdotally, my students thoroughly enjoyed yoga. This is a great activity to use during transitions, to start the day, or to take a break from instruction at any point. Students benefit from this because as their self regulation increases, so does their potential success in the future (Compagnoni et al., 2019; Hutchinson et al., 2021; Rimm-Kaufman et al., 2009; Skibbe et al., 2019).

References

- Caruso, M. (2022). The slow dichotomization of elementary classroom roles. 'Grammar of schooling' and the estrangement of classrooms in Western Europe (1830-1900). *Paedagogica Historica*, 58(2), 196-214. <https://doi.org/10.1080/00309230.2020.1822887>
- Compagnoni, M., Karlen, Y., Merki, K. (2019). Play it safe or play to learn: mindsets and behavioral self-regulation in kindergarten. *Metacognition and Learning*, 14, 291-314. <https://doi.org/10.1007/s11409-019-091910y>

- Compagnon, M., Losenno, K. (2020). "I'm the best! Or am I?" Academic self-concepts and self-regulation in kindergarten. *Frontline Learning Research*, 8(2), 131-152.
- Finders, J., McClelland, M., Geldhof, G.J., Rothwell, D., Hatfield, B. (2021). Explaining achievement gaps in kindergarten and third grade: The role of self-regulation and executive function skills. *Early Childhood Research Quarterly*, 54, 72-85.
<https://doi.org/10.1016/j.ecrsq.2020.07.008>
- Gage, N., MacSuga-Gage, A., Prykanowski, D., Coyne, M., Scott, T. (2015). Investigating the collateral effects of behavior management on early literacy skills. *Education and Treatment of Children*, 38(4), 523-540.
<https://doi.org/10.1353/etc.2015.0018>
- Hutchinson, L., Perry, N., Shapka, J. (2021). Assessing young children's self-regulation in school contexts. *Assessment in Education: Principles, Policy & Practice*, 28(5-6), 545-583. <https://doi.org/10.1080/0969594X.2021.1951161>
- Jarraya, S., Wagner, M., Jarraya, M., Engel, F. (2019). 12 weeks of kindergarten-based yoga practice increases visual attention, visual-motor precision and decreases behavior of inattention and hyperactivity in 5-year-old children. *Frontiers in Psychology*, 10(796).
<https://doi.org/10.3389/fpsyg.2019.00796>
- Johnson, A. D., Schochet, O. N., Martin, A., Castle, S., Horm, D., Phillips, D. A., & The Tulsa SEED Study Team. (2022). When does 1 + 1 not equal 2? The relative advantage of public school-based pre-k versus Head Start for low-income children's kindergarten cognitive and self-regulatory skills. *Developmental Psychology*, 58(5), 848-865.
<https://doi.org/10.1037/dev0001335>
- Korpershoek, H., Harms, T., de Boer, H., van Kuijk, M., Doolard, S. (2016). A meta-analysis of the effects of classroom management strategies and classroom management programs on students' academic, behavioral, emotional, and motivational outcomes. *Review of Educational Research*, 86(3), 643-680.
<https://doi.org/10.3102/0034654315626799>
- McClelland MM, Cameron CE, Duncan R, Bowles RP, Acock AC, Miao A and Pratt ME (2014) Predictors of early growth in academic achievement: The head-toes-knees-shoulders task. *Frontiers in Psychology*, 5.
<https://doi.org/10.3389/fpsyg.2014.00599>
- McClelland, M., Cameron, C.E. (2019). Developing together: The role of executive function and motor skills in children's early academic lives. *Early Childhood Research Quarterly*, 46, 142-151.
- Moon, J., Webster, C., Herring, J., Egan, C. (2022). Relationships between systematically observed movement integration and classroom management in elementary schools. *Journal of Positive Behavior Interventions*, 24(2), 122-132.
<https://doi.org/10.1177/1098300720947034>
- Owens, J., Holdaway, A., Smith, J., Evans, S., Himawan, L., Coles, E., Girio-Herrera, E., Mixon, C., Egan, T. (2018). Rates of common classroom behavior management strategies and their associations with challenging student behavior in elementary school. *Journal of Emotional and Behavioral Disorders*, 26(3), 156-169.
<https://doi.org/10.1177/1063426617712501>
- Rashedi, R.N., Rowe, S.E., Thompson, R.A. Solari, E. J., Schonert-Reichl, K. A. (2021). A Yoga Intervention for Young Children: Self-Regulation and Emotion Regulation.

- Journal of Child and Family Studies*, 30, 2028–2041. <https://doi.org/10.1007/s10826-021-01992-6>
- Reid, S., Razza, R. A. (2021). Exploring the efficacy of a school-based mindful yoga program on socioemotional awareness and response to stress among elementary school students. *Journal of Child and Family Studies*. <https://doi.org/10.1007/s10826-021-02136-6>
- Rimm-Kaufman, S., Curby, T., Grimm, K., Nathanson, L., Brock, L. (2009). The contribution of children's self-regulation and classroom quality to children's adaptive behaviors in the kindergarten classroom. *Developmental Psychology*, 45(4), 958-972. <https://doi.org/10.1037/a0015861>
- Shiu, S.P., W, S.H., C, Y.J. (2020). The effects of a small scale intervention to develop self-regulation in kindergarten children. *Early Childhood Development and Care*, 190(3), 333-347. <https://doi.org/10.1080/03004430.2018.1471474>
- Skibbe, L., Montroy, J., Bowles, R., Morrison, F. (2019). Self-regulation and the development of literacy and language achievement from preschool through second grade. *Early Childhood Research Quarterly*, 46, 240-251. <https://doi.org/10.1016/j.ecresq.2018.02.005>
- Sun, Y., Lamoreau, R., O'Connell, S., Horlick, R., Bazzano, A. (2021). Yoga and mindfulness interventions for preschool-aged children in educational settings: A systematic review. *International Journal of Environmental Research and Public Health*, 18. <https://doi.org/10.3390/ijerph18116091>
- Telles, S., Singh, N., Kumar Bhardwaj, A., Kumar, A., Balkrishna, A. (2013). Effect of yoga or physical exercise on physical cognitive, and emotional measures in children: a randomized control trial. *Child and Adolescent Psychiatry and Mental Health*, 7(37). <https://doi.org/10.1186/1753-2000-7-37>
- Viglas, M., Perlman, M. (2018). Effects of a mindfulness-based program on young children's self-regulation, prosocial behavior and hyperactivity. *Journal of Child and Family Studies*, 27, 1150–1161. <https://doi.org/10.1007/s10826-017-0971-6>

Appendixes

Appendix A: Behavior Chart

[illegible]

Appendix B:

Intervention details

Day	Palm tree pose	Child's pose	Lion's pose	Lotus pose	Diamond pose	Cobra pose	Angle pose	Sun salutation	Half camel pose	Breathing
-----	----------------	--------------	-------------	------------	--------------	------------	------------	----------------	-----------------	-----------

1	x	x	x	x						x
2	x	x	x	x						x
3	x	x		x	x	x				x
4		x		x	x	x			x	x
5	x	x		x	x				x	x
6	x	x	x	x	x	x				x
7		x	x	x		x	x			x
8		x	x					x		x
9				x			x	x	x	x
10	x		x	x	x		x		x	x
11		x	x		x	x			x	x