Fall 12-16-2021

# Yoga as a Positive Behavior Intervention

Kristen Kadrie
kristen.kadrie@mnstate.edu

# Yoga as a Positive Behavior Intervention

Kristen Marie Kadrie

Department of Graduate Studies, Minnesota State University, Moorhead

## Abstract

This study explored teaching preschool age students how to use yoga strategies to calm their bodies, reducing the number of times a student demonstrates negative behavior. The fifteen participants were three through five year olds from one of the preschool classrooms at the Minnesota State University Moorhead (MSUM) Early Learning Center. Baseline data was collected for five days, resulting in a determination that four of the students would be considered the subjects for the study, one who received special education services. Additional baseline data was collected for these students for ten days. All fifteen participants and the classroom teachers were instructed in yoga techniques for twenty days. Post-assessment data shows that the students reduced the number of times they each demonstrated the negative behaviors identified for them. Anecdotal data suggests that the students and their teachers found the yoga instruction motivating. However, informal observations reveal that the teachers are not yet generalizing the instruction to all parts of the school day where the techniques could be useful to prevent negative behaviors and dysregulation. This study hopes to encourage future studies on the effects of a school based yoga intervention for students with or without an Individualized Education Plan who struggle with negative behavior.


## Introduction

With the pressure of school demands and peer approval, more children are suffering from anxiety and depression. This can affect students from preschool through high school and into the adult years (Steiner, Sidhu, & Pop, 2013). It has been revealed in the United States that anxiety and depression are the main sources of mental health issues among students. About 31.9% of students

are suffering from anxiety disorders (Nanthakumar, 2018). The effects of anxiety are troublesome for these students because it can affect both concentration and memory, which are key components to academic success (Razza, Bergen-Cico & Raymond, 2013). Yoga, which contains specific poses, involves a combination of stretching, breathing and mental relaxation also known as meditation (Bloom, 2011). Yoga is unique as a practice because it joins both the individual's mind with their body (Jeyaraj, 2016). In other words, individuals who practice yoga are intentionally using their attention to focus on the movements they are creating rather than focusing on everyday stressors of life (Jayaraj, 2016). The practice of yoga gives students the opportunity to develop skills such as mindfulness, resilience, and anger control. (Nanthakumar, 2018).

The Minnesota State University Moorhead (MSUM) Early Education Center is a preschool center for children ages sixteen months through five years of age. These children come with various skills and needs. One concern that has surfaced based on informal teacher observation is the need to help students transition to naptime in the afternoon. Teachers at the MSUM Early Education Center have been struggling to support some of the students who are so dysregulated they cannot calm their bodies in order to nap or rest and therefore, benefit from the naptime. While considering the research on the effectiveness of yoga as a means for supporting students who are dysregulated, it was proposed to teach yoga in one of the classrooms. The goal being, to assist the young students in using yoga principles to calm and regulate their own bodies.

The overarching question this study seeks to answer is: To what degree does a yoga intervention help preschool aged students self-regulate before naptime? In order to answer this question, data

was collected on specific behaviors in students related to their self-regulation during transition times prior to nap time. The total number of students participating in the yoga sessions was fifteen. Targeted data focused on the students who displayed the most significant difficulty making the transition to naptime. The study occurred over the course of four weeks. This research adds to the research previously conducted on the benefits of yoga on preschool age students, not only as a positive behavior intervention for typically developing young students, but especially for students receiving special education services for emotional and behavioral disorders.

In order to gauge the effectiveness of the intervention, the student behavior was observed and analyzed before the intervention and compared with behavior in the same context, after the intervention. The results may be evidentiary support for integrating a yoga program in order to help the students improve their self-regulation. The research provides useful information in proposing to add yoga as a permanent component to the preschool program at the MSUM Early Childhood Center.

## Literature Review

### Incorporating Yoga in the classroom

In order to explore integrating yoga into the classroom, it is helpful to understand the benefits yoga has provided to those who've experienced it outside of the school classroom. Yoga has been commonly known to help adults find relaxation, relieve stress, and support positive self-awareness (Steiner, Sidhu, & Pop, 2013). In addition, some of the studies available have shown that yoga can benefit children as well. Yoga sessions can help improve a child's attention

skills, which helps with a child's performance in the classroom, including improvements in self-regulation skills (Steiner, Sidhu, & Pop, 2013). Research has also shown that yoga may help to develop a child's mind and body awareness, self-regulation and physical fitness, which in turn, enhance behavior, and mental, physical and emotional health (Nanthakumar, 2018). Eighty one studies gleaned positive results (Ross & Thomas 2016). However, it was noted in the research that even though all of the studies utilized a yoga intervention, the structure of the yoga session, type of yoga and frequency of yoga class varied from study to study. This makes it difficult to point to any variable that actually impacted the positive result (Nanthakumar, 2018). This only emphasizes the need for more contextual studies, such as those situated within specific contexts.

Meditation as one component in yoga was studied in its effects as an alternative health treatment to reduce anxiety, enhance social skills, and improve self- concept (Steiner, Sidhu, & Pop, 2013). The researchers chose to isolate meditation as one of the yoga components to study (Steiner, Sidhu, & Pop, 2013). The goal of meditation is to be more present and have a greater acceptance of oneself (Steiner, Sidhu, & Pop, 2013). Steiner, Sidhu, & Pop's (2013) work demonstrated that using this specific yoga component gained positive outcomes by assisting children in reducing anxiety, enhancing social skills, and improving their self- concept, techniques that can be used as a foundation for incorporating yoga in the classroom.

In addition to meditation, another approach that was studied was incorporating yoga in the classroom through yoga-type principles which include muscle relaxation, breath control, and mental focus on particular body movements and postures, all which connect to the three components of yoga (Steiner, Sidhu, & Pop, 2013). The research described particular techniques that can be taught to children to lead them through activities that allowed them to be more

mindful (Steiner, Sidhu, & Pop, 2013). Sitting comfortably with eyes closed, and using repetitive individual mantras is a way to accomplish the technique (Steiner, Sidhu, & Pop, 2013). Another goal of this technique is to be in a state of increased awareness during deep relaxation (Steiner, Sidhu, & Pop, 2013). This helps eliminate stress and increases creativity and intelligence (Steiner, Sidhu, & Pop, 2013). Lastly, there is an approach where a basic sitting meditation technique is used to stabilize the mind (Steiner, Sidhu, & Pop, 2013) . The breath or another object is used as a reference point for being mindful in the present moments (Steiner, Sidhu, & Pop, 2013). The thoughts that may arise are not judged but simply acknowledged and released (Steiner, Sidhu, & Pop, 2013). The goal of this meditation is being more present and having a greater acceptance of oneself (Steiner, Sidhu, & Pop, 2013).

The three components that comprise a yoga experience, postures and poses, breathing techniques, and meditation can also be enhanced by developing a skill called mindfulness (Steiner, Sidhu, & Pop, 2013). It was determined that there was a deeper connection between mindfulness and student well-being (Nanthakumar, 2018). The skill of mindfulness offers individuals the opportunity to address underlying stress (Razza, Bergen-Cico & Raymond, 2013). The term “mindfulness” has been used to refer to a psychological state of awareness, a practice that promotes this awareness, a mode of processing information, and a characterological trait. Using a variety of yoga strategies can lead a person to a state of mindfulness which provides them with positive effects such as in their physiological and mental health through the down-regulation of the nervous system (Nanthakumar, 2018).

In addition to the increased benefits of yoga to mental health, researchers recognize that physical fitness is a significant factor in helping children with anxiety (Li, Xia, Meng & Zhang, 2020). Physical exercise can help to increase the production of the brain’s feel-good

neurotransmitters called endorphins, resulting in the ability to manage stress more effectively Dishman et al. (2020). The moderating effect of yoga strategies may enable children with higher agility levels to show better outcomes in associated physical fitness and managing anxiety (Li, Xia, Meng & Zhang, 2020).

**Educational benefits of yoga as an intervention for children, preschool-elementary**

It is important to consider the overall educational benefits of yoga. There are few studies that focus on the benefits of a yoga intervention on specific age groups such as preschoolers (Razza, Bergen-Cico & Raymond, 2013). One of the researchers mentioned that their study was the first to examine this (Razza, Bergen-Cico & Raymond, 2013). However, there are some additional studies that have been done to determine the effectiveness of yoga and yoga techniques on preschool and elementary age children (Wolff &Stapp, 2019). This work is relevant, as it continues to build an overall understanding of yoga interventions in the field of education.

Razza et al. (2013) determined that yoga as an intervention for young children, including preschool age, was beneficial because it helps the children to self-regulate while learning pre-academic skills necessary for success in elementary school and beyond. Self-regulation was measured using a pre and post questionnaire that was sent home to parents to complete. They found that when children are able to self-regulate, they are able to control their emotions, attention, and behavior in response to contextual situations, stimulus, or demands (Razza, Bergen-Cico & Raymond, 2013). These are skills needed for them to be successful not only in school but in real world experiences (Razza, Bergen-Cico & Raymond, 2013). In addition, they assert that it is very important for children at a young age to develop self-regulation skills because it helps them to positively shape their moral development, personality, and academic

competence (Razza, Bergen-Cico & Raymond, 2013). Razza et al.'s work is relevant to our foundational understanding of using yoga interventions as an integral aspect of child development.

Steiner et al. (2013) confirms that yoga improves self-regulation in their research with students with emotional behavioral disorder (EBD) who were in fourth and fifth grade. Steiner et al. (2013) noted in one study, students with EBD received twenty weeks of one hour yoga sessions. Using the Conners' Rating Scale (Steiner et al. (2013), the authors used qualitative methods to gather feedback from parents and teachers regarding the students' behavior, schoolwork, and social life. The study showed a significant increase in attentiveness in school work and adaptive skills compared to the control group Steiner et al. (2013). Another study stated that students with attention problems who completed a 3-week intervention showed improvements in their performance with staying on task compared to students who had attention issues but did not receive the intervention (Abadi & Madgaonkar, 2008). These studies support aforementioned research demonstrating the positive results of integrating yoga and yoga practices in the early childhood and elementary classroom.

While the studies above look at yoga interventions generally and in relation to EBD, Abadi and Madgaonkar (2008) investigated the effects of a yoga intervention for students who were diagnosed with attention deficit hyperactivity disorder (ADHD), a commonly diagnosed childhood psychiatric disorder. Some of the difficult behaviors associated with ADHD in children is the impulsivity, unbounded need for gross motor activity, and difficulty sustaining attention (Abadi & Madgaonkar, 2008). Commonly known treatment for ADHD is providing

medication to the children to help reduce symptoms of hyperactivity and impulsivity (Abadi & Madgaonkar, 2008). However medication should not alone be the treatment to help support students with ADHD (Abadi & Madgaonkar, 2008). Students report while being on medication for ADHD that they have experienced nausea, headaches, and an inability to sleep (Abadi & Madgaonkar, 2008). These side effects can result in students not wanting to take their medications which can cause the treatments to fail for the student (Abadi & Madgaonkar, 2008). Some other treatments that are commonly used are behavioral therapy, cognitive behavior therapy, and parent training (Abadi & Madgaonkar, 2008). Regardless the type of therapy the student may receive, the student is rarely able to be relieved of all symptoms associated with ADHD (Abadi & Madgaonkar, 2008). There has been growing evidence that children with ADHD can benefit from exercise because exercise stimulates the cerebellum, as the cerebellum is an area in the brain that regulates balance and coordinates movement (Abadi & Madgaonkar, 2008). Yoga plays a big part in stimulating the cerebellum for students with ADHD which can be a useful natural activity to help the students self-regulate their behaviors (Abadi & Madgaonkar, 2008). As Li, Xia, Meng & Zhang, (2020) attest, this physical activity can also reduce anxiety, which is often connected to ADHD.

While there are some additional studies related to yoga interventions and specific age groups, other variables related to the effectiveness of yoga interventions could be studied more deeply. Additional studies could include a look at the effect of teacher training and the benefits this adds to the use of the intervention, the effects of time spent and frequency of the intervention, the demographics of students, and perceptions of teachers and participants regarding the value of yoga (Beauchemin, Hutchins, & Patterson, 2008). Research that considers the long-term benefit of yoga also needs to be further studied (Beauchemin, Hutchins, & Patterson, 2008). Finally, the

effects of yoga on the general student population and culture or climate of the school could provide additional rationale for formally incorporating yoga in Pre-K-12 educational settings. The next section will go beyond the benefits of yoga intervention, and look closely at the perception of yoga in the classroom.

**Perception on the effectiveness of yoga in the classroom**

Some emerging studies address benefits to students' performance (Steiner, Sidhu, & Pop, 2013). Given this, administrators and teachers are primary decision makers in implementing new programs within a school system (Wolff &Stapp, 2019). Furthermore, it is important to consider that teachers are the implementers or facilitators in a new program because they are responsible for helping their students meet the positive outcomes the program was intended to promote (Wolff &Stapp, 2019). If teachers are resistant towards new programs, outcomes could be different than what was expected (Wolff & Stapp, 2019). According to Steiner et al. (2013), the selection of a participating school in the yoga intervention can be complex. It is imperative to have “school buy in” at the principal and teacher level to be prepared to work with yoga instructors in order for the intervention to be successful (Wolff & Stapp, 2019).

To help understand the importance of teacher implementation of a yoga program into their classroom, Wolff and Stapp (2019) reviewed two studies that assisted in their research. One study examined a school implementing a yoga program called Yoga 4 Classrooms (Wolff &Stapp, 2019). The program focused on utilizing the teacher as the primary facilitators to teach yoga. These teachers were provided six hours of training prior to implementation of the yoga program. The teachers felt after implementing the program that they could see a significant

change in their students' cognitive, social, and emotional skills (Wolff & Stapp, 2019). In another study reviewed, a school utilized a yoga program called Rainbow Yoga (Wolff &Stapp, 2019). Rainbow Yoga provides training for classroom teachers on how they incorporate yoga in their classrooms (Wolff &Stapp, 2019). After the teachers completed the program they noticed their preschool students benefited tremendously by observing how attentive they were in following directions (Wolff &Stapp, 2019).

Wolff and Stapp (2019) interviewed teachers before the program began and asked how they felt about the yoga program prior to starting. Some teachers felt that yoga was a calm activity and that their children wouldn't be able to participate because "they are too wild" (Wolff &Stapp, 2019). Other teachers were excited about a new experience for their students. The teachers felt that adult yoga and child's yoga were much different (Wolff &Stapp, 2019). A difference in adult yoga that is not found in child's yoga is that it is important that you are hitting every position,using correct form, and the activities are more individualized (Wolff & Stapp, 2019). In contrast, child's yoga involves more play, imagination, and having fun (Wolff &Stapp, 2019). As they implemented yoga, the teachers began to notice that their student's physical development was improving (Wolff & Stapp, 2019). One teacher mentioned that they noticed some children in her classroom found their balance and coordination (Wolff &Stapp, 2019). Other teachers felt that it was important to expose children to different ways the body can move (Wolff & Stapp, 2019). Several teachers reported they noticed that their children were able to control their emotions after completing the yoga program (Wolff &Stapp, 2019). The teachers stated the children were able to handle difficult social problems such as sharing and taking turns with their peers and form better relationships (Wolff &Stapp, 2019). The teachers felt that the program was successful when it involved the teachers within the yoga program (Wolff &

Stapp, 2019). The teachers felt that it was important they received training on yoga, but also have the freedom to provide ideas of how they can incorporate what they are learning in the yoga sessions into their classroom (Wolff & Stapp, 2019). This is an example of teachers being skeptical, but upon training and attempting the strategy, found yoga to be an effective intervention. Consideration should be given to conducting research that collects data on the teachers' background and classroom practices and the effects of good versus poor classroom management skills related to yoga intervention success.

Not only is it important to have teacher and administrator buy-in with the introduction of a new intervention, the buy-in of students is also key (Case-Smith, Klatt & Shupe 2010). Case-Smith, Klatt & Shupe (2010) wanted to understand the perceptions of students, particularly third grade students from a low socioeconomic status who participated in a 8-week yoga program. The participants completed a yoga program that consisted of 45-minute sessions during the school day. In addition, four days a week, the teacher led a 15-minute yoga session in the classroom (Case-Smith, Klatt & Shupe 2010). The overall goal of the program was to help students improve their concentration, decrease stress and anxiety, and improve body awareness. During the 45-minute yoga sessions, the children practiced posture and poses, breath control and meditation (Case-Smith, Klatt & Shupe 2010). Every two weeks, the children were interviewed using a focus group format (Case-Smith, Klatt & Shupe 2010). The teacher would randomly select 4 to 5 students for each focus group (Case-Smith, Klatt & Shupe 2010). The children were given paper and crayons and then asked to draw a picture of the yoga program (Case-Smith, Klatt & Shupe 2010). During this time the children were asked to share about their picture, what did the yoga program mean to them, how did the program make you feel,

and what did the program do to change you? (Case-Smith, Klatt & Shupe 2010). The focus groups were videotaped and audiotaped for analysis. Also, the teacher was interviewed in the classroom about how they felt about the program (Case-Smith, Klatt & Shupe 2010).

After the implementation, the videotapes and audiotapes were analyzed (Case-Smith, Klatt & Shupe 2010). The teacher's response affirmed the student's reports. Specifically, students stated that the yoga program helped them feel calm which correlated with improving focus in the classroom (Case-Smith, Klatt & Shupe 2010). Others stated that they felt that they could control their behaviors such as anger (Case-Smith, Klatt & Shupe 2010). Lastly, the students described positive feelings about themselves, including feelings of self-affirmation. They also felt that yoga helped their interpersonal relationships (Case-Smith, Klatt & Shupe 2010). This finding supported the findings of Wolff and Stapp (2019) which noted positive results from teachers' reports.

Given these compelling results, more studies need to be conducted that explore the impact yoga has on children's behaviors, not only in the classroom but also in the home (Case-Smith, Klatt & Shupe 2010). In addition, parent and student participation in studies to determine benefits of yoga in the home environment would be beneficial to further study (Case-Smith, Klatt & Shupe 2010).

## Method and Data Collection

### Initial Observations (Pre-assessment)

The preschool classroom chosen for this project consisted of fifteen students. For baseline data purposes, I chose to initially observe the entire classroom to determine where the challenges to getting the students settled down for nap time existed. The students were observed for sixty

minutes between 12:00 p.m. and 1:00 p.m. each day for five days. This was the timeframe after their lunch and just prior to nap time. This time consisted of some quiet free play such as reading books, playing with puzzles as well as using the bathroom. During this time, students are encouraged to "wind down" in preparation for rest and/or napping. The initial five days of observation resulted in observed patterns for four students who demonstrated significant negative behaviors that interfered with their ability to settle down to rest. These four students became the target students for the study.

The four target students were observed for ten days from 12:00 p.m. to 1:00 p.m. This was the same timeframe that was observed for all of the students, just after their lunch and prior to nap time. I documented when each of the four students demonstrated the target behavior I had identified for each student (figure 1). Three of the students demonstrated the behavior of screaming and one student displayed inappropriate impulsive actions which included punching the wall, tugging on the faucet, and climbing on tables and shelves.

Behavior: **Yelling** (Student X, Student J, Student E)
Behavior: I**nappropriate Impulsive Actions** (Student B)

Date:

| Student | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|
| X | | | | | | | | | | |
| J | | | | | | | | | | |
| E | | | | | | | | | | |
| B | | | | | | | | | | |

*Figure 1: Raw Data Chart*

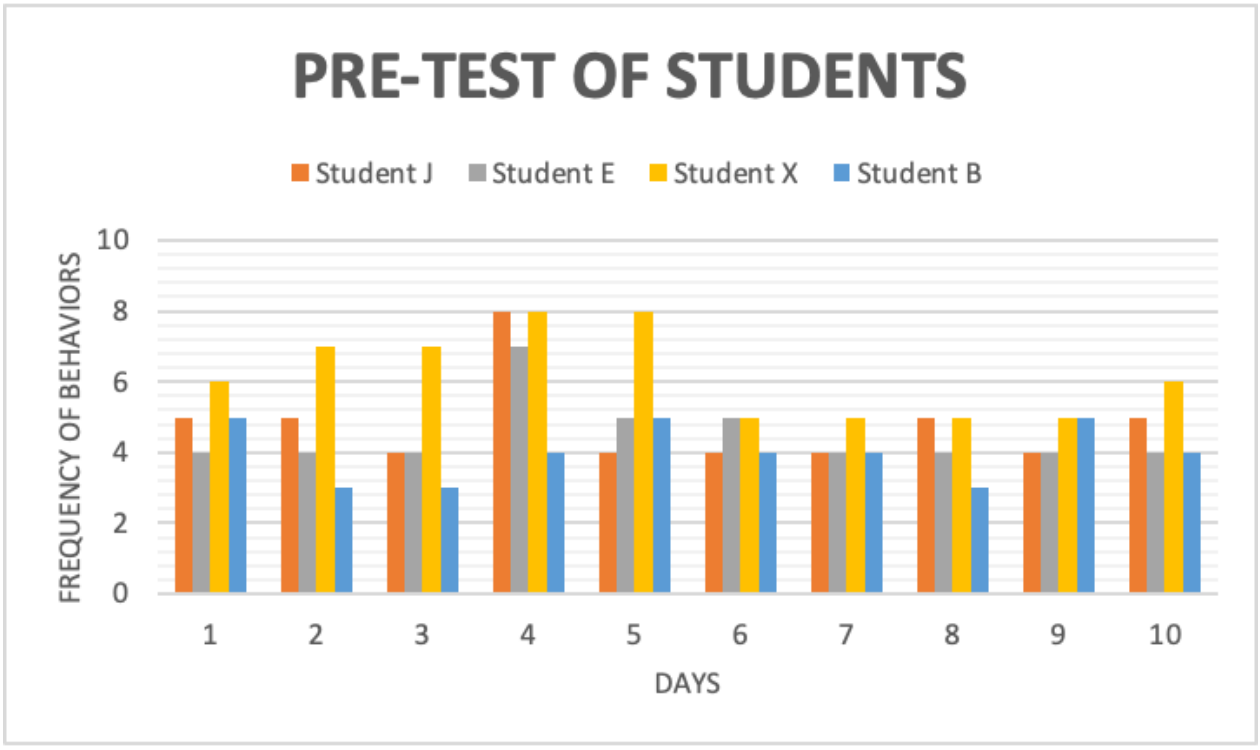


*Figure 2: Pre-test: Student J, Student E, Student X, and Student B*

The first target student, Student J is a three year old female. During the ten day observations, Student J demonstrated the negative behavior of screaming when a teacher gave her a direction to do something that she did not want to do. For example, the teacher instructed Student J to put her plate away and Student J screamed at the teacher and refused to follow the directions. The data shows that she demonstrated this negative behavior on an average of 4.8 times each time frame (figure 2).

Student E, the second target student is a three year old male. Student E would scream when given instructions by an adult to complete a task. For example, the teacher told Student E that it was his turn to go to the bathroom before nap time. Student E screamed at the teacher and refused to

follow directions. The data shows that he demonstrated this negative behavior on an average of 4.9 times each time frame (figure 2).

The third target student, Student X is a three year old male that is currently receiving special education services for developmental delay. During observations, Student X also demonstrated the negative behavior of screaming when a teacher instructed him to follow a direction. For example, the teacher instructed Student X to go to his cot for rest time, and Student X started screaming and refused to follow the directions. The data shows that he demonstrated this behavior an average of 6.2 times in the time frame (figure 2).

Lastly, the fourth target student, Student B is a three year old male. When observing Student B, he demonstrated the negative behavior of inappropriate impulsive actions. For Student B, inappropriate impulsive actions refers to punching the wall, tugging on the faucet, and climbing on tables and shelves. The data showed that he demonstrated this behavior an average of 4 times in the time frame (figure 2).

**Intervention**

After the pre-assessment data was collected, the entire classroom of fifteen students, along with the three teachers assigned to that classroom, participated in yoga practice. This instruction extended over a twenty school day period. Each session lasted thirty minutes. Not only was I the researcher, but I was also the teacher for the yoga intervention. I received certification in teaching yoga through Kumarah Yoga and Mindfulness for Kids (Kumarah, 2021). Techniques taught to the students were taken from the Ultimate Kids Yoga and Mindfulness Teacher Training series

(Kumarah, 2021). Specifically, the students were taught to use mindfulness, yoga poses, and deep breathing techniques.

One activity I used to teach mindfulness was the singing bowl. The singing bowl produces sounds and vibrations when hit or circled with a mallet. The sounds and vibrations are intended to help the students use their sense of hearing to focus on the particular sound of the singing bowl. When I started circling the mallet around the singing bowl, I asked the students to place a thumbs up by their chest when they started hearing the vibrations. This told me that they had their focus on the sound of the singing bowl which indicated that they were practicing mindfulness by using their sense of hearing.

When teaching yoga poses, I used an activity in game form called “Yogi Says”. During this game, the students were instructed to dance when music was playing. When the music stopped, the students would run to their yoga mat and listen to instructions on what yoga pose we were going to implement. For example, “Yogi says, child’s pose.” The students would then complete the child's pose.

A third type of yoga technique that was taught was a deep breathing technique. I chose an activity called “breathing buddy,” which used a stuffed animal toy as each student’s buddy. The students put themselves in a resting pose which means to lay on their backs completely still. The students would place their breathing buddy on their stomachs and practice deep breathing correctly by inhaling air into their lungs and making their stomachs expand, causing their

breathing buddy to move up on their stomachs. When the students exhaled, they would notice their stomach moving down as well as their breathing buddy going down.

**Post Observation (Post-assessment)**

After completing twenty days of the yoga intervention, post-assessment data was collected to determine if there were any differences between the pre-assessment data and post-assessment data. The target students were the same as those observed in the pre-assessment data. There is no specific length of time for which intervention data should be collected or evaluated (Lane, 2021). However, it is suggested that those collecting post data follow a schedule that is guided by the type and severity of the problem or target behavior and the intervention design (Lane, 2021). It is also advised that the data collection not occur all day nor even for an entire period (Lane, 2021). Instead, data should be collected during the times when the problem behavior can most likely be observed, and then for only a representative period of time. Additionally, the data collection should occur frequently enough to allow the individual(s) collecting the data to determine whether a behavioral change is occurring (Lane, 2021).

The guidelines provided by Dr. Lane were considered when determining the plan for collecting post-assessment data. Given these guidelines, I decided to collect post-assessment data for the four target students for ten days from 12:00 p.m. to 1:00 p.m. This was the same timeframe that was observed for the four students during the pre-assessment phase. This was also the same routine the children had completed during the pre-assessment, after their lunch and prior to nap time.

I documented when each of the four students demonstrated the target behavior I had identified for each student. On the first day of post-observation, there was a substitute teacher in the students' classroom. This was also the morning after the Halloween Holiday and parents reported that their children participated in trick or treating. Post observation data documenting the negative behaviors for Student B was the highest observed from any of the other post-observation days.

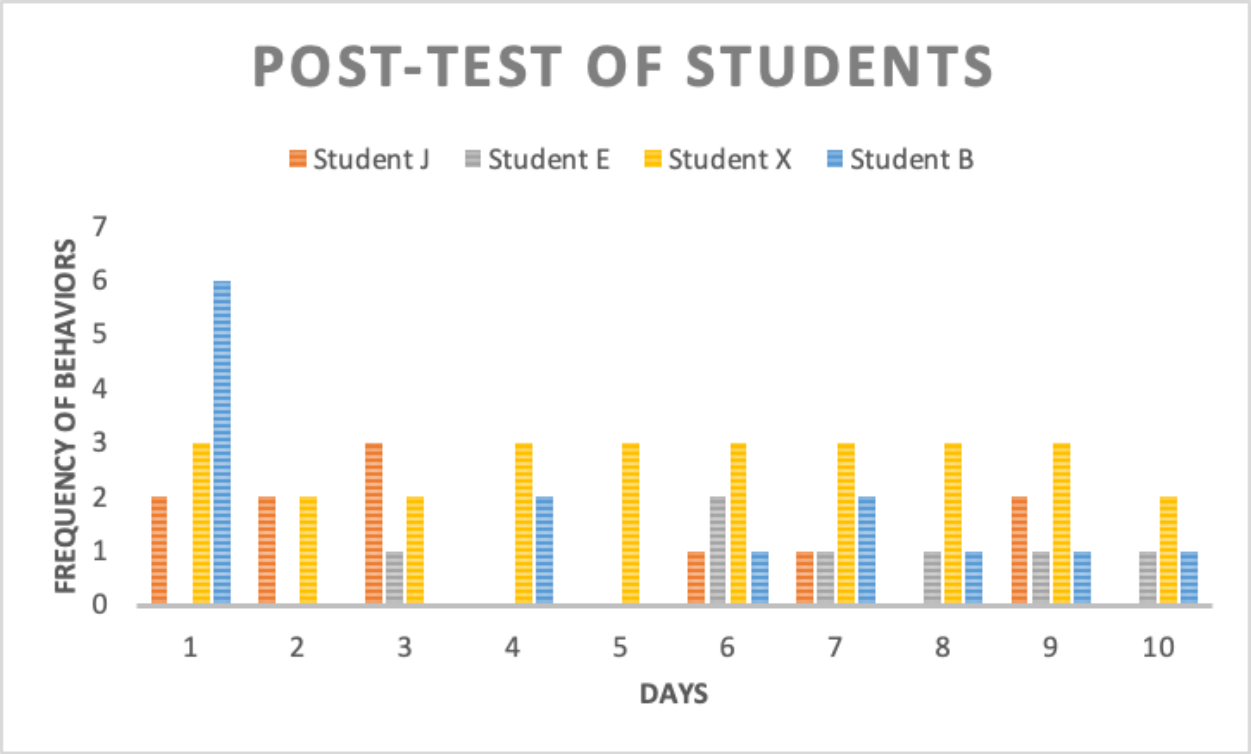


*Figure 3: Post-test: Student J, Student, E, Student X, and Student B*

Student J's observed behavior was screaming. Her pre-assessment showed that on average she screamed 4.8 times each day during the hour of observation. Post-assessment data for Student J

revealed that she on average demonstrated the screaming behavior 1.1 times each time frame during the observation (figure 3).

Student E's observed behavior was also screaming. His pre-assessment showed that on average he screamed 4.9 times each day during the hour of observation. Post-assessment data for Student E showed that he demonstrated the screaming behavior an average of 0.7 times each day during the time frame of the observation (figure 3).

Additionally, Student X's observed behavior was screaming. He is currently on an individualized education plan (IEP) for Developmental Delay. His pre-assessment showed that on average he screamed 6.9 times each day during the hour of observation. Post-assessment data for Student X revealed that he on average demonstrated the screaming behavior 2.7 times each day during the time frame of the observation (figure 3).

Student B's observed behavior was inappropriate impulsive actions which consisted of punching the wall, tugging on the faucet, and climbing on tables and chairs. His pre-assessment showed that on average he demonstrated these negative behaviors 4.0 times each day during the hour of observation. Post-assessment data for Student B showed that he on average demonstrated the inappropriate impulsive actions behavior 1.4 times each day during the time frame of the observation (figure 3).

**Results**

The post assessment data indicates that all four target students' behaviors, including the student receiving special education services through an IEP, improved, as demonstrated by the reduced number of negative behaviors from the pre-assessment to the post-assessment. Student J decreased the average number of negative behaviors from an average of 4.8 during the time frame of pre-assessment to an average of 1.1 during the post-observation. Student E decreased the average number of negative behaviors from an average of 4.9 during the timeframe of pre-assessment to an average of .7 during the post-observation. Student X, the student receiving special education services, decreased the average number of his negative behaviors from an average of 6.2 during the timeframe of pre-assessment to an average of 2.7 during the post-observation. Lastly, Student B decreased the average number of negative behaviors from an average of 4.0 during the timeframe of pre-assessment to an average of 1.4 during the post-observation.

The results of the post assessment are encouraging, given that all four target students are demonstrating less negative behaviors and more acceptable behaviors, including the student on an IEP. For example, the students appeared more attentive to the directions given by the teachers and were able to more frequently follow the directions without demonstrating negative behaviors. Student X, the student who has an IEP, was observed to use his words more frequently when in a conflict with a peer. Observation notes showed that on one instance a peer spit at Student X and rather than scream at the peer he told the peer "no, I don't like that." He also was able to walk away when he appeared mad at one of his friends. The four target children demonstrated a real interest in the yoga sessions that were presented on each of the days. Most notably, Student B

was observed to be highly engaged during the yoga sessions. He was able to follow the directions that were given and complete each activity. I also noted that Student B, who I had previously observed to be easily distracted, stopped an activity he was doing in the large motor room to help a friend who was hurt.

The yoga activities were a highlight of the student's day. The students not only appeared engaged with the activities, they frequently requested certain games and poses such as "Yogi Says," or the "Bear Hunt" poses. "Yogi Says," was a favorite because it gave the students a chance to be the teacher. I would give the students an opportunity to be the "Yogi," and the students were in charge of calling out the pose and showing their peers how to create the pose with their body. It could be assumed that this game gave the students confidence and provided them an opportunity to show off their leadership skills. Student J would get excited when I started playing the "Bear hunt" song and she would say "This one is my favorite Miss Kristen!" In addition to these two activities, a particular favorite was the "What Do You Hear?" activity, a mindfulness activity requested daily by the students. This involved the students guessing the sound that an object or animal was making. Student X appeared very proud, saying "I was right," when he was able to correctly identify the sound. Given these observations, one can infer that when students are able to participate in activities that are highly motivating and of high interest, they are able to generalize the activity. It is also helpful when the students can assume a teacher role for their peers, developing their leadership skills. Additionally, it should be noted that the children sought me out during the school day and asked if it was yoga day. If it was not a yoga day, they would demonstrate their disappointment by stating, " Awe, bummer".

Involving the teacher and assistants from the classroom was a critical component to the implementation of the intervention. The teacher and assistants participated in each yoga session, learning the techniques alongside the students. The expectation being that the teachers would model the techniques that were learned in yoga class and encourage the use of the yoga techniques during the school day as a preventative measure to student dysregulation and negative behaviors. Teachers and assistants reported that implementing the techniques were easy and fun for the students. They verified information provided by the students that the students enjoyed the sessions and were disappointed on the days they were not offered. Both the teacher and the assistants reported that the intervention has made preparation for nap time go much smoother for all of the students, especially the target students. It should be noted that I provided the teacher and assistants with frequent reminders initially to use the techniques. Using the techniques did not come naturally at first, but increased with ease over time. Additionally, I have observed that teachers don't automatically think about using a yoga strategy for other behaviors that may be occurring in their classroom. For example, a teacher is struggling with a four year old student who does not want to rest for the full required sixty minutes. She had not been implementing the yoga techniques with him. I reminded her that the yoga strategies I have been teaching could be helpful for him in calming himself. In replicating a study such as this, it is suggested that a coaching component be added to ensure that teachers and assistants who are required to implement the strategies are implementing them when appropriate and with fidelity throughout the school day. An instructional coach is someone whose primary professional responsibility is to bring evidence-based practices into classrooms by working with teachers and other school leaders (Spangler, 2021). This level of support paired with a study of the effectiveness of coaching could produce valuable future research.

**Limitations/ Future Studies**

The parents of the children in the classroom each provided permission for their child to participate in the yoga intervention study. This study design did not include parent feedback or specific communication regarding what their child was learning during the yoga sessions. It would be interesting to add to a future study a parent component that would involve teaching the parents the yoga strategies through a set number of morning and evening sessions or providing them with instruction on how to do the yoga activities with their child through a video. Studying the impact of the use of yoga techniques across environments, including the student's home would be an interesting value add to future studies on the topic.

Further research regarding the benefits of a yoga based intervention may want to consider replicating research that has been already conducted in this area. Researchers may want to consider longitudinal studies that are aimed at the long term effects of using yoga as a preventative measure for students who struggle with dysregulation. Researchers may also wish to consider studies that target students specifically who are receiving special education services. Given additional evidence on the benefits of yoga for students who struggle with dysregulation, preschools, K-12 schools, and programs for students receiving special education services may embrace this strategy as part of the regular school day.

The yoga intervention ended with the twentieth day of instruction. Teachers and assistants reported being disappointed that the study had ended and spoke about what a positive impact teaching yoga to the students had on the student’s daily behavior and routines. This study was a

small contribution to the increasing literature regarding the value of yoga as an integral part to a preschool program. It is hopeful that preschool programs such as MSUM's Early Learning Center will look at this data and consider the value yoga instruction could add to their programs.

**Reflection**

As I reflect back on what I have learned through this study, I have discovered that when implementing an intervention, consistency is critical. It is not just the facilitator of the intervention that needs to implement the intervention as it is intended, but the entire team. I also appreciated being a part of a process such as this. In doing so, I found that pre-planning was critical. I needed to be exceptionally organized and prepared to ensure I was collecting the appropriate data with fidelity. It was also critical that in preparation for the study, a comprehensive literature review be conducted to help me determine what I wanted to study and how I would go about shaping the study. I am confident that in my future role as a special educator, this experience will underscore for me the importance of not only aligning my practice with evidence based strategies, but to also think outside of the box and try strategies that may not be as widely researched. Additionally, as I work to educate the other adults in a student's life, I know that this research, evidence based strategies and the experience with this intervention will help me in providing options to best help the student develop skills that will, in turn, allow them to self-regulate their behavior, and be successful, regardless of their context.

## References

Abadi, M. S., & Madgaonkar, J.(2008) Effect of yoga on children with attention deficit/hyperactivity disorder. *National Academy of Psychology*, 53(2), 154-159. https://www.researchgate.net/profile/Srinivasan_Venkatesan3/publication/258517947_Effect_of_yoga_on_children_with_attention_deficithyperactivity_disorder/links/02e7e5288af3a4d311000000/Effect-of-yoga-on-children-with-attention-deficit-hyperactivity-disorder.pdf

Beauchemin, J., Hutchins, T. L., & Patterson, F. (2008). Mindfulness Meditation May Lessen Anxiety, Promote Social Skills, and Improve Academic Performance Among Adolescents With Learning Disabilities. *Complementary Health Practice Review*, 13(1), 34–45. https://doi.org/10.1177/1533210107311624

Bloom, S. (2011). Definition of yoga for children. https://healthfully.com/109825-definition-yoga-children.html.

Case-Smith, J., Klatt, M., & Shupe Sines, J. (2010). Perceptions of Children Who Participated in a School-Based Yoga Program. *Journal of Occupational Therapy Schools, & Early Intervention*. 226-238. 10.1080/19411243.2010.520246.

Jeyaraj, R. (2016, May 21). *What is so special about yoga?* The Hindu. Retrieved December 1, 2021, from https://www.thehindu.com/features/metroplus/fitness/what-is-so-special-about-yoga/article5928994.ece.

Jones, S. (2019). Ditching detention for yoga: schools embrace mindfulness to curb discipline problems. Retrieved from https://www.edweek.org/leadership/ditching-detention-for-yoga-schools-embrace-mindfulness-to-curb-discipline-problems/2019/05

Kumarah, M. (2021, August 6). About Kumarah yoga. Retrieved November 17, 2021, from https://kumarahyoga.com/.

Lane, K. (2021, January 4). *How will Ms.Rollison know whether the intervention is successful?* IRIS Center. Retrieved November 17, 2021, from https://iris.peabody.vanderbilt.edu/module/fba/cresource/q4/p12/.

Li Y, Xia X, Meng F and Zhang C (2020) Association Between Physical Fitness and Anxiety in Children: A Moderated Mediation Model of Agility and Resilience. Front. Public Health 8:468. doi: 10.3389/fpubh.2020.00468

Nanthakumar C. The benefits of yoga in children. J Integr Med. 2018 Jan;16(1):14-19. Doi: 10.1016/j.joim.2017.12.008. Epub 2017 Dec 14. PMID: 29397087.

Razza, R.A., Bergen-Cico, D. & Raymond, K. Enhancing Preschoolers' Self-Regulation Via Mindful Yoga. *J Child Fam Stud* 24, 372–385 (2015). https://doi.org/10.1007/s10826-013-9847-6

Ross, A., & Thomas, S. (2010). The health benefits of yoga and exercise: A review of comparison studies. *The Journal of Alternative and Complementary Medicine*, *16*(1), 3–12. https://doi.org/10.1089/acm.2009.0044

Steiner, N.J., Sidhu, T.K., Pop, P.G. *et al.* Yoga in an Urban School for Children with Emotional and Behavioral Disorders: A Feasibility Study. *J Child Fam Stud* 22, 815–826 (2013). https://doi.org/10.1007/s10826-012-9636-7

Spangler, D. (2021). *HMS Instructional Coaching*. HMS Instructional Coaching. Retrieved November 17, 2021, from https://hmsinstructionalcoaching.weebly.com/.

Wei, M. (2016). More than just a game: Yoga for school-age children. https://www.health.harvard.edu/blog/more-than-just-a-game-yoga-for-school-age-children-201601299055.

Wolff, K., & Stapp, A. (2019). Investigating Early Childhood Teachers' Perceptions of a Preschool Yoga Program. *SAGE Open*. https://doi.org/10.1177/2158244018821758