

# P1: User Research

Dream Team

## Initial Design Question

Early childhood is a critical period to build a good bedtime routine, and children who suffer from arthritis are forced to endure pain that prevents them from getting a good night's sleep. We hope to design a product that will help children with arthritis create and maintain healthy sleeping habits. That being said, before we can start designing, we first need to conduct user research to understand the needs of children with arthritis. For that reason, this study is intended to answer the following design question: How can we establish regular sleep patterns in children, ages 2-5, who suffer from arthritis?

## Stakeholders

The primary stakeholders for this design problem are as follows:

- **Sleep Innovations for Preschoolers with Arthritis (SIPA).** This project is sponsored by Weichao Yuwen from SIPA, who would like us to design a product that engages children with arthritis, ages 2-5, and a webapp that engages parents in the child's sleep intervention. She has a high interest in and influence over this project, and we will be consulting with her and working with her throughout the design process.
- **Children with arthritis.** Children with arthritis are currently not directly engaged in their sleep intervention and are dependent on their parents for guidance. This project's goal is to change that by making children with arthritis our primary user and designing a product that they can interact with to help them fall asleep and stay asleep.
- **Parents.** Parents of children with arthritis are currently the only ones directly engaged in their child's sleep intervention and spend much of their time learning how to manage their child's sleep. Although parents may not be the primary user of our product, they might still be a direct user of our product and should be considered while making design decisions, especially because their child's quality of sleep affects theirs as well.

## Research Questions

The research questions that we identified are as follows:

- What bedtime routine, if any, do children currently have? Where do they experience issues?
- When do children usually experience sleep interruptions at night? What do they do when they experience an interruption?
- How frequently do children experience intense pain? How severe is the pain? How is the pain treated?
- Do children experience pain when lying down? Sitting still? Moving around? How does the pain compare to each other in each instance?

## Methods

The three user research methods we conducted are as follows:

- **Interview with sponsor.** In our interview with Weichao, our sponsor, we set a 40 minute block of time on Tuesday, October 16th aside to discuss the project with her and what she had in mind for her proposal. By interviewing her, we hoped to familiarize ourselves with the design space that we were working with and get an idea of what direction we should head in.
- **Literature review.** In our literature review, we read three scholarly articles (two of them were recommended by our sponsor and one of them was recommended by our professor) and wrote a summary for each of them. By conducting a literature review, we hoped to gain a better understanding of how to help children who experience sleep problems, especially the ones who are diagnosed with juvenile idiopathic arthritis.
- **Interview with children.** In our interview with children, we held 5-10 minute interviews with 4 children, ages 8-11, on Saturday, October 20th to discuss their sleep habits. By interviewing the children, we hoped to learn about their routine, what they do before they go to bed, and what they do when they wake up in the middle of the night to inform our design decisions.

## Findings

The findings from our user research are as follows:

### **Interview with Sponsor**

According to Weichao, our sponsor, 20-30% of typical developing children experience behavioral sleep problems, with the prevalence of behavioral sleep problems increasing in children with juvenile idiopathic arthritis (JIA). Even so, most of the literature on how to treat behavioral sleep problems in children are targeted towards typical developing children, and not much research has been done for children with arthritis, specifically.

JIA has seven different categories, with the most common being oligoarticular and polyarticular arthritis. In other words, children with arthritis may experience unpredictable cyclic phases of active and inactive inflammation in their elbows, wrists, knees, ankles, and sometimes even their jaws, limiting their range of movement and affecting their ability to carry out their daily routines. For more severe types of JIA, there may also be systemic inflammation, where the inflammation spreads throughout the body and causes a fever. That being said, children with arthritis normally experience more pain and stiffness first thing in the morning than anything else and may need to take medication (e.g., steroids) to treat it, further affecting their ability to sleep at night.

Although clinical sleep problems can only be treated by the child's medical provider, current sleep interventions to help the child with behavioral sleep problems include boundary setting, such as bedtime passes to counter against curtain calls; activities for the child to wind down, such as a hot bath or shower and reading a book; and keeping the child away from screens before bedtime. To help children stay asleep, Sleep Innovations for Preschoolers with Arthritis (SIPA) also gives children a clock to let them know when it is time for them to stay in bed and when it is okay for them to get up. For the purpose of this project, SIPA is interested in designing a sleep intervention for behavioral sleep problems that directly engages children.

### **Literature Review**

Our literature review revealed that many families with young children experience sleep disruptions, regardless of their health status. According to one study, an "estimated 15% to 40% of infants, toddlers, and preschool children experience difficulty settling to sleep and disruptive night awakenings" (Ward, 2007). On the other hand, the parents of these children are also constantly sleep deprived from being woken up in the middle of the night (Yuwen, 2017). This, in turn, affects their general well-being, and families that participated in a sleep study stated that sleep affects both their physical and mental

health (Pina, 2017). Unsurprisingly, sleep disturbances in young children may have lasting effects on the child, with a positive correlation to a “difficult temperament, irritability, and decreased adaptability” in their preschool years and “depression, anxiety, attention problems, and aggression” when they are mid adolescents (Ward, 2007). Although we are always told that sleep is important, there is an overwhelming amount of evidence that it is more than just that and is essential to leading healthy lives.

Research has identified several factors that may be causing sleep disturbances. Since young children do not have established sleeping patterns, they may have a difficult time falling asleep and waking up at the same time each day. In the case of children with JIA in particular, they may also experience “frequent night wakings, delayed sleep onset, fragmented sleep, arousals, anxiety, and daytime sleepiness” (Ward, 2007). Unfortunately, not much is known about chronic illnesses and sleep disturbances, and one study states that “parents did not know who to ask for help when they had a question about caring for their child with these symptoms” (Yuwen, 2017). If symptoms of JIA are detected during a child’s bedtime, parents may understandably fall into a state of confusion and panic.

That all being said, there are ways to intervene in a child’s sleep problems to help them set and maintain a good bedtime routine. The key is consistency, and parents are advised to “[establish] a bedtime routine, [set] limits, [use] positive reinforcement (sticker charts), and reassurance” (Ward, 2007). By setting boundaries and remaining consistent, tension in the family will decrease, reducing external stressors in the environment, to create a better sleep environment for children (Ward, 2007).

### **Interview with Children**

We interviewed 4 children, ages 8-11, to gain insights into their bedtime routines and found that there was a pattern where children tended to go to sleep and wake up at consistent times on weekdays during the school year but didn’t during the weekend, summer break, and late night family outings. Furthermore, children seemed to struggle to fall asleep unless they used up all of their energy during the day. Child 1 (age 8) read books for 20 minutes before bed but said that his body would not let him fall asleep afterwards, Child 2 (age 7) would watch parts of a movie on her tablet, and Child 3 (age 11) would sit on her phone before bed. In contrast, two of the children expressed that they quickly fell asleep after going out with their family. One was a store outing, and the other was their sibling’s band festival.

As for sleep disturbances, a couple of children spoke up about not sleeping well at night. Child 2 stated that although she does not wake up in the middle of the night, she

experiences a lot of tossing and turning. Child 3 stated that the automatic light in the hallway would wake her up when people were walking around, after she had already fallen asleep.

A couple of other interesting data points we collected show that some children like to play games before bed. Child 2 said she sometimes plays card games and board games before bed and really enjoys them. Child 4 said he likes to play chopsticks and uses the phone for an hour before bed but has a very regular sleeping schedule.

Due to time constraints and limited access to children, we were only able to interview four children to gather insights into their bedtime routines. While we found areas that we would like to further explore, we cannot draw any firm conclusions from our data, because there was so much variability and too few participants.

## Design Requirements

The design requirements for our solution are as follows:

- The solution should directly engage children, as the current solution only directly engages parents.
- The solution should not have a screen (blue light suppresses melatonin and inhibits a person's ability to fall asleep) for children.
- The solution should have a webapp interface for parents to interact with.
- The solution should help children wind down before bed and establish regular bedtime habits.

## Refined Design Question and Stakeholders

After conducting our user research, we would like to scope our design question to the following: How can we directly engage both parents and children with our design to establish regular bedtime routines and sleep patterns in children, ages 2-5, who suffer from arthritis? Based on what we have learned, parents are currently involved in their child's sleep intervention, but the child themselves are not, so one of our main design requirements is to involve both of them together. By including our target user group in our design question, we hope that it will serve as a reminder about what we should focus on and who we are designing for. As for stakeholders, we did not identify any new ones and decided to stick with our original list. Our stakeholders are our sponsor as well as children with arthritis and their parents.

## References

- Pina, L. R., Sien, S. W., Ward, T., Yip, J. C., Munson, S. A., Fogarty, J., & Kientz, J. A. (2017, February). From Personal Informatics to Family Informatics: Understanding Family Practices around Health Monitoring. In CSCW (pp. 2300-2315).
- Ward, T. M., Rankin, S., & Lee, K. (2007). Caring for Children with Sleep Problems. *Journal of Pediatric Nursing, 22*(4), 283-296. doi:10.1016/j.pedn.2007.02.006
- Yuwen, W., Lewis, F. M., Walker, A. J., & Ward, T. M. (2017). Struggling in the Dark to Help My Child: Parents' Experience in Caring for a Young Child with Juvenile Idiopathic Arthritis. *Journal of pediatric nursing, 37*, e23-e29.

## Appendix A

### Interview with Sponsor

Q: What is the current research being done by SIPA?

A: We're working with parents and kids with arthritis. The kids are 2-5 year olds, so they're toddler and preschool-aged children. They're the young-aged children. In our previous studies, we have found that both children and their parents don't sleep well. By not sleeping well, we mean that they don't sleep enough, and they have disruptive sleep.

Different kids have different sleep problems. Some of them may have problems falling into sleep, so during the evening time, they don't want to go to sleep. For some children, it's when they wake up in the middle of the night. They don't fall back to sleep by themselves, so they have sleep disruptions during the middle of the night. That's what we've learned before. We know from a body of sleep literature that sleep impacts a lot of the everyday functioning of the parents and children as well as the development of the children, so it's an important area.

For sleep, a lot of the sleep problems in this age range are what we call behavioral sleep problems. These are the things we can actually intervene in and change their behavior to improve their sleep. There is a different area of sleep problems that are physiological - we call obstructive sleep apnea and all that sort - and we don't treat those children. These children need medical intervention, but we are helping the general kids with behavioral sleep problems, and it's estimated that around 50-70% of those children have those problems.

Q: You said both children and parents have sleep problems. Does the kid wake up and then that wakes the parents up? Or is there some other reason that parents wake up in the middle of the night?

A: That's a great question, and that's a very important reason that those parents don't sleep well either. They're worried about their children, as well as for this age in the United States, most of them don't sleep together. The kids have their own bed. It depends on the family, but when the kids have a chronic condition like arthritis, parents tend to start co-sleeping again like going back to when the child was an infant, because they feel like they can tend to the child more and sometimes the child wants that additional attention. When you're co-sleeping, there might be some sleep disruptions on both. In general, when you have a child with a chronic condition, the parents are worried, they're stressed, and all that affects their sleep.

Q: I remember you mentioned last time that it's normal for kids in general to wake up in the middle of the night. Can you compare and contrast some of the sleep patterns in kids that don't have arthritis and kids who do?

A: Oh yeah. For kids who are typical developing kids, they do have sleep problems too, but the prevalence around that isn't huge. About 20-30% of those children may have behavioral sleep problems. For kids with their chronic condition, the prevalence is higher. In addition, those kids have joint problems - joint pain, fatigue, tendonitis (?) - so that might hinder their sleep. Also, they take medications - some of the medications are steroid medications, anti-inflammatory - and those mess up with their sleep system as well. These are different things that may affect children differently when they have a chronic condition. In addition, when kids have a chronic condition, parents tend to be more lenient and tend to the disease first, so they might be more lenient on other aspect of their child's life. For example, sleep, they might not be that strict, given that the child has a chronic condition.

Q: I guess could you elaborate more on the symptoms of childhood arthritis? Like the severity of the pain that kids experience?

A: Yeah, definitely. Juvenile idiopathic arthritis is a group of rheumatological conditions in childhood. They actually have seven different categories of all kinds of arthritis lumped together. The most common ones are oligoarticular and polyarticular. Those are the two common JIA conditions, and those involve children with joints. Usually it's elbow, knees, ankles, sometimes it's their jaws, things like that. This disease has an active disease vs. inactive disease, so sometimes they go into those active phases where those joints are actively inflamed - it's tender, it's swollen, and it's very painful for those children - and that impacts their ability to do daily living activities or walking or talking. It depends on where the joint is infected. Some more severe types of JIA involve systemic inflammation. Some kids will have systemic fever and inflammation all throughout the body, because this is an autoimmune disease - your own immune system attacking your body.

Q: Is this non-stop? Or do kids feel pain in cycles?

A: It's cyclic, but it's unpredictable.

Q: So there will be better nights compared to others?

A: Yes. The symptoms are not predictable. In addition to the daily and weekly medications they take, they have pain medications and other medications they can take as needed, so when they have really bad pain, they can take that.



Q: Do the kids ever experience side effects that also affect their sleep?

A: Of course. Yes. The steroids definitely affect their sleep, and the side effects of some medications are pretty bad. There's one medication that's very commonly used in JIA. It's called methotrexate, and it's a cancer drug, so there's a lot of chemo side effects affecting these children too, so they definitely experience a lot of side effects. For this condition, why we're still looking into it very closely is because we don't know why it happens and we don't know how to treat it, so the rheumatologists have some idea that these drugs might work on these children, so they'll try it out with like, say methotrexate, for a week or a month and see how it works. If not, they have to try a different drug, so there's a lot of that uncertainty going on too.

Q: What limitations do the children experience with the arthritis? Like in general?

A: The joints affect their range of motion, so they may not be able to bend one joint or the other. In terms of daily living, they can't put on their clothes, just because they can't bend this arm or the leg. Things like that.

Q: What are the ways that kids try or parents try to help them fall asleep?

A: Behavioral sleep interventions, like in general, for this age range is hard. Parents are training their kids sleeping. Even for the general population, typical developing children, it's hard. The things we use are basic knowledge about how to teach the parents what's good sleep, what do you need to do an hour before bedtime, what are the best practices.

For example, we want them to have a bedtime routine, which includes maybe starting with a hot shower or bath and then afterwards going to bed to read a book or something to the kid for 10 minutes and then just winding down the day for them to try to fall asleep and then boundary setting. A lot of the kids at this age are trying to gain autonomy, so they want to decide on things themselves, so there's this boundary setting with the parents and kids. The parents want to say, "Hey, this is the last story I'm going to read for you tonight," and some kids - we call it curtain calls - are like, "Can I have another sip of water?" or something. They just don't want to fall asleep, so these limit setting thing is the things we teach the parents, and then we give them tools.

One thing we teach them is bedtime passes, so the kids have those two passes we give them. They can hold onto them or they can use them. They only have two passes at bedtime to call their parents. After they use those two passes, they don't have any passes to use, so they don't have any excuse to get up anymore.

In terms of nighttime wakings, when they wake up, we give them those very cute clocks to put in their bed. When they see the clock is lighting up, it tells them they can get out of bed. If there's no light on anymore, it means they still have to stay in bed.

Those different behavioral things. Those are already established interventions by psychologists to help parents manage their children's sleep. What we are adapting here is for kids with arthritis. We're adding this additional dimension of the chronic condition, and they have some additional needs that we need to help with the parents. What I am approaching you guys for is an add-on. A very crucial part of this project is right now we're targeting the parents. We're teaching the parents how they could talk to their children about doing things, but we're not directly engaging the kids, because in general, in research, we engage kids 5 and above, because we can directly talk to them or give them things. 2-5 year olds - it's better than infants, they understand talk - but we don't have the resources yet to develop something specifically to target them, so I'm inviting you all to brainstorm and think of things to engage with kids in this intervention as well.

Q: We can think broadly about the solutions? I think you mentioned potentially an application? But then my concern is that if kids look at screens in the middle of the night, they might not be able to fall asleep.

A: Yes. This intervention is going to be a web application for parents, but we don't necessarily want the kids to look at the application or web or something. You can develop a game or something. It's all up to you. You brought a really good point that we don't want kids to look at screens at bedtime.

Q: Going back to the sleep habits, how often do kids without arthritis compared to kids with arthritis wake up in the middle of the night?

A: I don't know exactly the comparison, but it's more of the prevalence, so more kids with arthritis have sleep problems, and individually, how much they actually wake up varies.

Q: What is the recommended hours of sleep for children that age?

A: Yes, that's a great question. A good resource for you guys to look at is the National Sleep Foundation. They have recommended sleep amounts for different ages. For 2-5 year olds - they say 2-3 year olds and 3-5 year olds - they have about 11-12 hours a day is good, and that depends if the kids naps or not, so some kids nap during the day and some sleep a little less during the day. For parents, we recommend 7-9 hours, but these parents from our previous studies sleep less than 7 hours.

Q: You were talking about how we're doing behavioral interventions, so them waking up with pain, we wouldn't be treating the pain. It would be the medical providers treating that and then we come up with a way for them to go back to sleep?

A: That's a great question. Usually those kids don't wake up with pain. Their arthritis pain is usually in the morning when they wake up. It's not exactly like the rheumatoid arthritis for the older adults, but it's very similar in that they wake up with very stiff joints, because all these attacking of the joints and accumulation of the inflammation fluids have been there the whole night. When they wake up in the morning, that's when their pain is the most, and they can't really move and stuff. After they move around for a little bit, those tend to get better.

Q: So when they're first going to bed, it's not too bad unless they're having a flare up, but in the middle of the night, would they start feeling the pain because it's already been building up?

A: Sometimes it's very interesting. When I interview those parents, they wake up with pain, but we can't discern whether it's growth pain or arthritis pain, so it's really hard for those parents to decide: *Should I give the medication? Should I not? We do give them guidelines. In the middle of the night, it's usually not arthritis. It's usually maybe growth pain, and here are the things you can do, non-pharmacologically. We don't tell them what medication to give, but there are a lot of things that we can tell the parents to do that to help their children. Giving a warm bath or massage on the joints and things like that, but there might be things that you guys can think of about storylines or something that the kids can remember every time when they have pain. Maybe they can think of something or play with to distract them or help them to go to sleep or something.*

Q: So in a way it's kind of similar to like... I know they say that you should never have tech near your bed because you should establish that is where you go to bed, so it becomes very strongly associated if you fall asleep. It's for the kids like *oh they see this* and you need to go to bed.

A: Yes, and it would be great if - and an idea we were thinking because Asuka, who will be joining us, designed the SIPA logo with ursa major and minor as the theme of the sleeping bears and stars, and we interviewed a couple of our co-investigators, how kids 2-5 year olds are really into stars and constellations and things like that and that's how we came up with the story - so maybe there's a sleeping animal theme or things like that you can think about. Some ideas.

Q: I think you were also talking about how there's currently interventions for sleep for the general population and then you talked about additional needs. Do you have certain needs that you want us to address?

A: The interventions I just mentioned about how to train parents and their child to sleep are adapted from an existing intervention at Children's, so generally speaking, the general sleep problems and how we tackle those have established guidelines for those. For this specific population of children with arthritis, there is not. That's where the gap is. Then also, again, even for the original study that tackles typical developing children, it's educating the parents. I don't think they have anything that directly involves kids. Probably most of the focus is going to be the hour around bedtime. In the middle of the night, we try to do things to keep the kids asleep, but most of the sleep problems are around bedtime.

I would say that the other gap I forgot to mention is about the original intervention is that they're delivered in person and a sleep trainer has to go to their patient's home and teach them and they do training. For kids with arthritis, it's not a rare disease, but it's not that common, and for the whole Pacific Northwest, Seattle Children's is their center, so a lot of the parents - I just spoke to a parent that had to drive from Idaho every month or something to come to Children's and see a doctor or something - so I don't want anything the constraints them from having resources. I want to do something that's a web delivered intervention and that we can mail in materials and have every resource available, so that they don't have to come or we don't have to go. It's the 21st century - we don't need in person things to do anything anymore, so we are adapting all these materials to a web application and that's what Asuka is working on right now.

Q: Do you have any resources you'd recommend that we look at to dive deeper?

A: I think the information we talked about is sufficient enough for you guys, because I don't want you to go deeper into how arthritis happens and go into the medical stuff of it. I can definitely send a brief article on common sleep problems for kids of this age.

## Appendix B

### Literature Review

Pina, L. R., Sien, S. W., Ward, T., Yip, J. C., Munson, S. A., Fogarty, J., & Kientz, J. A. (2017, February). From Personal Informatics to Family Informatics: Understanding Family Practices around Health Monitoring. In CSCW (pp. 2300-2315).

This study focused lowering barriers in families to manage/monitor their health together with a new technology. The primary health area investigated in this study was sleep. The study included semi-structured interviews with 14 typically healthy family and 10 families with at least one child with Juvenile Idiopathic Arthritis (JIA) along with three participatory design sessions with nine kids aged 7-11. The interview sessions with families suggested that sleep patterns impact other areas of health such as, “mental health, physical activity and diet”. The main study was aimed at designing an artifact that allows families to monitor each others health informatics. Report contained sets of notable quotes from interview with families that gave insight into difficulties experienced by families with and without health complications in managing sleep.

Ward, T. M., Rankin, S., & Lee, K. (2007). Caring for Children with Sleep Problems. *Journal of Pediatric Nursing*, 22(4), 283-296. doi:10.1016/j.pedn.2007.02.006

Sleep disturbances are prevalent, with an “estimated 15% to 40% of infants, toddlers, and preschool children [experiencing] difficulty settling to sleep and disruptive night awakenings” as well as “approximately 20% to 30% of all children experiencing some type of sleep disturbance during childhood,” and from a survey, only 25% of pediatric clinicians felt confident in their ability to treat it. This is an issue, because sleep is an important part of early childhood development, influencing a child’s emotional, behavioral, and physiological responses, and studies have found that children who experience sleep disturbances may have a “difficult temperament, irritability, and decreased adaptability” in their preschool years and “depression, anxiety, attention problems, and aggression” when they are mid adolescents amongst other health issues. Children with arthritis may also experience “frequent night wakings, delayed sleep onset, fragmented sleep, arousals, anxiety, and daytime sleepiness” on top of all that. Little about chronic illnesses and sleep disturbances is understood; however, it is important to note, family dynamics and coping mechanisms that children with arthritis and their parents use influence children’s sleep patterns too. As such, parents are a vital part of

helping children with sleep disturbances and are advised to “[establish] a bedtime routine, [set] limits, [use] positive reinforcement (sticker charts), and reassurance” to create consistency as well as decrease tension and create family harmony.

Yuwen, W., Lewis, F. M., Walker, A. J., & Ward, T. M. (2017). Struggling in the Dark to Help My Child: Parents' Experience in Caring for a Young Child with Juvenile Idiopathic Arthritis. *Journal of pediatric nursing*, 37, e23-e29.

The purpose of the study is to delve into parents experiences caring for children with juvenile idiopathic arthritis. Juvenile Idiopathic Arthritis (JIA) is a common pediatric autoimmune condition. When dealing with this condition, parents often feel emotional turmoil, a feeling of helplessness when trying to figure out what to do for their child to ease the pain. This study follows 9 parents as they describe their experiences through in-person and phone interviews. Parents often feel physically and emotionally drained and they blame themselves for their child's pain. When searching for information regarding JIA, they do not come up with much information. Parents often had to decide on treatment options right after they found out their child had JIA and they felt overwhelmed processing all this information. Diagnosis of JIA takes awhile because all other conditions have to be ruled out beforehand. Parents had no other resource except for medical team, they would often reach out to people who had different conditions just to find someone to relate to. JIA took a hold on household. For example, siblings and parents trying and failing to understand the pain and parents being constantly sleep deprived because they keep waking up in the middle of the night. Parents feel a lot of guilt with JIA. Overall, parents feel a lack of information, they feel alone and have to reach out in the dark often, they need to manage side effects that pop up, they feel their child's pain, they feel drained by the whole process and JIA takes a toll on the house hold.

## Appendix C

### Interview with Children

Materials: Notebook, Pen, Questions

#### Questions

1. How old are you?
2. What time do you go to sleep?
3. What time do you wake up?
4. What do you do before you go to sleep?
5. Do you use a phone, tablet, or computer before you go to sleep?
6. Tell me about a time you fell asleep fast.
  - a. Why?
7. Tell me about a time you couldn't fall asleep.
  - a. Why?
  - b. What did you do?
8. Do you wake up in the middle of the night?
  - a. Why?
  - b. What do you do?
9. Do you take naps during the day?
  - a. How many times?
10. Do you have your own room? Share it with a sibling? Parents?
11. Do you sleep on your own, with your sibling, or with your parents? (Optional)

#### Results

Child 1:

8 years old, generally goes to bed at 8 pm or 9 pm. When asked what he does before bed, he said "all kinds of fun". He said that sometimes his family goes out for various things such as roller skating. He does not use his phone or any tech before bed, he reads for 20 min beforehand. He gets up for school at 7 am. He said that he never falls asleep easily that his body doesn't let him. I was trying to figure out why he can't fall asleep and he went with stress once I mentioned it but I don't know if he was just going with it for this interview. I asked what he get stressed about and he said school, general day to day. He does not take naps. He does wake up in the middle of the night and to fall asleep he just lays there. He has his own room.

#### Child 2:

7 years old, goes to bed at either 8, 9 or 10 pm. She consistently watches movies before bed on a tablet. She wakes up around 7 am (she was estimating) for school and sleeps in a little more on weekends. She also sometimes plays board and card games which she really enjoys. She described a lot of tossing and turning for a time she couldn't fall asleep but no particular reason as to why. A time she went to sleep fast was when she went to the store with her family and that tired her out. She does not wake up in the middle of the night and does not take naps. She shares a room with her mom and she never watches entire films before bed only parts.

#### Child 3:

11 years old, goes to bed at 9 pm or 8:30 pm sometimes. This only changes for events, such as when parents are out and they have a babysitter over. Wakes up at 6 or 7:30 but not consistently, weekends she sleeps in. She uses her phone before bed, goes on snapchat and pinterest. Struggles to fall asleep, says that the lights in the hallway are automatic so when people are walking around it keeps her up and she described a time she was doing a project and got stressed. She takes naps sometimes and when she does it's once a day and she has her own room and sleeps on her own.

#### Child 4:

8 years old, goes to bed at 9 pm or 8 pm everyday even on weekends and wakes up 7 am or 6 am every single days except during the summer to watch early morning cartoons when he stated he gets up at 7-9 am (which was essentially the same). He likes to play chopsticks before bed (the hand game) and uses phone before bed, plays minecraft for 1 hour. A time he fell asleep fast was when he went to his sisters (child 3) band festival and stayed from 8 - 10 pm after which he was super tired. Sometimes, he falls asleep at school. He said that sometimes the garage door opening in the middle of the night wakes him up. He said he brushes his teeth to help him fall asleep again. He has his own room.