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# The Relationship Between Parent Education of Sleep and Routine & Classroom Behavior of Students at a Pee Dee Region Elementary School

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The Relationship Between Parent Education of Sleep and Routine & Classroom  
Behavior of Students at a Pee Dee Region Elementary School

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### Abstract

This action research was carried out to determine if parent education of sleep and routine had an effect on classroom behavior (physical contact and defiance). The research was completed in two full day 4K (four-year-old) Montessori classrooms in a Pee Dee Region elementary school. Students and parents were included in the research. Data from parents was gathered using assessments and sleep diaries. Teacher data was gathered using reflection journals and tallying charts. Parents were provided weekly education on sleep and routine importance. There was no conclusive data to show that parent education directly affected classroom behavior. The researchers believe the outcome was due to a lack of consistent parental participation. More research could be conducted to test how influential parent education is on classroom behavior.

*Keywords: sleep, routine, parent education, preschool, classroom behavior*

Sleep and routine are significant elements developing healthy children. Educators are experiencing the effects of insufficient sleep and inconsistent use of routine with children. Many researchers agree that parent education of sleep and routine is needed and that it can have a positive impact on students' social and emotional abilities.

Sleep is one of the crucial physiological needs of all humans. It is also an essential element of child development. Children need adequate sleep to regulate emotions and appropriately respond to social interactions. School entails the education of the holistic child. When children are tired, educators struggle to provide a setting conducive to social and emotional growth.

Parent knowledge of sleep and routine is key in developing healthy children. Adults are responsible for providing a suitable environment for them to be successful. Social-emotional skills are dependent upon quality sleep and routine consistency. Little research has been collected on parent education of sleep and routine and its effects on child behavior. Without this information, it is difficult for families and educators to know what type or level of parental support is needed for the proper growth of children.

Does parent education on sleep and routine affect bedtime routine creation and adherence? What effect does parent education have on incidences of physical contact and defiance in the classroom?

### **Literature Review**

This literature review examines the importance of sleep and routine for success in development and the importance of parent education on these key elements. Some specific areas covered in this review include: (1) cognitive and social-emotional effects of sleep deprivation; (2) the importance of family involvement and consistency of routines at bedtime; (3) approaches to parent education on sleep and routine.

### **Theoretical Framework**

Koulouglioti, Cole, Moskow, McQuillan, Carno, & Grape (2014) framed their study on the basis of the ecological theory by Bronfenbrenner. The researchers referenced Bronfenbrenner and Evans (2000) by stating the ecological theory as, “children’s socioemotional functioning and sleep acquisition are particularly at risk for children living in chaotic home environments characterized by lack of structure, lack of routines, and high levels of noise,” (p. 81). The microsystem (a child’s immediate environments) found within the ecological theory is comprised of school and home. The interactions between school and home affects the growth and development of children. Bronfenbrenner and Evans state, “These less supportive relationships operating as a proximal process, in turn, produced poorer behavioral adjustment at school,” (p. 121). The ecological theory supports this research on the correlation between parent education of sleep and routine and the behavior of children in their microsystem of school. Therefore, ecological theory provides the theoretical framework for this action research because it explains how their immediate environment affects a child’s development.

### **Effects of Sleep Deprivation**

The following studies have shown that quality and quantity of sleep have a direct relationship with cognitive functioning and social-emotional skills. Results support higher cognition and a greater ability to regulate emotions after a night of high quality sleep. Sleep deprivation seems to cause lower cognitive functioning skills and more social-emotional problems, such as a decreased ability to regulate and internalize emotions.

While society often targets race as being the sole predictor of the achievement gap, there are other aspects that may play a role. Quality and quantity of sleep is often overlooked as key factors when determining cognitive functioning gaps. According to Buckhalt (2011), "if sleep accounts for any significant proportion of the variance in school achievement, improving children's sleep may provide a new focus to narrow the achievement gap," (p. 9). In Buckhalt's (2011) study, two racial groups, Euro-American (~70%) and African-American (~30%), of different socioeconomic status families were chosen to participate in a one week study using actigraphs (i.e., a monitor that captures sleep/wake activity) and parent-informed sleep diaries to track sleep within children. At the end of the week, the children went to the lab to be assessed using cognitive tests. The results of the assessments in combination with the actigraphs and sleep diaries revealed that African-American children scored 16- to 19- points lower for verbal cognition due to increased sleepiness. More sleep results in higher cognitive functioning, while less sleep results in lower cognitive functioning. Sleep deprivation also causes lower emotional/behavioral regulation, higher impulsivity, and higher hyperactivity within children, (Maski & Kothare, 2013). Regardless of socioeconomic

status, Buckhalt's (2011) study shows that the achievement gap can decrease with more focus on high quality and quantity of sleep.

Emotional regulation is the ability of one to appropriately control, display, and experience emotions in any given situation. Specifically, affect, a term used by psychologists, is the experience of showing emotions. In a study completed by Konen, Dirk, Leonhardt, and Schmiedek (2016), 110 students ages 8-11 provided daily sleep habits and current affect four times throughout the day for 31 consecutive days. This study showed that high sleep quality showed higher affect. High affect and high activation was present throughout the day for those students who experienced an early bedtime with longer sleep. Students with later bedtimes and shorter sleep experienced low affect and deactivation throughout the day.

Mindell, Leichman, DuMond, and Sadeh (2017) conducted an 18-month study including 117 mothers and their children assessed every three months. The children in this cohort were 3-18 months old. Children with a higher sleep intake at six months of age showed lower levels of social-emotional problems at 12 months of age. Similarly, at 12 months old, bedtime, as well as sleep onset latency, showed a significant relationship with social-emotional problems. For children at 18 months of age, later bedtime resulted in higher social-emotional problems. The conclusion of this study, however, found the most substantial outcome due to sleep deprivation, onset sleep latency, and later bedtimes was internalization. Internalization is the ability to internalize social skills such as attitudes and establish these values or attitudes as one's self.

### **Importance of Routines at Bedtime**

Home environment directly correlates with consistency of bedtime routines. Mindell, Telofski, Wiegand, and Kurtz (2009) define bedtime routine as “one such daily family routine and consists of parents engaging their child in the same activities in the same order on a nightly basis prior to turning out the lights (“lights out”),” (p. 599). Spagnola and Fiese (2007) discovered that consistent family routines and rituals presented a predictable, emotional climate that was conducive to early childhood development.

In an attempt to discover more about the relationship between bedtime routines and sleep outcomes, mothers of 10,085 children in Mindell, Li, Sadeh, Kwon, and Goh’s study (2014) completed the Brief Infant/Child Sleep Questionnaire. The questionnaire asked questions related to bedtime routine consistency, sleep habits, and behavior problems suspected by adults. The results of the questionnaire show that bedtime routines are dose-dependent with the amount of high-quality sleep obtained.

Not only are children who participate in a bedtime routine able to obtain more sleep, but so are children who utilize routines throughout the day. Staples, Bates, and Petersen’s study (2010) used actigraphs among 87 children for seven days. The actigraphy revealed sleep data that showed a greater amount of sleep for those children whose parents adhered to the bedtime routine and were consistent with parenting practices in discipline than those who did not. Similar to the findings in this study, Mindell and Williamson’s (2018) theoretical review also found that to have higher sleep intake, children not only need a consistent bedtime routine, but they also need more consistent daytime discipline and limit-setting practices throughout the day.



To determine if children who had frequent, consistent routines at age four still were using routines at age six, Koulouglioti completed a study. “Mothers were interviewed when children were ages three years ( $N = 278$ ), four years ( $N = 264$ ), and again at 6 years ( $N = 181$ ),” (Koulouglioti et al., 2013). The sociodemographic characteristics among 177 families were diverse among education, ethnicity, income, family structure, and child’s gender. Koulouglioti et al. used two tools to measure the child’s routine, the Child Routine Questionnaire and the Sleep Duration subscale of the Children’s Sleep Habits Questionnaire. Parents answered questions about morning routines, bedtime routines, and sleep duration. It was observed that sleep intake was higher at age six for children who had a consistent routine beginning at age four and continuing to age six (Koulouglioti et al., 2013).

Henderson and Jordan (2010) found multiple factors to affect consistency of routines, such as child behaviors and the environment. Home environment is an essential element of a healthy routine. Certain aspects of the home environment, such as television usage, may influence sleep quantity and quality. Brockmann et al. (2016) in their attempt to show effects of television usage, proved that television likely should not be a part of a bedtime routine for children. They found that when televisions were present in children’s rooms or if evening viewing occurred, the quality of sleep was affected significantly. The quality of sleep is likely caused by the disrupted circadian rhythm. Circadian rhythm, also known as your “body clock,” is the 24-hour cycle that naturally tells your body when it is time to eat, sleep, and wake.

### **Parent Knowledge of Sleep and Routine**

Parent education of sleep and routine has proved to be a successful method to improving quality and quantity of sleep as well as bedtime routine consistency. While parent classes, parent-child groups, and home-school connections have been effective, the following studies have shown that additional education should continue to be provided to parents of all socioeconomic statuses. Overall, parent knowledge of sleep requirements is lacking, indicating the imperative need for parent education.

Martin, Barajas, Brooks-Gunn, and Hale's (2011) study of 1,850 low socioeconomic status families supports "research indicating that racial minorities and households with lower levels of socioeconomic status are at higher risk of not having regular bedtimes and bedtime routines," (p. 241). In providing five different parenting services (case management, home visiting, parent-child groups, parenting classes, and parenting support groups), results showed that parents were more receptive and benefitted the most from parenting classes and parent-child groups. The families involved in those two services provided a regular bedtime for their child.

Similar to this study, the Sleep Well! Education Campaign also studied parent-based sleep education of low socioeconomic status families. One hundred fifty-two children were included in the study over the course of four weeks. The education campaign promoted three messages: bedtime before 21:00; no caffeine; keep electronics out of the bedroom. With the collection of sleep data at the beginning and end of the four week period, results showed that there were 19.6% fewer electronics used and sleep intake increased by 0.39 hours, while caffeine intake did not improve or worsen (Mindell, Sedmak, Boyle, Butler, & Williamson, 2016).

Rather than educating parents on the importance of sleep and routine, McDowall, Campbell, and Elder assessed parents' current knowledge of child sleep. One hundred fifteen parents of children aged 2-12 years completed a true/false questionnaire. "The accuracy of parent estimations of their child's sleep requirements varied: 55% were within recommendations, while 26% underestimated their child's sleep requirements, 19% overestimated," (McDowall et.al, 2015, p. 57). Parents also reported barriers to bedtime, such as parent worked late, dinner was late, family or friends visiting, etc. The overall results showed that knowledge of child sleep was poor and more research on parent education should be completed.

### **Methodology**

This study was a correlational design. Weekly sleep diaries, classroom observations, and daily teacher journals were used to collect data to inform the study. Pre, mid, and post-assessments were presented to parents to complete independently and return to school.

The population for this action research was 4K (4-year-old kindergarten) students enrolled at a Pee Dee Region elementary school (N=30). The sample was 16 students enrolled in two 4K classrooms during the 2018-2019 school year. Eight students were in one classroom and eight were in the other. This sample features 8 females and 8 males. Parental permission was sought via a passive consent letter prior to the beginning of this action research.

The Parent Pre-Assessment (see Appendix A), Parent Mid-Assessment (see Appendix B), and Parent Post-Assessment (see Appendix C) were completed by parents in a series of multiple choice and open-ended questions that were designed to

gather information about current parent knowledge of bedtime routines and their current bedtime routine. Parents also completed Weekly Sleep Diaries (see Appendix D) to gather daily information about the time the child woke and went to bed, if a bedtime routine was used, and an explanation if not. We tallied student behaviors (physical contact and defiance) using a chart titled Tallying Behaviors (see Appendix E) each day in the classroom, as well as completed a Teacher Reflection Journal (see Appendix F). The Teacher Reflection Journal consisted of the number of adults and children present, mood of teacher, special events, recess details, successes/challenges, information about parent education sent home during the week, and its impact in the classroom.

During the first week, we held one Morning Meeting for parents to ask questions to ensure parents understand what we were doing. We also sent home the Parent Pre-Assessment (see Appendix A) during week one. Each week, we sent home a Weekly Sleep Diary (see Appendix D) every Monday, and they were returned by parents through the child's Daily Communication Folder on the following Monday. During weeks 2-6, parent education material on sleep and routine was sent home each Monday based on what the parents already know using the Parent Pre-Assessment (see Appendix A) results. We sent home the Parent Mid-Assessment (see Appendix B) during week 3. At the end of week 6, we sent home the Parent Post-Assessment (see Appendix C).

As researchers, we completed the following:

- Appendix E (Tallying Behaviors completed by the teacher showed the amount of daily negative behaviors (physical contact, defiance) per student throughout the entire school day (7:35-2:10) for 6 weeks.)

- Appendix F (The Teacher Reflection Journal completed by the teacher gave the total number of kids present, weather (inside/outside recess), teacher/substitute present, any special events (drills, assemblies, birthdays, holidays) occurring, the teacher's mood, information sent home, and effectiveness of information sent home for each school day.)

After data collection was complete, we reviewed data from the parent assessment (see Appendix A, B, and C) responses and prominent themes evident in each response. Weekly Sleep Diaries (see Appendix D) were also used to determine if parent education influenced bedtime routines during the six weeks. In addition, Tallying Behaviors (see Appendix E) and the Teacher Reflection Journals (see Appendix F) were used to determine if parent education impacted physical contact and defiance of 4K students in the classroom.

### **Data Analysis**

The purpose of this study was to determine if parent education of sleep and routine affects classroom behavior (physical contact and defiance) of four-year-old students at a Pee Dee Region elementary school. The researchers assessed parent knowledge at three different times during the study with pre-, mid-, and post-assessments. Parents provided bedtime routine data through Weekly Sleep Diaries. The researchers tallied student behaviors each school day and provided pertinent information through daily Teacher Journals.

The subjects for this study were four-year-olds enrolled at a Pee Dee Region elementary school and their parents in Florence, South Carolina. Two classrooms participated in the study. Within the two classrooms, 16/30 students were active

participants. There were eight students from each classroom. Of the 16 students, eight were males and eight were females. Of the 16 parents that participated, all 16 were the mothers of the students.

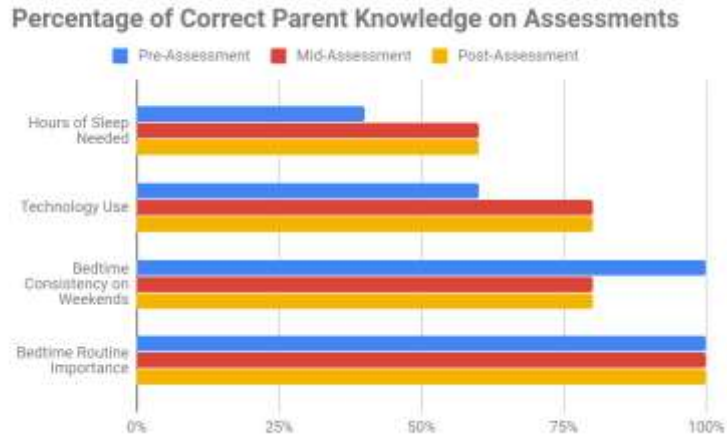
### **Parent Creation and Adherence of Bedtime Routines**

Does parent education on sleep and routine affect bedtime routine creation and adherence? To answer this question, the researchers analyzed daily Teacher Journals, Weekly Sleep Diaries, and pre-, mid-, and post-assessments completed by parents. The Teacher Reflection Journals were completed at the end of each school day by the researchers. The Weekly Sleep Diaries were completed each week by parents. Pre-, mid-, and post-assessments were completed independently at home by parents. Data was analyzed and placed into tables and charts.

### **Behavioral Effects of Parent Education**

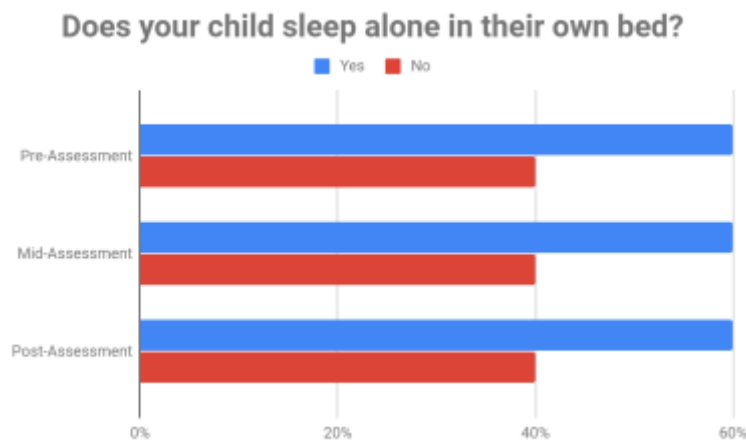
What effect does parent education have on incidences of physical contact and defiance in the classroom? To answer this question, the researchers analyzed daily Teacher Journals and Tallying Behaviors charts. The Teacher Reflection Journals were completed at the end of each school day by the researchers. The researchers throughout each school day completed the Tallying Behaviors charts. Data was analyzed and placed into tables and charts.

*Chart 1*  
*Percentage of Correct Parent Knowledge on Assessments*



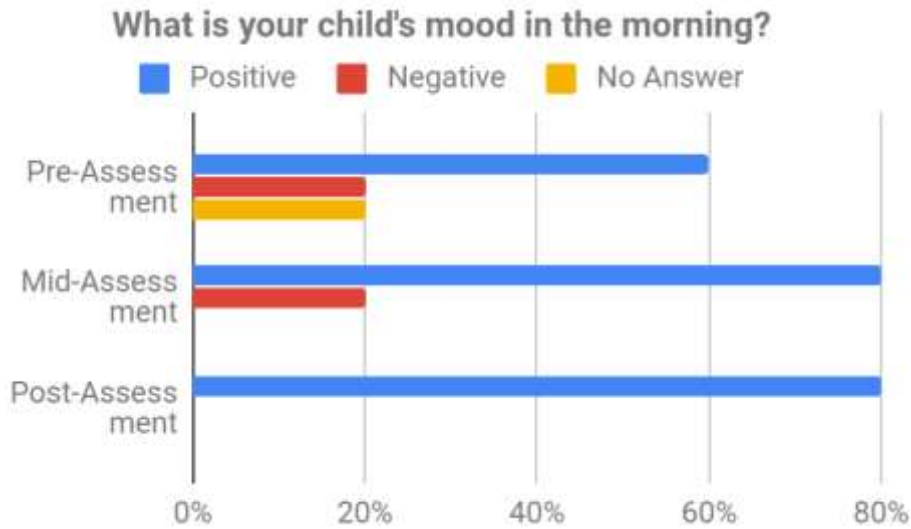
Parent knowledge of sleep and routine was a mix of improvement and decline as found in Chart 1. Knowledge of hours of sleep needed and technology use improved from pre-assessment to mid-assessment; however, there was no improvement from mid-assessment to post-assessment. Bedtime consistency on weekends resulted in a decline of parent knowledge from pre-assessment to mid-assessment. Parent knowledge of bedtime routine importance was consistent throughout all assessments administered.

*Chart 2  
Current Sleep and Routine Habits Question #5*



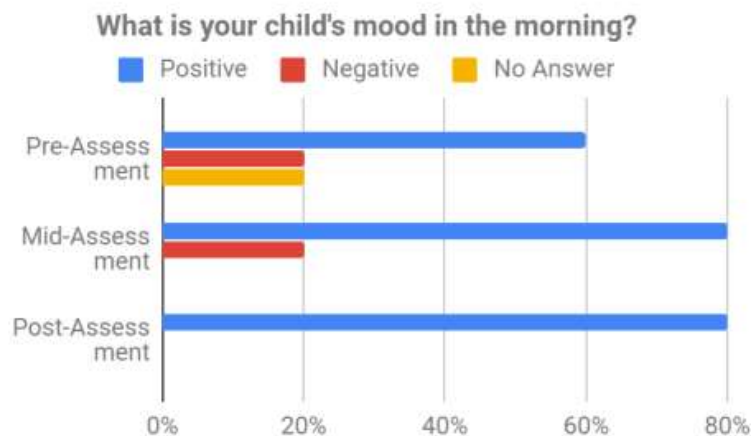
Independent sleep remained consistent.

*Chart 3  
Current Sleep and Routine Habits Question #7*



Struggle at bedtime increased from pre-assessment to mid-assessment and then decreased from mid-assessment to post-assessment.

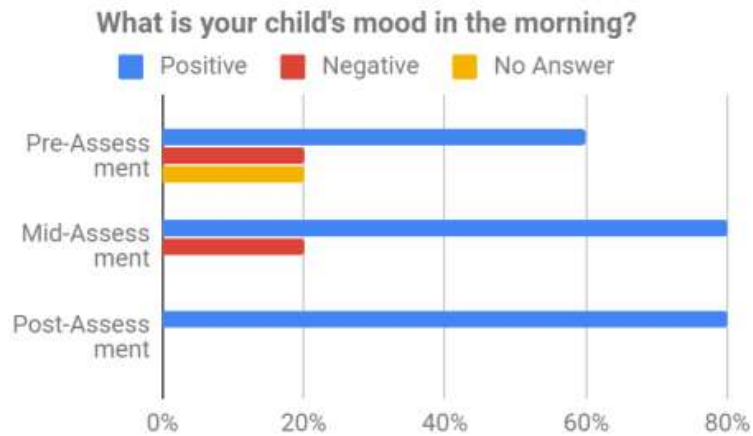
*Chart 4  
Current Sleep and Routine Habits Question #9*



Struggle at wake time decreased consistently throughout all assessments.

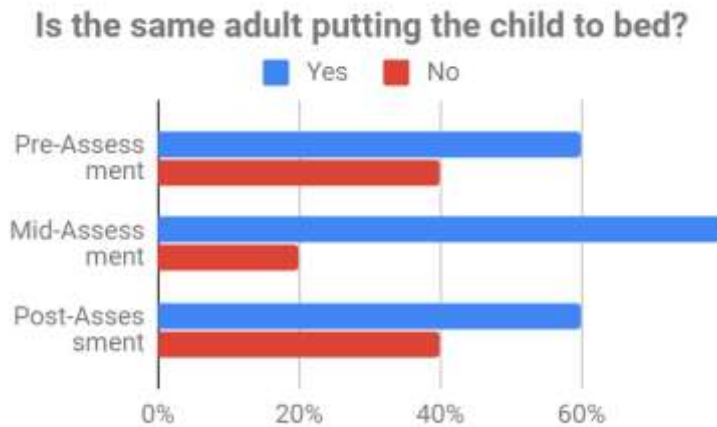
*Chart 5  
Current Sleep and Routine Habits Question #10*





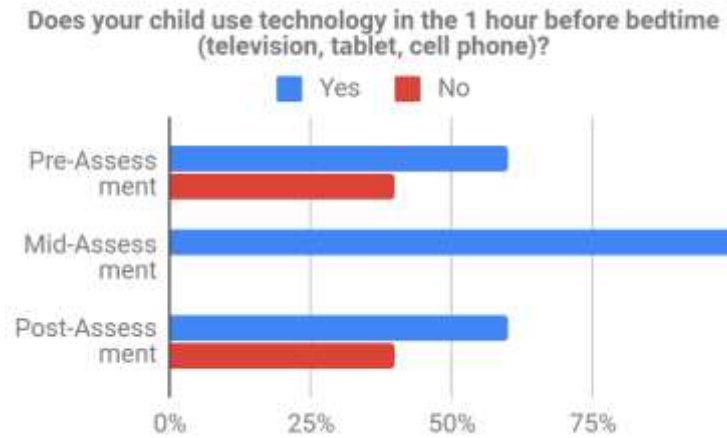
Child's mood at wake time improved during the six weeks resulting in four of five students having a positive mood.

*Chart 6  
Current Sleep and Routine Habits Question #11*



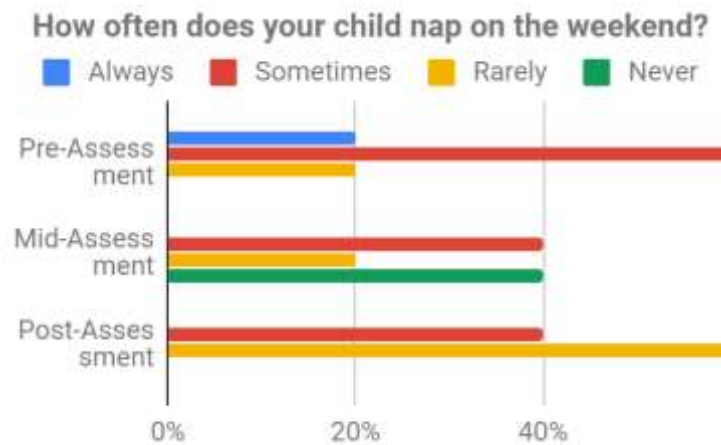
The same adult putting the child to bed stayed consistent except for one child.

*Chart 7  
Current Sleep and Routine Habits Question #12*



Technology use before bedtime increased from pre-assessment to mid-assessment and then decreased from mid-assessment to post-assessment. However, more than half of the students continued using technology before bedtime.

*Chart 8  
Current Sleep and Routine Habits Question #13*



Nap occurrence decreased from pre-assessment to mid-assessment and increased from mid-assessment to post-assessment.

*Table 1  
Post-Assessment Additions*

<b>Variable</b>	<b>Post-Assessment</b>
Information Read If not, why?	100% Yes
Notice of Change Following New Routine Yes No N/A	80% 20%
Changes Noticed	Behavior improved, more alert, more energized, eager, happier
Plan to Continue New Routine Yes	100%

All parents participating read the information provided, however only four of the five parents noticed a change in their child's behavior after following a new routine. The changes noted were all positive. Despite one parent not noticing a change, all parents plan to continue the new routine.

*Table 2*  
*Week 1 Sleep*

<b>Student</b>	<b>Average of Hours Slept Per Night</b>	<b>Number of Nights Followed Bedtime Routine</b>	<b>Reasons Not Followed</b>
A	9	4	Weekend
B	10	2	Church/family time
C	9.3	1	Dance practice
D	10.05	4	Went to bed on time but overslept
E	9.75	4	Weekend

All students slept an average of at least nine hours during week one. No students followed their bedtime routine all five nights. Student A and E followed four of

the five nights of their bedtime routine but did not follow it on the fifth night due to it being the weekend.

*Table 3*  
*Week 2 Sleep*

<b>Student</b>	<b>Average of Hours Slept Per Night</b>	<b>Number of Nights Followed Bedtime Routine</b>	<b>Reasons Not Followed</b>
A	8.95	4	Weekend
B	10.15	3	Fell asleep early
C	8.8	1	Dance practice
D	9.55	3	Bible study & child was tired allowed to sleep 15 extra minutes.
E	10.25	4	Weekend

Average hours slept per night was lower than the previous week for three of the five students. However, the other two students increased the number of hours slept. Student A and E followed a bedtime routine the highest number of nights and both did not follow a bedtime routine on the fifth night because it was the weekend. Student C slept the least amount of hours and followed the bedtime routine the least.

*Table 4*  
*Week 3 Sleep*

<b>Student</b>	<b>Average of Hours Slept Per Night</b>	<b>Number of Nights Followed Bedtime Routine</b>	<b>Reasons Not Followed</b>
A	9.35	4	Weekend
B	9.9	2	Fell asleep early (x2)
C	9.4	4	Wedding rehearsal
D	9.52	3	Bible study, stayed up to read extra book
E	10.5	5	N/A

Student E slept the greatest number of hours and followed the bedtime routine all five nights. Student B fell asleep early twice during the week and also had the lowest number of nights following a bedtime routine.

*Table 5  
Week 4 Sleep*

<b>Student</b>	<b>Average of Hours Slept Per Night</b>	<b>Number of Nights Followed Bedtime Routine</b>	<b>Reasons Not Followed</b>
A	9.55	4	Weekend
B	9.65	5	N/A
C	9.7	4	Family time
D	9.6	3	Late dinner, STEAM Night
E	10.25	5	N/A

All students followed a bedtime routine for more than half of the week and averaged more than nine and a half hours of sleep for the week.

*Table 6  
Week 5 Sleep*

<b>Student</b>	<b>Average of Hours Slept Per Night</b>	<b>Number of Nights Followed Bedtime Routine</b>	<b>Reasons Not Followed</b>
A	8.5	5	N/A
B	9.05	2	Stayed with grandma
C	9.1	3	Family time
D	9.65	4	Came home late
E	10.05	3	Family Emergency, woke up later due to doctor's appt.

Family was the main reason bedtime routine was not followed this week.

Student A followed the bedtime routine all five nights and also averaged the least hours of sleep this week.

*Table 7*  
*Week 6 Sleep*

<b>Student</b>	<b>Average of Hours Slept Per Night</b>	<b>Number of Nights Followed Bedtime Routine</b>	<b>Reasons Not Followed</b>
A	9.3	4	Weekend
B	9.95	4	Fell asleep early
C	9	3	Returned home late/weekend
D	9.55	4	Bible Study
E	9.85	4	Pick daddy up from work

All five students averaged nine hours of sleep or higher. Of the five, four students followed the bedtime routine four of the five nights. Student A and C averaged

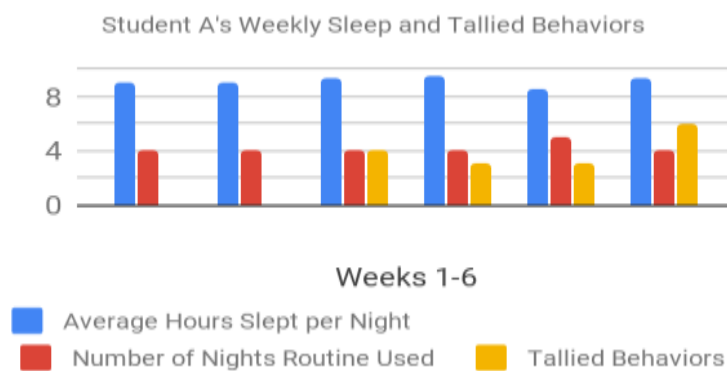
the least amount of sleep and did not follow a bedtime routine on the fifth night because it was the weekend.

*Table 8  
Behaviors Tallied*

Student	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6
A	0	0	4	3	3	6
B	2	0	2	1	0	1
C	0	0	0	0	0	0
D	4	3	6	4	0	5
E	0	1	0	0	2	3

Student A and E both increased the number of behaviors displayed during the six weeks. Student C remained consistent with zero behaviors tallied. There was a high volume of behaviors tallied for Student D. However, during week 5, Student D displayed no behaviors. Student A and D were the only students to display six tallied behaviors during a week. Student B’s behaviors tallied fluctuated throughout the six weeks. Furthermore, the behaviors tallied decreased overall.

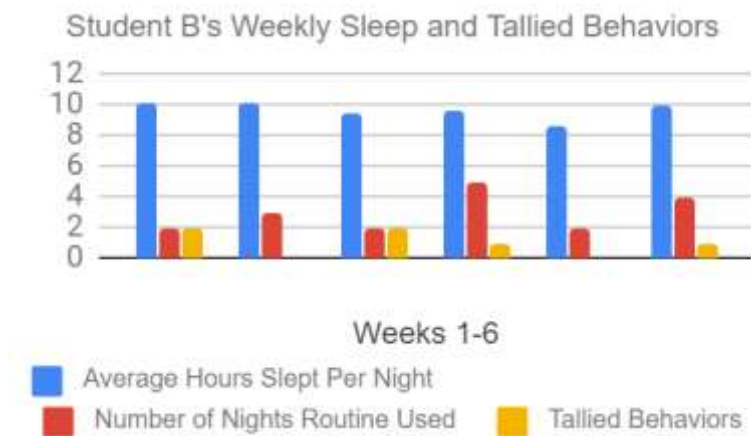
*Chart 9  
Student A’s  
and Tallied*



*Weekly Sleep  
Behaviors*

Student A's average hours of sleep remained consistent during the six weeks. The bedtime routine was followed at least four nights per week for all weeks. Over the six weeks, behaviors tallied increased.

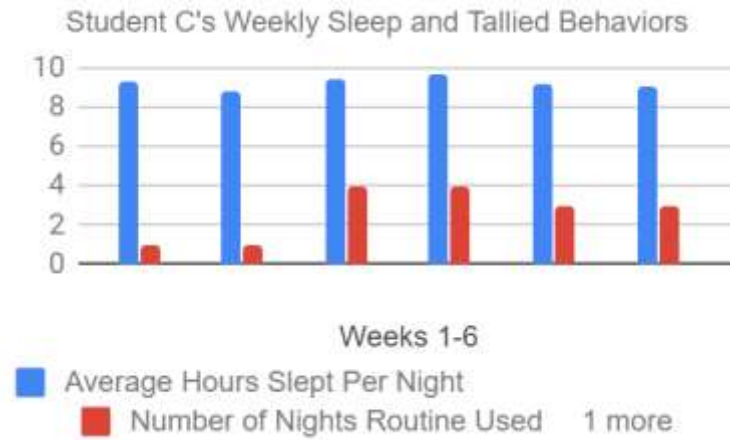
*Chart 10*  
*Student B's Weekly Sleep and Tallied Behaviors*



The week averaging the most hours of sleep and the week averaging the least hours of sleep both resulted in no behaviors tallied. Number of hours slept remained consistent during the six weeks.

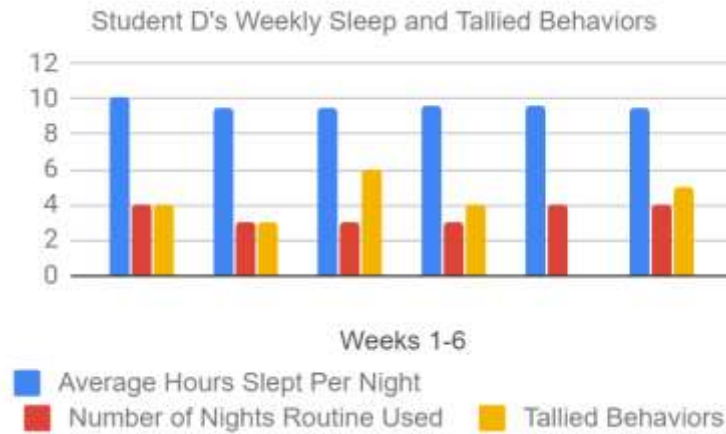
*Chart 11*  
*Student C's Weekly Sleep and Tallied Behaviors*





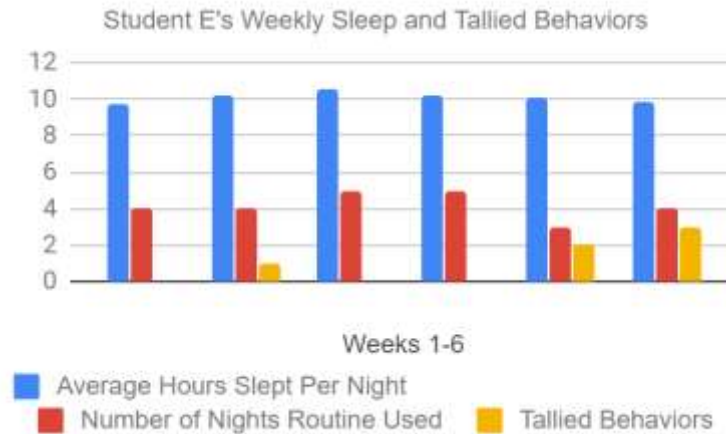
Regardless of the average hours of sleep and number of nights bedtime routine was followed, Student C did not display any behaviors for tallying.

*Chart 12  
Student D's Weekly Sleep and Talled Behaviors*



Student D followed the bedtime routine more than half of the week during all six weeks. The average hours of sleep remained consistent. Hours slept and bedtime routine followed remained consistent, however during week five, Student D displayed no behaviors.

*Chart 13  
Student E's Weekly Sleep and Talled Behaviors*



The two weeks in which hours slept and number of nights the bedtime routine was followed were highest, no behaviors were tallied. When the number of hours slept and nights the bedtime routine was followed began to decrease, behaviors tallied increased.

The goal of the study is to determine if parent education affects classroom behavior (physical contact and defiance). While the majority of students' sleep stayed consistent, routine consistency fluctuated. Tallied behaviors also fluctuated but ultimately increased for the majority of students. There continues to be inconsistencies among the data collected. With this in mind, our analysis of this data directly influences our future course of action.

### **Action Plan**

Past research suggests that parent education is continued and emphasized in an attempt to study the effects on sleep quality and bedtime routine consistency. "North American researchers have reported that 52% to 76% of parents of children aged three months to 12 years underestimated their child's sleep requirements," (McDowall et al., 2015, p. 57). With increased knowledge, parents hold the key to driving sleep quality and bedtime routine within their household.

Teachers have the advantage of closely working with parents by providing strategies to aid in healthy child development. This allows teachers to potentially have a positive effect on sleep and routine habits when social-emotional skills are weak within the classroom.

The purpose of this action research project was to explore if providing parents with education/resources of sleep and routine affects a four-year-old child's behavior (physical contact and defiance) within the classroom. As shown in the data above, only five of the sixteen participants were consistent in submitting the required sleep and routine information weekly. The other participants responded, but data collection was inconsistent. After analyzing the data, the researchers concluded participant submission to be too small to suggest that parent education of sleep and routine directly affects behavior in the classroom. It can be suggested that sleep and routine consistency may not be the only factors that immediately affect a child's behavior.

*Based on the findings of this study, the following conclusions were drawn:*

*On the weeks students slept an average of fewer than 10 hours, behaviors were higher than the weeks students slept an average of more than 10 hours. As mentioned above, the study completed by Konen, Dirk, Leonhardt, and Schmiedek (2016) shows that students with later bedtimes and shorter sleep experienced a low ability to regulate emotions throughout the day.*

- *Student C slept an average of fewer than 10 hours, and zero behaviors were tallied during weeks 1-6. It can be concluded that Student C is an outlier in the data.*

- *No students slept the recommended 11-13 hours of sleep per night. All participating students slept an average of fewer than 10.5 hours per night.*
- *Routine consistency fluctuated for each student during the six weeks. Most weeks routine occurrence was four and below.*

*Based on the findings and conclusions of this study, the following recommendations were drawn:*

- *Actigraphs should be used as a more effective method of data collection on hours slept per night rather than relying solely on parents to record the data each morning and night. Sleep times may be skewed and misinformed. Buckhalt's (2011) study and the study completed by Staples, Bates, and Peterson (2010) both used actigraphs as a reliable source of sleep data collection. Actigraphs are devices that are worn on the body that monitor sleep/wake activity.*
- *Other factors, such as home environment (parenting style, parent level of education, single-parent household, etc.), student disabilities (autism, ADHD, developmental delay, etc.), and school environment (adult interactions, the culture of the school, etc.), should be considered.*
- *To increase involvement in the study, more parent-teacher interactions should occur. Interactions could include but are not limited to meetings, after-school events, and frequent contact. Martin, Barajas, Brooks-Gunn, and Hale's (2011) study provided five different parenting services. The results showed parents were more receptive and benefitted the most from parenting classes and parent-child groups.*

- *Clear expectations of tallying behaviors should be defined (i.e., when to tally and definitive examples of defiance and physical contact).*
- *Further research should be collected over a longer period (8+ weeks).*
- *Two groups of students could be studied and compared. One group is sleeping the recommended 11-13 hours per night and one group is sleeping under the recommended 11-13 hours per night.*

The two researchers will continue to provide all parents with valuable sleep and routine educational resources. Regardless of the behavioral results, there are several other important developmental factors that are positively impacted by sufficient sleep and routine consistency. To find if there is a correlation, further research on the behavioral effects of sleep and routine parent education should be completed considering the recommendations listed above.

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#### Appendix A

## Parent Pre-Assessment

Please honestly answer the following questions to the best of your ability. This form needs to be completed and returned in your child's Daily Communication Folder by (insert date).

1. How much sleep does a 4-5 year old child need every night?
  - a. 7-9 hours
  - b. 9-11 hours
  - c. 11-13 hours
2. How much technology (e.g. tablet, computer, television) should a 3-5 year old child use throughout the day?
  - a. 2 hours
  - b. 1 hour
  - c. 3 hours
3. On the weekend, should a 4-5 year old child go to bed later or at the same time as on the weekdays?
  - a. Later
  - b. Same time
4. Is it important for a 4-5 year old child to follow a bedtime routine? Yes No

### Current Sleep and Routine Habits

Think about the past week. If the past week was abnormal (death in family, child was sick, etc.), please think about the most recent normal week.

1. On school nights, what time did your child go to bed? \_\_\_\_\_
2. On school mornings, what time did your child wake up? \_\_\_\_\_
3. Did you follow a bedtime routine? Yes No
4. If yes, how many nights did you follow the bedtime routine? \_\_\_\_\_  
If no, why? \_\_\_\_\_
5. Does your child sleep alone in their own bed? Yes No
6. If no, who does your child sleep with? \_\_\_\_\_
7. Does your child struggle at bedtime? Always Sometimes Rarely Never



8. If your child does struggle, what does your child's behavior look like? \_\_\_\_\_  
\_\_\_\_\_
9. Does your child have difficulty getting out of bed in the morning?  
Always Sometimes Rarely Never
10. What is your child's mood in the morning? \_\_\_\_\_
11. Does the same adult put your child to bed every night? Yes No
12. Does your child use technology in the 1 hour before bedtime (television, tablet, cell phone)? Yes No
13. Does your child take a nap on Saturday and/or Sunday?  
Always Sometimes Rarely Never

## Bedtime Routine

Please check the box that applies.

- We do follow a consistent bedtime routine each night.
- We do **not** follow a consistent bedtime routine each night.

What does your child's bedtime routine look like?  
Please list the activities that occur and in what order they occur each night.

Time bedtime routine begins \_\_\_\_\_

1.
2.
3.
4.
5.
6.
7.
8.

Time bedtime routine ends \_\_\_\_\_

## Parent Mid-Assessment

Please honestly answer the following questions to the best of your ability. This form needs to be completed and returned in your child's Daily Communication Folder by (insert date).

1. How much sleep does a 4-5 year old child need every night?
  - a. 7-9 hours
  - b. 9-11 hours
  - c. 11-13 hours
2. How much technology (e.g. tablet, computer, television) should a 3-5 year old child use throughout the day?
  - a. 2 hours
  - b. 1 hour
  - c. 3 hours
3. On the weekend, should a 4-5 year old child go to bed later or at the same time as on the weekdays?
  - a. Later
  - b. Same time
4. Is it important for a 4-5 year old child to follow a bedtime routine? Yes No

### Current Sleep and Routine Habits

Think about the past week. If the past week was abnormal (death in family, child was sick, etc.), please think about the most recent normal week.

1. On school nights, what time did your child go to bed? \_\_\_\_\_
2. On school mornings, what time did your child wake up? \_\_\_\_\_
3. Did you follow a bedtime routine? Yes No
4. If yes, how many nights did you follow the bedtime routine? \_\_\_\_\_  
If no, why? \_\_\_\_\_
5. Does your child sleep alone in their own bed? Yes No
6. If no, who does your child sleep with? \_\_\_\_\_

7. Does your child struggle at bedtime? Always Sometimes Rarely Never
8. If your child does struggle, what does your child's behavior look like? \_\_\_\_\_  
\_\_\_\_\_
9. Does your child have difficulty getting out of bed in the morning?  
Always Sometimes Rarely Never
10. What is your child's mood in the morning? \_\_\_\_\_
11. Does the same adult put your child to bed every night? Yes No
12. Does your child use technology in the 1 hour before bedtime (television, tablet, cell phone)? Yes No
13. Does your child take a nap on Saturday and/or Sunday?  
Always Sometimes Rarely Never

### Bedtime Routine

Please check the box that applies.

- We do follow a consistent bedtime routine each night.
- We do **not** follow a consistent bedtime routine each night.

What does your child's bedtime routine look like?

Please list the activities that occur and in what order they occur each night.

Time bedtime routine begins \_\_\_\_\_

1.
2.
3.
4.
5.
6.
7.
8.

Time bedtime routine ends \_\_\_\_\_

## Parent Post Assessment

Please honestly answer the following questions to the best of your ability. This form needs to be completed and returned in your child's Daily Communication Folder by (insert date).

1. How much sleep does a 4-5 year old child need every night?
  - a. 7-9 hours
  - b. 9-11 hours
  - c. 11-13 hours
2. How much technology (e.g. tablet, computer, television) should a 3-5 year old use throughout the day?
  - a. 2 hours
  - b. 1 hour
  - c. 3 hours
3. On the weekend, should a 4-5 year old child go to bed later or at the same time as on the weekdays?
  - a. Later
  - b. Same time
4. Is it important for a 4-5 year old child to follow a bedtime routine? Yes No

### Current Sleep and Routine Habits

Think about the past week. If the past week was abnormal (death in family, child was sick, etc.), please think about the most recent normal week.

1. On school nights, what time did your child go to bed? \_\_\_\_\_
2. On school mornings, what time did your child wake up? \_\_\_\_\_
3. Did you follow a bedtime routine? Yes No
4. If yes, how many nights did you follow the bedtime routine? \_\_\_\_\_
5. Does your child sleep alone in their own bed? Yes No
6. If no, who does your child sleep with? \_\_\_\_\_
7. Does your child struggle at bedtime? Always Sometimes Rarely Never

8. If yes, what does your child's behavior look like? \_\_\_\_\_  
\_\_\_\_\_
9. Does your child have difficulty getting out of bed in the morning?  
Always Sometimes Rarely Never
10. What is your child's mood in the morning? \_\_\_\_\_
11. Does the same adult put your child to bed every night? Yes No
12. Did you read the information on sleep and routine sent home each Monday? Yes No
13. If no, why? \_\_\_\_\_  
\_\_\_\_\_
14. Does your child use technology in the 1 hour before bedtime (television, tablet, cell phone)? Yes No
15. Does your child take a nap on Saturday and/or Sunday?  
Always Sometimes Rarely Never
16. Did you see any changes when following the new routine, if you followed a new routine? Yes No N/A
17. If Yes, what were the changes? \_\_\_\_\_  
\_\_\_\_\_
18. Do you plan to continue the new routine? Yes No

### Bedtime Routine

Please check the box that applies.

- We do follow a consistent bedtime routine each night.
- We do **not** follow a consistent bedtime routine each night.

What does your child's bedtime routine look like?

Please list the activities that occur and in what order they occur each night.

Time bedtime routine begins \_\_\_\_\_

1.
2.
3.
4.
5.
6.
7.
8.

Time bedtime routine ends \_\_\_\_\_



Appendix D

# Weekly Sleep Diary

Please return in child's folder on Monday

Week (insert number)

Date	Time in Bed	Wake Up Time	Did you follow the bedtime routine?	If not, why?



Appendix F  
**Teacher Reflection Journal**

Date:

Number of Students Present:

Weather (inside/outside recess):

Adults Present:

Special Events:

Teacher Mood:

In particular, what successes and challenges did the students have during the day?

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What type of source did I provide for the parents to implement?  
(answer on Mondays)

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In what ways did I see evidence of these sources impacting parents and children? (answer on Fridays)

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