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Occupational Therapy Screening Tool for School-Aged Children with Sleep Problems

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OCCUPATIONAL THERAPY SCREENING TOOL FOR SCHOOL-AGED
CHILDREN WITH SLEEP PROBLEMS

by

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Submitted to the Occupational Therapy Department

of the

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In Partial fulfillment of the requirements

for the degree of

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This Scholarly Project, submitted by Jenae Becker, MOTS and Kathryne Kitchen, MOTS in partial fulfillment of the requirement for the Degree of Master's of Occupational Therapy from the University of North Dakota, has been read by the Faculty Advisor under whom the work has been done and is hereby approved.

Faculty Advisor

Date

PERMISSION

Title Occupational Therapy Screening Tool for School-Aged Children
with Sleep problems

Department Occupational Therapy

Degree Master's of Occupational Therapy

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ABSTRACT

The purpose of this scholarly project was to review the occupational therapy literature and develop a guide to instruct occupational therapists in screening children with sleep problems and associated occupational performance issues.

The primary method used for this project was the use of an extensive literature review of common sleep problems, co-morbidities of sleep problems, the impact of lack of sleep, sleep interventions, and the role of occupational therapy when addressing sleep problems in school-aged children. A number of search engines were utilized including PubMed, CINAHL, PsychInfo, OT Search, OT Seeker, and OT textbooks.

The literature indicated there was a lack of sleep assessments available to be used by occupational therapists when addressing school-aged children and sleep problems. The “Occupational Therapy Sleep Screening Tool” was developed to give therapists an easy-to-use screening tool to help identify and provide services in relation to sleep. The Person-Environment-Occupation model provides the foundation for the developed screening tool. The screening tool includes a pre-screening checklist, a take home questionnaire, and both a parent and child informal interview.

School-aged children sleep problems have an impact on a child’s emotions, behaviors, cognition and relationships. The screening tool provides the occupational therapist with a guide to screening for sleep problems including impact on the child’s occupational performance.

CHAPTER I

INTRODUCTION

Sleep is an occupation taking up nearly one-third of a person's life (Pierce & Summers, 2011). Sleep is needed in order to perform all other waking occupations in which one participates. The amount of sleep one engages in has a major impact on an individuals' cognition, behavior, mood, development and overall quality of life (Pierce & Summers, 2011). According to Owens, Jones and Nash (2011), inadequate and reduced quality of sleep is a growing health concern among children in the United States. Between 30-50% of children in the United States have some type of sleep problem during their childhood years (Dawson, 2004; Simola et al., 2011).

According to the National Sleep Foundation (NSF) (2011), common sleep problems found in school-aged children include parasomnias, insomnia and obstructive sleep apnea. Sleep problems are commonly found to be comorbid with many types of medical diagnosis like attention deficit hyperactivity disorder (ADHD), autism and mood disorders, which are all disorders that occupational therapist may work with in a pediatric setting.

According to Simola et al., (2012), children who lack sleep are at a higher risk for developing an array of difficulties including physical, cognitive, behavioral and emotional problems. Studies have shown that children who sleep less than nine hours a

night are more likely to show reckless behaviors, increased aggression towards others, and are reported to be more emotionally imbalanced (Aronen et. al, 2000; Nixon et al, 2008, Sadeh, Gruber & Raviv, 2002). The consequences of untreated sleep problems will impact the child's ability to complete daily activities (Lazaratou, Soldatou & Dikeos, 2012).

For the purpose of this scholarly project, the following definitions pertain.

Sleep disorder, a child must meet specific criteria for the various types of disorders and/or have a disturbance in their normal sleep pattern (Hoban, 2010).

Sleep problem, is more common than a sleep disorder and is defined as an insufficient sleep pattern that is found to be disturbing to the parents and or child (Thiedke, 2001).

As of 2008, sleep and rest were included among the occupations listed in the Occupational Therapy Practice Framework: Domain and Process (American Occupational Therapy Association [AOTA], 2008). However, many therapists have overlooked addressing this occupation, which is needed in order for an individual to carry out other daily occupations (West, 2009). Limited assessments and screening tools addressing sleep problems are available for occupational therapist to utilize, specifically with school-aged children. The purpose of this scholarly project was to review the occupational therapy literature and develop a guide to instruct occupational therapists in screening children with sleep problems and associated occupational performance issues.

The Person-Environment-Occupational (PEO) model (Law et al., 1997) was used to develop the "Occupational Therapy Sleep Screening Tool" (OT-SST). The PEO model was designed to examine occupational performance by looking at the relationship and harmony between the person, the occupation and the environment (Law et al., 1997). The

person, environment and occupation can either constrain or enable one another, which would lead to either positive or negative occupational performance. The term occupational performance is the relationship or interconnectedness of the person, environment, and occupation over the individual's life span (Strong & Gruhl, 2011).

The OT-SST was designed to assist the occupational therapist in addressing possible sleep problems in school aged-children. The OT-SST was created to meet the need identified in a review of literature revealing the limited amount of sleep screening tools available for occupational therapists to utilize. The OT-SST includes a five-step process, including a pre-screening risk checklist, a caregiver take home questionnaire, a caregiver interview, a self-report child interview and instructions for interpretation of findings through the use of the PEO model.

Chapter II offers a review of literature relevant to evidence-based research related to sleep in school-aged children. Chapter III is an overview of the methodology used to apply the research findings in the development of the OT-SST. Chapter IV includes the OT-SST overview, administration procedures, interpretative guidelines and a case illustration. Chapter V summarizes the project and provides recommendations for future study.

CHAPTER II

REVIEW OF LITERATURE

Sleep plays a vital role in a child's development, health, and quality of life. Sleep has a direct impact on a child's mental and physical development. According to the National Sleep Foundation [NSF] (2011), school-aged children are recommended to have between nine and twelve consecutive hours of sleep per night to maintain alertness and perform during the day. At this age, children start to become more involved with homework, school, and extracurricular activities that can affect a child's sleep routine. When a child's sleep pattern is disrupted, it can affect the child's emotional, physical, cognitive and behavioral development (Biggs et al., 2011; Simola et al., 2011; X. Liu, Liu, Owens & Kaplan, 2005).

Sleep is a daily activity that absorbs up to a third of the day in order to rest the mind and body for the next day. Although you're sleeping, it is still defined as an active state (Pierce & Summers, 2011). According to Pierce and Summers (2011), sleep is a biological process, which is greatly affected by our interactions with the environment and our behaviors. Human beings function by circadian rhythms, which defines the 24-hour period of a human day. Sleep is found within these rhythms and these rhythms are designed to have certain awake and non-awake times in order for a human to function properly (Pierce & Summers, 2011). There are five total stages of sleep. The individual goes through four stages of non-rapid eye movement (NREM) sleep, which is characterized by the body still being fully active (Pierce & Summers, 2011). An

individual then transitions to rapid eye-movement (REM) sleep where the brain is highly active and all dreams occur (Pierce & Summers, 2011).

Common Childhood Sleep Problems:

In order for a child to be diagnosed with a sleep disorder, a child must meet the specific criteria for that disorder (Hoban, 2010). A sleep problem is more common than a sleep disorder and is defined as an insufficient sleep pattern that is found to be disturbing to the parents and or child (Thiedke, 2001).

Between 30-50% of children in the United States have some type of sleep problem during their childhood years (Dawson, 2004; Simola et al., 2011). Sleep problems are found to be one of the most sought out conditions of children that parents talk to their physician about (Thiedke, 2001). According to the National Sleep Foundation (NSF) (2011), parasomnias, insomnia and obstructive sleep apnea are common sleep problems found in school-aged children.

Parasomnias

Thiedke (2001) states that parasomnias are found to be more common in children than adults; Hoban (2010) states parasomnias may correlate with genetic factors. Parasomnias, according to the National Sleep Foundation (NSF) (2011), are types of sleep disorders that are characterized by unwanted movements, events and/or behaviors that occur during sleep. In school-aged children, there are many common types of parasomnias including nightmares, sleep terrors, restless leg syndrome, and sleepwalking.

Nightmares are startling dreams that occur during rapid eye movement sleep and awake the child. According to the NSF (2011), most children have at least one nightmare during childhood; more than three percent of preschool and school aged children

experience frequent nightmares. Nightmares can arise from a fearful event such as dramatic or violent films, increased stress, or a change in the child's environment such as an addition to a family or moving to a new home (Lyness, 2010; Schmitt, 2006).

Nightmares can increase anxiety symptoms in children who experience them frequently and no treatment is commonly used. However, drugs such as benzodiazepines are used to decrease REM sleep, which can reduce the amount or frequency of nightmares (Sadock & Sadock, 2008).

Sleep terrors, also known as night terrors, often occur during non-rapid eye movement sleep. Lyness (2010) reports that night terrors are most prevalent in children ages 4-12, and often occur during moments of stress and exhaustion. Sadock and Sadock (2008) report that between 1-6% of children experience sleep terrors and they are more common in boys than girls. During a sleep terror, a child may scream out and become upset and then wake up with no remembrance of the event (Hoban, 2010). Sleep terrors may be caused from lack of sleep, change in routine, stress, or sleeping in a different environment (Lyness, 2010). Treatment of sleep terrors is rarely needed, however a family can identify possible family stressors that can lead to these sleep terrors (Sadock & Sadock, 2008). Moturi and Avis (2010) reported that benzodiazepines can also be used to decrease the severity of night terrors in children.

Restless leg syndrome (RLS) is a disorder that involves an uncomfortable feeling in the legs causing the child to move mostly during the evening and night hours (Kotagal & Silber, 2004). The feelings from RLS make it difficult for the child to fall asleep. RLS involves both the sensory and motor systems, and if present in a child it is a strong indicator that it will be present in the individual throughout their adulthood. For children

with RLS who suffer from pain and discomfort, it is common to see daytime sleepiness, and increased inattention from a child's lack of sleep (Maheswaran & Kushida, 2006). Pain and discomfort from RLS is often eased by moving around and getting up from ones bed (B.J. Sadock & Sadock, 2008). Children with RLS are encouraged to participate in daily exercise and stimulating activities should be limited prior to going to sleep (Moturi & Avis, 2010).

Sleepwalking is the act of a child walking in an often-staggered formation while the child is still asleep. According to the American Academy of Child and Adolescent Psychiatry [AACAP] (2012), between 15-40 % of children will have at least one episode of sleepwalking during their childhood, and sleepwalking is noted to begin between the ages of six and twelve years old. Sleepwalking is caused by increased tiredness or sleep deprivation and is found to be a genetic trait (B.J. Sadock & Sadock, 2008). It is noted that children who sleepwalk appear with a flat affect and can complete tasks such as opening doors and going outside while sleepwalking. Children who experience sleepwalking are often unaware of their actions and can fall back asleep with no recollection of the sleepwalking event (Sadock & Sadock, 2008). It is recommended that parents or guardians of children who are sleep walking should be cautious if trying to wake the child as the child may become aggressive or hit out (Kravitz & Clements, 2011). Also, possible injuries such as falling down stairs can occur and safety precautions should be put in place (Sadock & Sadock, 2008).

Enuresis or bedwetting is another parasomnia found most commonly in children between the ages of 6 and 12 in which case the child voids unintentionally during the night (Hoban, 2011). Enuresis is found to be more common in young boys than girls, and

could be due to factors such as emotional distress, insufficient bladder volume, or immature arousal responses. Medication can be used to treat enuresis, however, is more commonly treated with bladder training and identification of the child's emotional stressors (Hoban, 2010).

Insomnia

Insomnia occurs when a child complains of difficulty falling asleep, and/or remaining asleep. It is estimated that about 10% of school aged children suffer from insomnia (Geijlswijk et al., 2010). Insomnia can lead to a child having cognitive, behavioral and/or relationship problems with one's family (Geijlswijk et al., 2010). Insomnia can be temporary when due to stress or some type of sickness or can become a more long-term condition, which can be due to mental illness or medications the child may be taking. According to Children's Hospital Cleveland Clinic (2009), insomnia is often characterized by a decrease in a child's daytime functioning and the feeling of not receiving enough sleep. Insomnia can have a long-term effect on the individual if the underlying cause is not addressed or healthy sleep practices are not used.

Obstructive Sleep apnea

Obstructive sleep apnea occurs when there is a change in the child's breathing pattern, often a pause in the breathing, caused by a blocked airway passage. It is estimated that 1-3 percent of children suffer from sleep apnea (Chidekel & Lundien, 2011; Dawson, 2004). Children with sleep apnea are often observed to have increased sleepiness throughout the day and increased snoring throughout the night (Chidekel & Lundien, 2011). A child with sleep apnea may present with increased disturbances in

sleep throughout the night. Procedures such as tonsillectomy and adenoidectomy are found to help treat the symptoms of sleep apnea (Marcus et al., 2012).

Common Comorbidities Related to Sleep Problems

Sleep problems are commonly found to be comorbid with many types of medical diagnosis and complications. Parents of children with an underlying medical diagnosis, such as attention deficit hyperactivity disorder (ADHD), autism, or mood disorders, frequently reported sleep-related problems that affected the child's performance throughout the day (Gregory et al., 2006; Ivanenko et al. 2006; Weiss & Salpekar, 2010). Sleep problems and ADHD appear to be bidirectional in the sense that each diagnosis can lead to the diagnosis of the other. Sleep problems are also often discovered in children who have been diagnosed with autism or a mood disorder.

Attention Deficit Hyperactivity Disorder

ADHD is characterized by a child having difficulty with behavioral and social functioning due to increased hyperactivity and decreased attention spans. Children with sleep problems due to ADHD will experience increased severity of these symptoms along with increased aggression and irritability (Sung et al., 2008). Approximately 25-50% of children who have ADHD suffer with sleep problems, which may include bedtime resistance and resultant fatigue throughout the day. Bedtime resistance and resultant fatigue along with medications that a child is taking can increase ADHD symptoms, making daily activities more difficult for the child (Weiss & Salpekar, 2010). Bedtime resistance is found to be a common sleep struggle in children with sleep problems and ADHD. Most commonly, a child with ADHD and sleep problems will suffer in school and social relationships such as being late for school and conflict with family members

(Sung, et al., 2008).

If sleep problems occur for a prolonged period of time, children can experience consequences that can be associated with psychological problems such as mood disturbances along with ADHD. When a child is deprived of sleep, drowsiness is what many would expect to see in these children. However, it is common that hyperactivity can occur more frequently as evidenced by increased fidgeting as a way for the body to keep itself awake (Pierce & Summers, 2011). Hiscock et al., (2007) found that children with sleep problems are up to 12 times more likely to develop ADHD. Sleep problems in children with ADHD are known to increase ADHD-like symptoms such as increased irritability and aggression, and can account for behavioral and cognitive difficulties these children face in their day-to-day routines (Weiss & Salpekar, 2010).

Autism

Autism spectrum disorder (ASD) is a neurodevelopmental disorder that is prevalent in more than 1:88 children (Center for Disease Control and Prevention [CDC], 2012). Children with ASD commonly have emotional, social and communication difficulties, along with sleep problems, which impact their daily functioning (Liu et al., 2006; Taylor, et al, 2012). Studies have shown that 50%-70% of children with ASD have at least one type of sleep problem that is experienced daily (Liu et al., 2006; Wiggs & Stores, 2004).

Depression

Depression is characterized by persistent, sadness and irritable mood. Children who are depressed often experience difficulty falling asleep or oversleeping (Cash, 2004). According to Pierce and Summers (2011), sleep problems are common in individuals

with a mental illness. Depression is an illness that can cause sleep problems, and sleep problems can be a precursor to depression (Pierce & Summers, 2011). Liu et al., (2007) studied 553 children with depression between the ages of 7-14 years old and found that 73% of children with depression either suffered from insomnia or hypersomnia. Liu et al., (2007) found that children with either insomnia or hypersomnia were more depressed than children without sleep problems.

Anxiety

Anxiety is one of the most commonly diagnosed disorders in children and is associated with impairment in a number of areas, including sleep. Children with anxiety often experience sleep problems such as nightmares and difficulty sleeping alone or away from home, which affects the quality and amount of sleep a child engages in. Alfano et al., (2007) found that 88% of the 128 children with generalized anxiety disorders (GAD) experienced at least one sleep related problem, interfering with the child's everyday occupations and family functioning. Further, children with GAD took more time falling asleep at night than healthy children, resulting in later wake up times due to the children falling asleep later (Alfano et al., (2012). Hudson et al., (2009) found that school-aged children with anxiety disorders showed different sleep patterns and slept less than their peers who were non-anxious. It is important for children with anxiety to receive a full nights sleep. If proper amounts of sleep is not received, than individuals may become more anxious, and symptoms of anxiety can increase (Stein & Mellman, 2005).

Impacts of Lack of Sleep in Children

According to Simola et al., (2012), children who lack sleep are at a higher risk for developing an array of difficulties including physical, cognitive, behavioral and

emotional problems. Studies have shown that children who sleep less than nine hours are more likely to show reckless behaviors, increased aggression towards others, and are reported to be more emotionally imbalanced (Aronen et al, 2000; Nixon et al, 2008, Sadeh et al., 2002). The consequences of untreated sleep problems will impact the child's ability to complete daily activities (Lazaratou, Soldatou & Dikeos, 2012).

Physical Health

Improper sleep in children is found to lead to physical consequences that affect a child's general health including obesity and decreased growth hormone production (Hemmingson et al., 2008; Stores, 2009; Taheri, 2006). Obesity is a common co-occurrence with sleep problems, and can be caused from both increased sleep or lack of sleep (Taheri, 2006). Agras et al., (2004) studied risk factors for childhood obesity and found that children who became overweight were reported to sleep 30 minutes less than a normal weight child, and were often less active. Children who have sleep problems are tired throughout the day which could decrease their motivation or ability to participate in daily physical activity (Taheri, 2006; Patel & Hu, 2008). Children who do not participate in physical activity throughout the day may be less tired at night due to an increase in stored energy (Agras et al., 2004). A child and parents understanding the importance of activity followed by participation in physical activities can have an effect on how tired the child is based on the child's activity level throughout the day (Taheri, 2006).

According to Stores (2009), sleep problems can have an affect on or inhibit a child's growth due to a decrease in growth hormone production. In order for a child to grow, the pituitary gland has to release a growth hormone; the largest amount is released when a child enters the deep phase of sleep (Stores, 2009; Verrillo et al., 2011). When the

child's body does not produce or release enough of this growth hormone, the child can experience multiple physical symptoms that make the child look younger than their peers (Stores, 2009; Verrillo et al., 2011).

Cognition

Cognitive effects of decreased sleep are often most evident in relation to the child's school performance. Individuals receiving adequate amounts of sleep present with higher memory functioning and faster reaction times (Curcio, Ferrara, DeGennaro, 2006; Peigneux, et al., 2001). Fallone, et al., (2005) found that children ages 6-12 who experienced restricted sleep duration (6.5 hours) presented with decreased school performance. Similarly, Simola, et al., (2012) found that 30% of children who have recurrent sleep problems require increased attention from staffing or teachers during school which affects their daily learning capabilities (Simola et al., 2012). Sadeh, Gruber and Raviv (2002) examined the links between sleep and neurobehavioral function in school-aged children, and found that children who had fragmented sleep patterns performed lower on performance tests as well as having a difficult time sustaining attention throughout the testing. This indicates that sleep plays a valid role in a child's cognition.

Behavioral/Emotional

The cognitive impairments of sleep problems can also present themselves in the behavioral and emotional problems of the child which makes it difficult to separate the two categories. When children do not receive adequate amounts of sleep, they become emotional, tired and unmotivated to take on daily tasks (Dahl, 1996, Gruber et al., 2012). Gruber et al., (2012) found that teachers saw students who were sleep-deprived as more

impulsive and irritable compared to their well-rested peers, who teachers saw as more alert and emotionally stable. The literature reports that behavioral and emotional problems have an effect on both the child's school relationships and on relationships within the child's family.

School

Behavior problems are more prevalent among children who sleep less and have inconsistent sleep schedules, often leading to behaviors that are problematic in the school setting (Biggs et al., 2011; Sadeh et al., 2002). Changes in sleep schedules do not have to be extreme to make a difference. Gruber et al., (2012) found that by adding one hour of sleep a night to a group of 10-11 year olds resulted in the children having a decrease in daytime sleepiness and emotional lability and impulsivity. Decreasing a child's sleep by one hour leads to an increase in impulsivity and daytime sleepiness (Gruber et al., 2012).

Everhart (2011) found that children with insomnia and obstructive sleep apnea struggle with symptoms of impulsivity, decreased reaction times and increased aggression and irritability due to insufficient sleep times. Children's academic experiences and abilities to acquire new knowledge were impacted. Simola, et al, (2012) stated that children with sleep problems required more help or assistance in school than those who do not present with sleep problems. Because children with sleep disturbances may present with aggression and social problems, peer relationships in the school setting are negatively impacted (Simola et al., 2012). Teachers are often the first to discover disturbances in behavior; behaviors can be misleading and give the impression that the child is presenting with ADHD symptoms (Everhart, 2011). Gruber et al. (2012) explored whether sleep duration was associated with ADHD-like symptoms in healthy, well-

developing school-aged children. Thirty-five children between the ages of 7-11 years of age were fitted with a device to assess typical sleep periods (Gruber et al., 2012). Teachers of the participants were asked to report symptoms of inattention and hyperactivity of the children. The results showed that decreased amount of sleep was linked to higher levels of teachers reporting ADHD-type symptoms, such as inattention and problems with cognitive functioning. It was found that it is important for sleep to be addressed early on in order to distinguish between these two difficulties (Everhart, 2011).

Family Relationships

Children's sleep problems are rarely brought to medical attention until the child's sleep problem is having an impact on the parent's sleep. The impact of the child's sleep often leads to parents having a disrupted sleep schedule, leading to higher levels of stress, depression and marital dissatisfaction which can negatively impact the family as a whole (Polimeni, Richdale & Francis, 2007). Parents who wake up two or more times throughout the night due to their children are more likely to assume their child has a sleep disturbance or problem (NSF, 2004).

The National Sleep Foundation (2004) states that 25% of parents of school-aged children are present in their room when they fall asleep and found mothers are more often the ones to go to their child's room when the child wakes up in the middle of the night. Parents of children with sleep problems would like to see a change in bedtime behaviors, bedtime, and morning awakening time. According to Pressman and Imber (2011), high levels of physical aggression towards parents and decreased attention at home and in school were found in children who slept in their parents' bed and/or had no specific bedtime.

Polimeni, Richdale and Francis (2007) found that maternal depression and family disorganization are related to sleep problems in children. Bates et al. (2002) also found that the families stress may contribute to disrupted sleep patterns in children. Spilsbury et al., (2005) examined how the social environment and maternal relationships with the child can affect the child's sleep. It was found that poor parental behaviors such as parents not setting a strict bedtime routine leads to poor sleeping patterns in children. Parents who support a child's social maturity and enforce bedtime routines will help increase their child's length of sleep and increase consistency in healthy sleep behavior patterns.

Interventions for Sleep Problems

The intervention process first begins with an assessment in order to determine the presence of a child's sleep problem. Several screens have been identified in the literature including the Children's Sleep Habits Questionnaire (CSHQ), the Pediatric Sleep Questionnaire (PSQ), the Pediatric Daytime Sleepiness Scale (PDSS), and the Cleveland Adolescent Sleepiness Questionnaire (CASQ). The questionnaires were designed to get a further understanding of a child's sleep and all have strengths and limitations. The CSHQ, PSQ, PDSS, and CASQ are screening tools that were developed by disciplines other than occupational therapy. Occupational therapists are especially interested in understanding the child's sleep environment, habits and routines related to the occupation of sleep, as well as the impact on performance of other role-related occupations such as family participation, school and community activities.

The Children's Sleep Habits Questionnaire (CHSQ) is a 35-item questionnaire designed to assess behavioral and medically based sleep problems in children aged 4 to

10 years old. The questions in the CHSQ are categorized into eight subscales, which include bedtime resistance, sleep onset delay, sleep duration, sleep anxiety, night waking, parasomnias, sleep disordered breathing, and daytime sleepiness (Owens, Spirito & McGuinn, 2000). The CHSQ is a parent-report assessment based on recall over a one-week period. Items are rated on a three-point scale: “usually” (5 to 7 nights per week), “sometimes” (2 to 4 nights per week) or “rarely” (0 to 1 night per week); which leads to an overall score as well as subscale scores. The higher the score indicates a more disturbed sleep.

A pediatric sleep specialist developed the CSHQ, which adds strength to the CHSQ assessment tool. According to Owens, Spirito and McGuinn (2000), the CSHQ has suitable internal consistency reliability for the bedtime resistance subscale in both the community and clinical samples and adequate internal reliability for the clinical sample for sleep duration, sleep disordered breathing, and daytime sleepiness, but not for the community sample.

Limitations for the CSHQ include that it is a parent report based on recall over a one-week period. Parents reporting for an older child may not be aware of his/her ability to initiate and maintain sleep throughout the night. The survey also does not address irregularity of sleep-cycles such as a child’s bedtime during the week vs. the weekend or non-school nights. The link to the questionnaire is not easily available to practitioners and the practitioner using the CSHQ must contact the author if he/she needs more information related to the questionnaire.

The Pediatric Sleep Questionnaire (PSQ) is a 69-item questionnaire that is filled out by the child’s parent to assess sleep related breathing disorders (SRBD) and

symptom-complexes for children between the ages of 2-18 years old (Chervin et al., 2000). The PSQ covers a wide range of sleep problems in children and has a sleepiness subscale, and a SRBD subscale.

Strengths of the PSQ include the response format: yes/no/don't know, which makes it easier for caregivers to answer. The test-retest reliability differ between the four subscales but fall between $r=.66$ to $r=.92$ (Chervin et al., 2000). The questionnaire is also available in Spanish, Turkish and Malay. Limitations for the PSQ include the questionnaire is limited to use of parental reporting, which is difficult for teenage children who might not inform their caregivers that they are having a difficult time maintaining or initiating sleep. Practitioners also need permissions from the author and cost for the PSQ depends on intended use, although no details are provided.

The Pediatric Daytime Sleepiness Scale (PDSS) is a self-report questionnaire, designed to assess the relationship between daytime sleepiness and school-related outcomes in children ages 11-15 years (Drake et al., 2003). The PDSS is a 13-item questionnaire related to sleepiness, using a 0-4 point scale for each question. Strengths for the PDSS include that it is easy to administer. The PDSS has shown both acceptable internal consistency as well as expected associations with outcomes linked to sleepiness (i.e. decreased mood, decreased sleep, and poor academic performance) (Drake et al., 2003).

Limitations to the PDSS include that it has not been specifically tested with adolescents who have a known sleep problem. In the original study performed by Drake et al. (2003), the participants were middle school children who were in a non-multicultural middle/upper class population, which may have hindered the results and

data. Also in order to gain access to the PDSS questionnaire, an individual needs permission from the author, Christopher Drake.

The Cleveland Adolescent Sleepiness Questionnaire (CASQ) is a self-administered instrument used to measure daytime sleepiness in adolescents from an age range of 11-17 years old (Spilsbury, 2007). Eleven of the questions address sleepiness, while five questions address alertness, using a 1-5 likert type response for each question. A high score at the end of the questionnaire indicated an increase in daytime sleepiness for the subject. Strengths within the CASQ are that it measures daytime sleepiness within a broader age range. The questionnaire is also free when used with permission through the “Copyright Clearance Center”. The CASQ has good internal consistency and evidence showed that the CASQ has construct validity (Spilsbury, 2007). Limitations to the CASQ include that it does not address other issues that would be relevant to decreased sleep such as the child’s mood, cognition or behavior throughout the day (Spilsbury, 2007).

To summarize, the CSHQ, PSQ, PDSS, and CASQ are screening tools developed by other professions, which focus primarily on the state of sleepiness. Information is obtained from either the caregiver or the child, yet valuable information regarding the impact of sleep performance on everyday occupation is not available.

Once an assessment is completed the next step is to set up interventions to help improve the child’s sleep performance. Intervention strategies that are commonly used to decrease the effects of childhood sleep problems include increasing physical activity, cognitive behavioral interventions, and medication (Mindell et al., 2006, Nixon et al., 2009). Sleep problems that occur within the early years of a child's life are crucial due to

the rapid development of their brain, which will control future behavior, cognition and emotions (Bonuck & Grant, 2012). A variety of disciplines including clinical and educational psychology, nursing and medicine have demonstrated interest in children's sleep problems. Although childhood sleep problems are common among children and are the most sought out problem by parents, many children are not receiving services because physicians are uncomfortable providing ongoing treatment (Mindell et al., 2012). Interventions provided by multiple disciplines will be described. The intervention strategies described were the most commonly found and used interventions for school aged children and look at the child's cognitive, behavioral and emotional parts along with incorporating the child's environment as well.

Physical Activity

Exercise is not only important for a child's health, mood and fitness, but also helps promote proper sleep. Having a child perform in physical activities and exercise helps the child's brain produce chemicals that promote sleep and relaxation (Nixon et al. 2009). Nixon et al (2009) monitored 519 healthy 7-year-olds to measure the amount of activity performed throughout the day and the amount of sleep the child engaged in at night. Nixon et al (2009) found that the children had a wide variation in how quickly each child would fall asleep, but that the more physical activity the child engages in throughout the day, the shorter the sleep latency. For every hour a child was inactive, it took an extra three minutes for the child to fall asleep (Nixon et al., 2009).

Weise (2010) also stated that children receiving physical activity throughout the day have an increased ability to fall asleep. Physical activity should occur no later than

three hours before bedtime and children should be restricted from other stimulating behaviors such as video games before bedtime (Weise, 2010).

Cognitive- Behavioral Interventions

The use of cognitive behavioral therapy involves both cognitive (e.g. modifying a child's thoughts and beliefs related to sleep) and behavioral methods to change maladaptive sleep behaviors (Tikotzky & Sadeh, 2010). Moturi and Avis (2010) found behavioral interventions for children with sleep problems produce significant improvements in a child's sleep performance. Behavioral interventions help children initiate and maintain sleep independently throughout the night, and can improve the child's quality and quantity of sleep (Moturi & Avis, 2010). Cognitive-behavioral interventions for sleep problems include relaxation training, cognitive therapy, stimulus-controlled environment, and sleep hygiene.

Rest and relaxation helps to restore the body and is linked to improving memory function and decreasing stress (University of Washington, 2011). Diaphragmatic breathing, muscle relaxation techniques and positive imagery can all be helpful aids to assist a child in initiating and maintaining sleep (Taylor & Roane, 2010; Royal Children's Hospital [RCH], 2010; Schlarb et al., 2011).

Progressive muscle relaxation (PMR) has the most evidence for treating clients with insomnia. PMR takes about 10-30 minutes and involves the child alternately tensing and relaxing different muscles throughout the body (Taylor & Roane, 2010). PMR can help distract and decrease the physical feelings that are linked with stress and worrying (e.g. heart racing, mind wandering and increased breathing) allowing the child to be better able to cope (RCH, 2010). Positive imagery involves having the child use his/her

imagination and think of a happy place that will distract worries while lying in bed. Positive imagery helps the child to relax and fall asleep (RCH, 2010). Diaphragmatic breathing is a relaxation technique used to help a child relax in a stressful situation. Relaxation techniques may be useful for children who have a fear of waking up at night due to a nightmare and need assistance releasing body tensions (Schlarb et al., 2011).

Cognitive therapy targets thoughts and beliefs contributing to a child's sleep problem. Children's thoughts about sleep could be linked to a fear of nightmares and increasing a child's inability to fall asleep (Taylor & Roane, 2010). Paine and Gradisar (2011) found that children with insomnia who underwent cognitive behavior therapy (CBT) experienced a decrease in their insomnia symptoms including longer sleep periods and fewer symptoms of anxiety. A variety of CBT techniques were used including sleep education, bedtime fading and sleep hygiene. Thought challenging, coping with self-talk, and gradual exposure to being separated from their parents were also employed (Paine & Gradisar, 2011).

Sleep hygiene education for parents and children is used to develop better sleep habits in order to increase quality and quantity of sleep. Sleep hygiene is a more preventative measure that encompasses habits throughout the day yet influences a children's sleep participation (Malow et al., 2009). Sleep hygiene can be seen as a preparatory method to have a full nights sleep such as reducing the use of caffeine, not taking part in physical activities close to bedtime and utilizing a consistent bedtime routine which includes a consistent environment and sleep schedule (Pierce & Summers, 2011). Other attributes to sleep hygiene include supplying the child with a healthy

surrounding environment, and to instruct the child to only use their bed for sleeping and not doing homework or playing on their bed (Pierce & Summers, 2011).

The National Sleep Foundation (2004) found that one third of school aged children drink at least one can of a caffeinated beverage per day. Calamoro et al., (2012) explored the effect of caffeine and technology on sleep duration in school-aged children and found that 30% of the children consumed at least one caffeinated beverage a day, while 42.4% had a television in the bedroom. Children who drank a caffeinated beverage had 15 minutes less sleep than children who did not drink a caffeinated beverage. Children with three technology items (i.e.: computer, phone, television) in their bedroom had 45 fewer minutes of sleep than children who did not have these items in their bedroom (Calamoro et al., 2012). Researchers concluded that consuming caffeinated drinks and having multiple technology devices in the bedroom resulted in a reduction of sleep hours in school-aged children. (Calamoro et al., 2012).

Over 40% of school-aged children in a study completed by the National Sleep Foundation (2004) had television sets in their room, which decreased their overall length of sleep. Researchers investigated how sleep duration, television and computer habits, increase difficulties in sleeping, and the effects of these on the enjoyment of school and on feelings of tiredness in school in both children and adolescents (Garmy, Nyberg & Jakobsson, 2012). Researchers results showed that 1 in 10 children in the first grade reported having difficulties going to asleep, while almost every fifth child in the older grades reported difficulty. Researchers also found that one in five children aged 10 reported being tired at school (Garmy, Nyberg & Jakobsson, 2012). Median length of sleep per night for 6-7 year olds was 10 hours, decreasing to seven and a half hours for 16

year olds. Students reported that the average time in front of a screen was between one and two hours per day. Of the “short-sleepers” researchers found that these students reported being more frequently tired in school, enjoyed school to a lesser extent, had greater difficulties falling asleep and waking up, had a TV in their bedroom and spent two or more hours a day watching TV or on a computer (Garmy, Nyberg & Jakobsson, 2012).

According to The Cleveland Clinic (2009) there are also physical environmental changes that can be made to the child’s room such as the removal of clocks. When a child is exposed to a clock while trying to sleep, it can increase their anxiety levels and increase the time it takes to fall asleep. The Center for Disease Control and Prevention (2012), also reports that individuals should make sure their bedroom is at a comfortable temperature, and the room is quiet and dark in order to promote relaxation. According to the Centre for Clinical Interventions [CCI], (2008) it is also suggested to use dark shades if necessary to block out the light and to use earplugs if needed to block out excess noise. These researchers also suggested that if an individual is unable to sleep within twenty minutes of lying in their bed than they should get up and do a sedentary task such as reading until they feel tired enough to fall asleep in their bed.

Stimulus-control therapy is designed to help children associate their bed with sleep. With this approach, children are to only use their bed for sleeping, only go to bed when fully tired and wake up at the same time everyday. Stimulus control can be used with other sleep restriction techniques including consistent bedtime routines and cues to be used for sleep onset (Owens, Palermo, & Rosen, 2002).

Owens, Jones and Nash (2011) examined sleep health knowledge and beliefs of sleep practices in caregivers of young children and found that 23% of children did not have a consistent bedtime, 23% of children had at least one electronic device within their bedroom, and 56% of parents reported that children frequently fall asleep when a parent is within their presence (Owens, Jones & Nash, 2011).

According to the National Sleep Foundation study (2004), school-aged children are more likely to change their sleep pattern on weekends by either sleeping in or staying up later. Biggs et al., (2011) indicated that shorter sleep duration and inconsistent sleep schedules are shown to increase problematic behaviors in school-aged children. Children with larger bedtime differences between school nights and non-school nights were six times more likely to be in the 95th percentile on the hyperactive scale, than children who had a consistent bedtime (Biggs et al., 2011). Irregular bedtimes have also been linked to lower academic performance than children with a more regular sleep routine (Pesonen et al., 2010). According to the CCI (2008), it is recommended to avoid taking naps during the day and to only go to bed at night when you are tired.

Pharmaceuticals

Sleep medications are used if all other interventions such as sleep hygiene, CBT and daily physical exercise have been unsuccessful. Diphenhydramine, Clonidine, Clonazepam and Melatonin are pharmaceuticals used to treat sleep problems in children (Pelayo, Dubik, 2008). Diphenhydramine has been shown to reduce time spent to fall asleep in both adults and children and is shown to decrease the number of sleep awakenings throughout the night (Gengo, Gabos, & Miller, 1989).

Of these medications, clonidine is one of the most commonly used sleep aids to

treat insomnia in children (Schnoes, et al., 2006). Clonidine is most often used in children with neurodevelopmental disorder or ADHD (Schones et al, 2006). Clonazepam is a benzodiazepine hypnotic used for children with sleep disorders and is found to decrease parasomnias (i.e. night terrors, sleep walking).

Cortesi et al. (2012) found that the use of melatonin had greater effects on bedtime resistance and sleep awakening than the use of cognitive behavioral therapy. However, it was found that cognitive behavioral therapy and melatonin combined reduced overall insomnia symptoms in children with autism spectrum disorder (ASD), with no adverse side effects related to the melatonin. The review of melatonin as sole therapy for sleep disorders by Sajith and Clarke (2006) indicated that it was the most effective method to reduce sleep-onset time, with improved total sleep time. Additionally Sajith and Clarke (2006) concluded that melatonin was an effective treatment for sleep initiation in children and adolescents with learning disabilities.

Many prescription drugs are designed for adults with sleep disorders and are not approved by the FDA for use with children. According to Pelayo and Dubik (2008), physicians often prescribe “off label” medicine to treat children with sleep disorders. According to the Cleveland Clinic it is important to be in close contact with the physician when looking at the possible use of over the counter supplements such as melatonin.

Role of Occupational Therapy

Crepeau, Cohn, and Schell (2003) defined occupation as “daily activities that reflect cultural values, provide structure to living and meaning to individuals...” (p.1031). In 2008 the Occupational Therapy Practice Framework was revised in the ‘areas of occupation’ to incorporate ‘rest and sleep’ as a main occupation. According to the

American Occupational Therapy Association [AOTA] (2008), the occupation of ‘rest and sleep’ is defined as “activities related to obtaining restorative rest and sleep that supports healthy active engagement in other areas of occupation” (p. 632).

Prior to rest and sleep being added to the framework, sleep was not considered an occupation because it did not involve an activity one engaged in while awake (Kielhofner & Burke, 1985). Sleep was seen as an unaware process that could not be manipulated or directed. This belief was reinforced by Martin (2002) who stated, sleep is found to be one of the least productive human activities. Because of this, it is often the activity that humans cut short in order to perform other daily occupations (Martin, 2002). The impact sleep has on performance of occupations had been ignored, which resulted in sleep and rest not being addressed separately by occupational therapists (Green, 2008).

Sleep and rest were listed under activities of daily living until 2008 when it was added to the framework as its own area of occupation. Sleep and rest was added because of its significance on benefitting or negatively effecting the participation of other daily occupations such as leisure, work or instrumental activities of daily living (Gentry & Loveland, 2013). The change in the framework was consistent with Adolf Meyer’s philosophy from 1922, when the occupational therapy profession was unfolding. Meyer (1922) identified work, sleep, rest and play as part of the four primary areas of occupation that were linked to a healthy, balanced lifestyle. According to the AOTA (2008) rest and sleep ranges from a quiet state of peace to sleeping and staying asleep. According to AOTA (2008), when treating sleep problems, occupational therapists address both sleep preparation (i.e. bed time routines, environment) and sleep

participation (i.e. sleep state without disturbances), as both are necessary to successfully complete the occupation of sleep.

Occupational therapists have a growing area for services in the areas of assessing a child's sleep environment and the establishment or modification of a child's sleep routine. Sleep is seen to be vital due to the influence it has on a child's awake activities (Pierce & Summers, 2011).

According to West (2009), occupational therapists can design interventions for patients in all settings including inpatient, outpatient and home health. Making modifications to the environment, preparatory methods and education are some of the many intervention strategies West (2009) reports occupational therapist can implement. Occupational therapists can help children and parents identify how various environmental barriers can be modified to enhance the sleep of the child (West, 2009). In regards to the sleep environment, distractions include television in the bedroom, the use of cell phones, bright lights in the room, and/or playing with toys or video games when the child is supposed to be sleeping. Modifying the child's bedtime routines, patterns and habits in regards to sleep preparation is also addressed by an occupational therapist (Picard, 2012).

The therapist can provide the family with calming activities that can help facilitate sleep, such as relaxation techniques and nightly routines that help calm the child down (Picard, 2012). West (2009) also found that preparatory techniques such as relaxation techniques were found to be used, and occupational therapists should focus on the client's wants and needs when implementing these (West, 2009).

West (2009) states that the goal of education is to prevent individuals from losing sleep. Sleep education, which can include the establishment of sleep routines, are found

to be highly beneficial for parents of children with a sleep problem (West, 2009).

Therapists may also educate families on the use of sensory integration strategies to help with a child's sleep including ideas like; tight or loose fitting pajamas, the fabric of the pajamas, the weight of a blanket the child uses to sleep and helping the child use a picture board to visually show a bedtime routine (Picard, 2012).

Adequate rest and sleep is found to enhance an individual's occupational participation, performance and overall engagement in daily activities. Engagement and performance in occupations are historical concepts of the occupational therapy profession and attention on sleep continues to be addressed within the scope of occupational therapy practice. Prevention interventions are addressed with both the child and the family and continue across one's lifespan. Occupational therapists play an important role in addressing the occupation of sleep due to sleep being part of the occupational therapy scope of practice, and the affect that sleep has on a child's other daily occupations (Picard, 2012).

Summary

The current literature has shown that 30-50% of children in the United States have some type of sleep problem during their childhood years (Dawson, 2004; Simola et al., 2011). According to the National Sleep foundation (2011), parasomnias and insomnias are common sleep problems found in school-aged children. Children who suffer from sleep problems often also experience other co-occurring medical diagnoses such as attention deficit hyperactivity disorder, anxiety, or depression affecting daytime performance (Gregory et al., 2006; Ivanenko et al. 2006; Weiss & Salpekar, 2010). Sleep problems can have a lasting effect on a child's cognition, behavior and physical abilities,

which limits the ability to complete daily occupations to the best of the child's abilities (Simola et al., 2012).

Many types of treatment interventions have been found to be beneficial for children with sleep problems and often involve both the child and the family (Mindell et al., 2006). An occupational therapists role is to educate both the child and family about the current condition and to identify the family's roles, and routines in order to promote a healthy life (Picard, 2012; West, 2009).

As of 2008, sleep and rest were included among the occupations listed in the Occupational Therapy Practice Framework: Domain and Process (AOTA, 2008). However, many therapists have over-looked addressing this occupation, which is needed in order for an individual to carryout other daily occupations (West, 2009). Limited assessments and screening tools addressing sleep problems are available for occupational therapist to utilize, specifically with school-aged children.

CHAPTER III

METHODOLOGY

This product development began with a review of the literature utilizing databases including PubMed, CINAHL, PsychInfo, OT Search, OT Seeker, as well as use of recognized OT textbooks. The literature review focused on defining sleep, sleep problems, common sleep problems among children, comorbidities to sleep problems, the impact of sleep problems, common interventions used to treat sleep problems and the role of occupational therapy in addressing and treating sleep problems. Review of the literature indicated a need for pediatric sleep screening tools specific to occupational therapy and performance.

A review of occupational therapy practice models was completed to determine the theoretical direction to complete and guide this product development. The Ecology of Human Performance (EHP) model (Dunn, 1994) and the Person-Environment-Occupation (PEO) model (Law et al., 1997) were both examined closely to determine which model addresses the child, their sleep and their environment in which sleep takes place. The EHP model was selected as a candidate due to its rich detail and focus on the child's sleep environment, which was found in the literature to play a large role in a child receiving adequate sleep (Dunn, 1994). The PEO model was selected due to its components focusing on the person, environment and occupations and how the three constructs work together to either strengthen or serve as barriers to occupational performance. The PEO model was selected due to its process of creating harmony among

the person, environment and occupation and it's process of looking at each component and how each component will affect one another.

Prior to developing the OT-SST research was done to assess the different types of screening tools available to other disciplines addressing sleep. Common screening tools used by other disciplines were generally either self-report or caregiver questionnaire. Very few if any addressed the occupational performance of sleep from both the child and the caregiver perspectives. Many of the screening tools lacked questions addressing the child's cognitions, behaviors and emotions throughout the day and night, which were found to be common concerns in children who experience sleep problems.

The "Occupational Therapy Sleep Screening Tool" (OT-SST) is a screening tool used to assist occupational therapists in addressing sleep problems in school-aged children. The OT-SST is a five-step screening method to determine the presence of a sleep problem and where the problem lies. The screening tool consists of a pre-screening risk checklist, a caregiver take-home questionnaire, a caregiver interview, a self-report child interview, and interpretation guidelines. The product includes administrative procedures and guidelines for interpretation guided by the PEO model. A case study follows to illustrate use of the screening tool(s), including the clinical reasoning process as it is guided by the PEO model.

CHAPTER IV

PRODUCT

The *Occupational Therapy Sleep Screening Tool (OT-SST)* is designed for occupational therapists to determine if sleep is having an impact on a child's daily occupations. The *OT-SST* targets school-aged children ages 6-12 who are currently experiencing difficulty with emotional, physical, cognitive and behavioral development in everyday occupations.

The *OT-SST* is based on the Person-Environment-Occupational (PEO) model (Law et al., 1996), which examines occupational performance by looking at the relationship and harmony between the person, the occupation and the environment (Law et al., 1996). Occupational performance is the relationship or interconnectedness of the person, environment, and occupation over an individual's life span (Strong & Gruhl, 2011).

The *Occupational Therapy Sleep Screening Tool* is a five-step screening tool beginning with a pre-screening checklist to determine if the remainder of the *OT-SST* should be completed. The therapist then administers a take-home caregiver questionnaire to obtain general information in regards to the child and their sleep. Following the questionnaire is a caregiver and then child information interviews that are adapted based on the findings from the take-home questionnaire. The final step of the *OT-SST* is the interpretation of results.

Occupational Therapy Screening Tool for Pediatric Sleep Problems (OT-SST)



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SECTION ONE

Introduction

INTRODUCTION

Sleep plays a vital role in a child's development, health, and quality of life. Sleep has a direct impact on a child's mental and physical development. According to the National Sleep Foundation [NSF] (2011), school-aged children are recommended to have between nine and twelve consecutive hours of sleep per night to maintain alertness and perform during the day. At this age, children start to become more involved with homework, school, and extracurricular activities that can affect a child's sleep routine. When a child's sleep pattern is disrupted, it can affect the child's emotional, physical, cognitive and behavioral development (Biggs et al., 2011; Simola et al., 2011; X. Liu, Liu, Owens & Kaplan., 2005).

In order for a child to be diagnosed with a sleep disorder, a child must meet the specific criteria for that disorder (Hoban, 2010). Sleep problems are defined as an insufficient sleep pattern disrupting to the parents and or child, sleep problems are more common than sleep disorders (Thiedke, 2001). Between 30-50% of children in the United States have some type of sleep problem during their childhood years (Dawson, 2004; Simola et al., 2011). Childhood sleep problems are found to be one of the most sought out conditions that parents discuss with their child's physician (Thiedke, 2001).

Occupational therapists often work with sleep problems, which are commonly found to be comorbid with many types of medical diagnosis and complications. Parents

of children with an underlying medical diagnosis, such as attention deficit hyperactivity disorder (ADHD), autism, or mood disorders, frequently reported sleep-related problems that affected the child's performance throughout the day (Gregory et al., 2006; Ivanenko et al. 2006; Weiss & Salpekar, 2010).

In 2008, sleep and rest was added to the Occupational Therapy Practice Framework as a separate area of occupation (American Occupational Therapy Association [AOTA]). According to AOTA (2008), when addressing sleep problems, occupational therapists assess both sleep preparation (i.e. bed time routines, environment) and sleep participation (i.e. sleep state without disturbances), as both are necessary to successfully complete the occupation of sleep.

Currently, occupational therapy lacks screening tools that specifically address sleep problems in school-aged children. Occupational therapists either use assessments designed for other disciplines or tend to overlook sleep problems as a concerning area. The Occupational Therapy Sleep Screening Tool (OT-SST) was designed to meet this need, providing a tool guiding occupational therapists' screening efforts when working with school-aged children with a possible sleep problem and associated occupational performance issues.

THEORETICAL MODEL

The OT-SST is a screening tool based on the Person-Environment-Occupational (PEO) model developed by a group of Canadian occupational therapy clinicians and researchers (Law et al., 1996). The PEO model was designed to examine occupational performance by looking at the relationship and harmony between the person, the occupation and the environment. The PEO model looks at the person, environment and occupation across one's lifespan, and the dynamic interactions between all three (Law et al., 1997).

From the PEO perspective, the *person* is viewed as “a dynamic, motivated and ever-developing being, constantly interacting with the environment” (Law et al., 1996, p.17). The person is comprised of four components including the affective, cognitive, physical and spiritual parts (Strong & Gruhl, 2011). The affective component looks at the person's feelings in relation to the occupation. The cognitive component looks at the person's thinking or thoughts about the occupation, while the physical component of the person is considered the actual participation or doing of the occupation. The spirituality component is considered the core of the person and is seen as the individual's beliefs, values and goals, that guide the person's choices and help shape one's identity. By addressing the aspects of the person one is able to focus interventions and care on client-centered practice (Strong & Gruhl, 2011).

The *environment* is considered the second component of the PEO model. From the PEO perspective the environment is “the context within which occupational performance takes place” (Canadian Association of Occupational Therapy [CAOT],

1997, p. 44). The elements within the environment component that shape and are shaped by the person include the cultural, physical, social and institutional (Strong & Gruhl, 2011). The cultural environment looks at the customs, beliefs and traditions. The physical environment is made up of objects that are tangible or can be seen, like a bed, or light. The social environment is made up of family, friends, or other networks that one interacts with. The institutional environment is made up of a large context or system like educational institutions or health-care systems (Strong & Gruhl, 2011).

The third component of the PEO model is *occupation*, which addresses what the individual does, needs or wants to do within his/her environment. According to Law et al. (1997) occupation is “Activities... of everyday life, named, organized, and given value and meaning by individuals and a culture. Occupation is everything people do to occupy themselves, including looking after themselves... enjoying life... and contributing to the social and economic fabric of their communities” (p.32). Examples of occupation include; activities of daily living (ADLs), instrumental activities of daily living (IADLs), work, play, leisure, social participation and sleep are all considered occupations within the occupational therapy framework (American Occupational Therapy Association [AOTA], 2008). Occupations are often analyzed by occupational therapists to determine the steps and objects needed in order for the individual to perform the occupation.

The term *occupational performance* is the relationship or interconnectedness of the person, environment, and occupation over the individual’s life span (Strong & Gruhl, 2011). Using the PEO model and looking at what factors influence the person, environment and occupation, a therapist can have an understanding of how to maximize fit to enable occupational performance (Strong & Gruhl, 2011). By looking at each

component of the PEO model the therapist is able to see how performance issues are affecting the individual's overall occupational performance. When evaluating an individual's occupational performance, an occupational therapist can use multiple methods to gather information. Assessments and observations are tools used to identify and measure the performance skills and patterns for each activity or occupation (AOTA, 2008).

Relationship of OT-SST to PEO

The OT-SST examines the occupation of sleep and what the person wants or needs to do in order to accomplish this occupation. The screening tool addresses the person (child) from a PEO perspective by looking at the child's physical, cognitive, spiritual, and affect (thoughts and feelings) about the occupation. The environment is addressed within the OT-SST by looking at the cultural, physical, social and institutional aspects of the sleep environment. The OT-SST was designed to look at these three components; the occupation, the person, and the environment as a whole working together to create harmony. Interview and questionnaire items are designed to help occupational therapists understand if sleep is an underlying problem that is affecting a child's cognition, behaviors, physical abilities and relationships in their everyday environments through the use of the PEO model.

OT–SST OVERVIEW

The Occupational Therapy Sleep Screening Tool for school-aged children (OT-SST) is a screening tool designed for occupational therapists to examine and determine if sleep is having an impact on a child’s daily occupations. The OT-SST targets school-aged children between the ages of 6-12 years old, who are currently experiencing difficulty with emotional, physical, cognitive and behavioral development which is effecting everyday occupations. In addition to sleep having an effect on the child’s emotional, cognitive and behavioral development, sleep problem are commonly found with many types of medical diagnosis and complications such as attention deficit hyperactivity disorder (ADHD), autism, anxiety disorders, and mood disorders.

The OT-SST consists of a pre-screening checklist filled out by the therapist, a take-home questionnaire for the child’s caregiver to complete, a follow-up caregiver interview and a child interview. The take-home questionnaire can take up to 15 minutes to complete, while the interview is approximately 20 minutes for the caregiver and 15 minutes for the child.

Steps to completing the OT-SST:

- I. Preparing for administration of OT-SST: Completing the Pre-screening Checklist
- II. Give caregiver the OT-SST-Take-home Questionnaire/ review findings from take-home questionnaire
- III. Administer OT-SST-Caregiver Interview
- IV. Administer OT-SST- Child Interview
- V. Summarizing and Interpreting Findings

SECTION TWO

Content

OT-SST: ADMINISTRATION PROCEDURES

Step to completing the OT-SST:

- I. Preparing for administration of OT-SST
- II. Give caregiver the OT-SST-Take-home Questionnaire/ review findings from take-home questionnaire
- III. Administer OT-SST-Caregiver Interview
- IV. Administer OT-SST- Child Interview
- V. Summarizing and Interpreting findings

I. Preparing for Administration of OT-SST

- a. Read and familiarize yourself with the OT-SST:** Familiarize yourself with this screening tool prior to completing your interviews with the caregiver and the child. By reading through the OT-SST, you will have a better understanding of how sleep can have an impact on a child's everyday occupations.
- b. Complete a pre-screening checklist:** The pre-screen checklist is designed to gather risk factors associated with a child's sleep in order to determine if the OT-SST would be beneficial to complete. These risk factors will help the therapist determine if further screening with the OT-SST is needed based on the findings. When completing the OT-SST: pre-screening checklist, it is essential that the you as the occupational therapist are familiar with the child and his/her diagnosis in order to understand what underlying factors that may be contributing to the child's sleep problems.

II. Give caregiver the OT-SST-Take-home Questionnaire.

- a. Handing out take-home questionnaire:** If two or more of the boxes were checked within the pre-screening checklist, it is advised that you continue with the OT-SST and hand out the take home questionnaire to the child's caregiver/s. The take home questionnaire is designed for the caregivers of the child to briefly describe the child, their sleep and the sleep environment. The questionnaire should be completed at home during the parent or caregivers own time and the therapist should instruct the parent or caregiver to return the completed questionnaire on their next therapy visit.
- b. Review findings from take-home questionnaire:** After the caregiver questionnaire has been completed and returned to you, you will need to read and understand the findings. By looking over what the caregiver/s have identified on the take-home questionnaire, you will be able to identify what areas of concern the caregiver is having with the child's sleep problem. The information will enable you to tailor the interview questions based on the caregiver's identified areas of concern.

III. Administer OT-SST-Caregiver Interview

- a.** Administered as a follow-up to the take-home questionnaire, the caregiver interview is designed to help the therapist understand the child, their sleep patterns and the environment in which they engage in sleep. The interview is designed to understand the caregivers' perspective on the child's daytime occurrences, nighttime occurrences and the child's sleep

environment in greater detail. The interview was designed to be an informal, semi-structured interview suggesting that you as a skilled occupational therapist can add, modify or eliminate any questions that may or may not pertain to the specific case. The interview is to be used as a guide for the therapist to easily address sleep and its affect on the child's daily occupations. The caregiver interview is estimated to be 10 to 30 minutes in length.

IV. Administer OT-SST- Child Interview

- a. The child interview is designed to look at the child's perspective on sleep and his/her sleep environment. This self-report will provide you with an understanding of the child's outlook on his/her daytime and nighttime occurrences behaviors and routines, along with a better understanding of his/her sleep environment. The interview is informal, and leaves room for you as a skilled occupational therapist to add, modify or eliminate any questions in order to gain a holistic profile of the child, his/her sleep, and sleep environment.

V. Summarizing and Interpreting findings

- a. When interpreting results from the take-home questionnaire and interviews, each of the factors within the PEO model should be addressed to have a better understanding of the child's occupational performance of sleep. The child's occupational performance is best defined in the context of understanding the child, the sleep environment and the activities associated with the child's sleep. When interpreting the results, the occupational therapist must understand the context between the child, the

sleep environment and activities in order to identify the barriers and strengths to occupational performance.

INTERPRETATION OF OT-SST

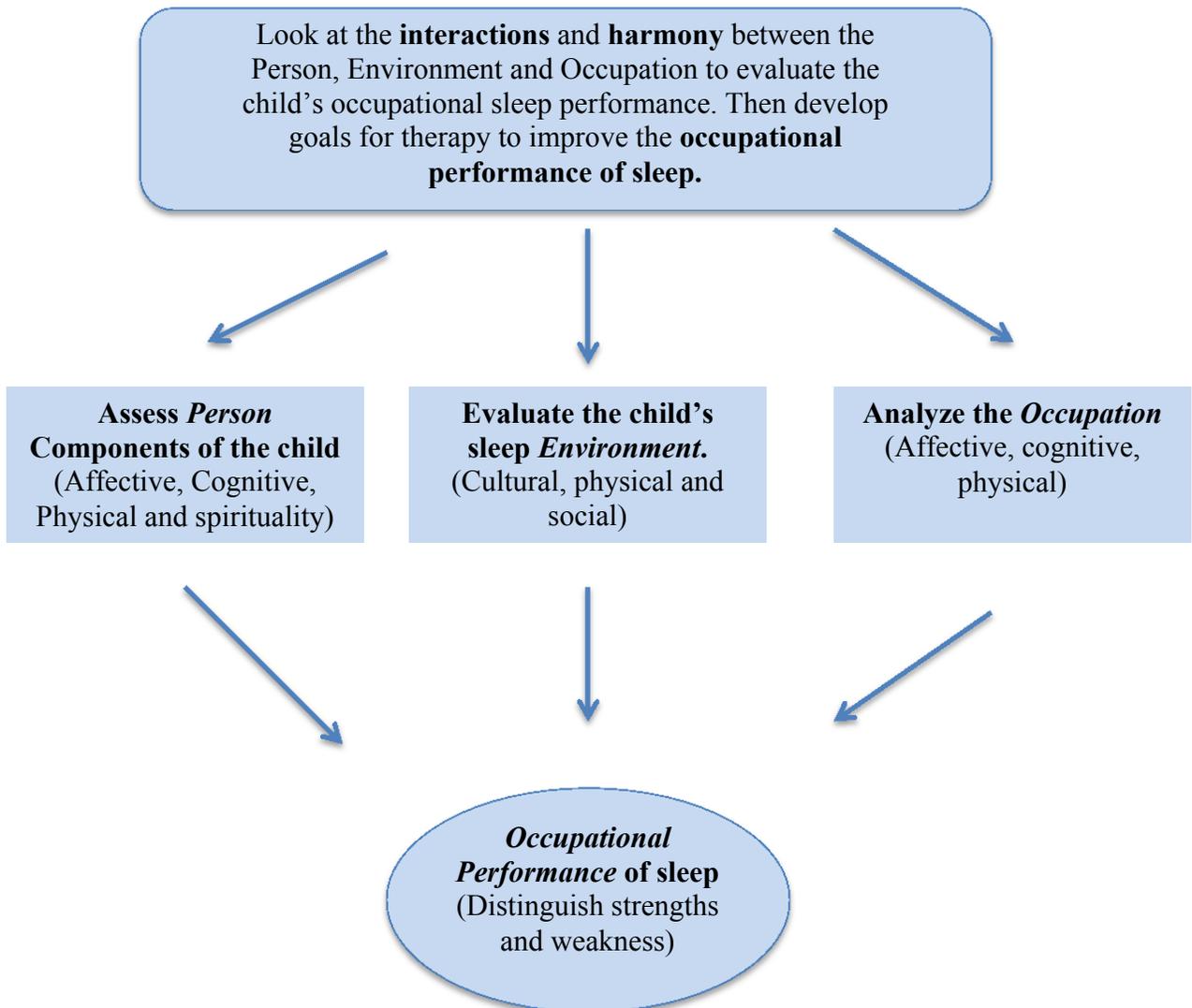
The goal for an occupational therapist is to interpret the results through the use of the PEO model, in order to improve the child's sleep performance by facilitating or improving the fit between the person, environment and occupation. When interpreting the results gathered from all parts of the OT-SST, it is important that you as a skilled occupational therapist incorporate the PEO model to set goals for therapy. The PEO model defines that if the person, environment, or occupation is disrupted or having dysfunction, then harmony between the three parts will affect the occupational performance of sleep (Law et al., 1997).

The take-home questionnaire is used as a pre-requisite for the caregiver and child interviews. The take-home questionnaire will assist you in examining what evidence is affecting the child's sleep. The take-home questionnaire gives the occupational therapist a general overview of the child's current sleeping environment and sleep habits. Once the caregiver completes the take-home questionnaire, the therapist will review the findings and determine what areas need to be addressed further in the caregiver and child interviews. If the therapist determines that a sleep problem may be occurring, the therapist should set up an interview with both the caregiver and the child to further investigate the occupational performance of sleep.

The caregiver and child interviews look at the person, the child's sleep environment, the occupation of sleep and the cognitive, behavioral, physical and relationship difficulties that can arise due to a child's sleep problem. It is the occupational therapists' responsibility to determine where dysfunction lies, and how this dysfunction can impact the other areas of the PEO model such as the person, environment or

occupation. The therapist needs to look at the interactions between the person and environment, the person and occupation, and the occupation and environment. Figure 1.1 and the case study in Appendix C will assist the therapist to examine what areas and interactions between the P-E, P-O, O-E are affecting the child's sleep performance.

Figure 1.1 (Law, 1997)



After examining all of the findings and connections between the three components of the PEO model, you as an occupational therapist will provide the findings to both the child and caregiver. If applicable, the therapist may briefly interpret findings first to the caregiver at the end of the interview. You will then discuss the barriers and supports to the occupational performance of sleep and any other pertinent findings. The therapist will need to use clinical reasoning skills to determine how much information found throughout the screening tool you will disclose to the child such as the purpose and what goals will be addressed going forward. The amount of information conveyed to the child will depend on age, developmental level and involvement in treatment. The therapist will work with the child and caregivers as a team to eliminate barriers or potential barriers, and work to increase or enhance the supports to improve satisfaction and performance in the occupation of sleep. After discussion, you as the therapist need to create goals that address the person, environment and occupation in order to enhance the child's occupational sleep performance.

SECTION THREE

Appendices

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APPENDIX A

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APPENDIX B

OT-SST FORMS

PRE-SCREENING SLEEP PROBLEM CHECKLIST

The Pre-Screening Sleep Problem Checklist is designed for the occupational therapist to look at the risk factors that are present within the child that may be impacting the child's sleep performance

Child's Name:	Age:	Diagnosis:
Child's Current Medication:		Date:

Risk factors that affect sleep performance include: (Please check all that apply)

- Attention Deficit Hyperactivity Disorder (ADHD)
- Autism
- Child suffering from Anxiety or Depression
- Child has had a recent change in behavior or mood (seen by therapist or informed by caregivers of child)
- Child has difficulty concentrating on a task
- Child is currently overweight
- Other: _____

Comments:

Decision- Making:

If two or more of the following risk factors were checked by the occupational therapist, the child would benefit from further screening using the OT-SST to address the overall impact of sleep.

Occupational Therapy Sleep Screening Tool- Take Home Caregiver Questionnaire

Caregivers of _____: My name is _____, I am the occupational therapist currently working with _____. This questionnaire is designed to provide the occupational therapist with information regarding your child's sleep and to further understand problems your child may or may not be facing. It is asked that the caregiver fills out this questionnaire at home and be brought in on your child's next therapy session. The caregiver, child and therapist will follow up with a short interview to further understand your child's sleep and sleep patterns in order to enhance your child's overall quality of life.

What difficulties is your child facing in regard to sleep? (i.e. nighttime tantrums, resistance to sleep, nightmares, etc.)

How many hours of sleep does your child get on a typical night?

Describe what bedtime looks like for your child.

(Turn page)

Does your child fall asleep at inappropriate times throughout the day? If yes, explain.

What is your child's bedroom set-up like? (i.e. shares a bedroom, lighting in child's room, electronics etc.)

Are there any other concerns you have regarding your child's sleep?

Signature

Date

Occupational Therapy Sleep Screening Tool- Caregiver Interview

Introduction:

I am interesting in learning more about _____ (child's name) and sleeping patterns and behaviors associated with bedtime. The purpose of this interview is to learn more about how _____'s (child's name) daytime and nighttime performance may be affecting and/or hindering sleep performance. Knowing how _____ behaves throughout the day and elements of the nightly routine will assist in understanding how _____'s sleep patterns may be affecting his/her relationships, and physical, cognitive and behavioral development.

Topic Areas:

The following interview questions will build on the information obtained from the take home questionnaire I have received from you. The interview will include the caregiver's perspective on:

- Child's daytime performance
- Child's nighttime performance
- Child's sleep environment

This set of interview questions addresses the caregiver's (your) perspective on the child's daytime performance. Within this section you will be asked questions that will look at the child's physical, cognitive and behavioral behaviors along with the child's relationships.

Caregiver's perspective of child's daytime performance

Physical:

1. How many minutes/hours of physical activity (sports, recess, free play) does your child engage in daily?

Cognitive:

1. Does your child experience difficulties completing homework tasks?
 - a. If yes, what types of difficulties are encountered?
2. Does your child become distracted when asked to listen or complete a task?
 - a. If yes, how often?

Behavioral:

1. Does your child experience difficulty staying awake during the day?
2. Has your child's teacher ever expressed concerns regarding your child's behavior at school?
 - a. Follow up: Have you received concerns from others in the community (such as community activities, clubs, sport practices, day care, etc.) about your child's behavior?
 - b. What is the nature of these concerns?
3. Does your child take naps during the day?
 - a. If yes, how often?
4. Describe your child's mood/attitude during the day? (i.e. happy, sad, angry)

Relationships:

1. Have you noted any concerns about your child's ability to maintain personal relationships?
 - a. If yes, what types of concerns have you found?
 - b. Which relationships present with the most difficulty? (i.e. siblings, friends, teachers, parents, coaches)

The next set of questions addresses the caregiver's (your) perspective on the child's nighttime performance. Within this section you will be asked questions that will look the child's physical, cognitive and behavioral functioning along with the child's relationships.

Physical:

1. Does your child participate in physical activity three hours or less before bedtime?
2. Does your child consume caffeinated beverages?
 - a. Is your child drinking caffeinated beverages three hours or less prior to bedtime?
3. What activities does your child perform *just* prior to bedtime? (i.e. reading, watching TV, playing, etc.)

Cognitive:

1. What signs tell you your child is tired?

Behavioral:

1. What is your child's typical bedtime routine?
2. How long does it typically take your child to fall asleep?
 - a. Does your child stay in bed when he/she awakes?
 - i. What does your child do when he/she can't sleep?
3. What is your child's bedtime on weekdays? Weekends? Non-school days?
4. Does your child awaken after falling asleep?
 - a. If yes, how often?
5. Does your child have tantrums before going to bed?
 - a. If yes, how often?
6. Does your child play on his/her bed?
 - a. If yes, when and how often?

Relationships:

1. Who is present in the room when the child falls asleep?
2. Does your child consistently sleep in his/her own bed?

The final section addresses the caregiver's (your) description on your child's sleep environment. You will be asked to look at the physical environment of your child's room and where they sleep.

1. Describe your child's room? (i.e. the layout, what devices are in the room, size of bed, etc.)
2. Where does your child typically fall asleep?
3. What type of noise is present while your child sleeps? (i.e. living room TV, a fan in child's room, the child's TV, etc.)
4. What types of lights are on when your child falls asleep?

Occupational Therapy Sleep Screening Tool: Child Interview

Introduction:

I am interested in learning more about you _____ (child's name) and your sleep. I want to learn more about your school, bedtime and your room at home where you sleep. This interview will assist me in learning more about you so that therapy sessions can be more fun for you.

I will start by asking you questions about your morning and afternoon including school, after school activities and any other activities you do during the day.

Physical:

1. What type of sports or exercise do you do during the day?

Cognitive:

1. How much homework do you have each day?
2. Do you like homework?
 - a. If no, why don't you?
3. Do you have trouble sitting down to do homework for a long time, or become tired while doing homework?

Behavioral:

1. Do you ever feel really tired at school or have trouble staying awake?
 - a. If yes, how often does this happen?
2. Do you take naps during the day?
 - a. If yes, is it everyday or just sometimes?
3. Do you ever get in trouble from your teacher at school? In sports? After school places?
 - a. If yes, what do you get in trouble for?

Relationships:

1. Do you get along with others kids at school?
 - a. How about your brothers or sisters? (If they have them)
 - b. Teachers?
 - c. Parents?
 - d. Coaches/after-school adults?

The next questions I will ask you will be about the nighttime and what you do at nighttime before bed and when you go to sleep.

Physical:

1. Do you do a lot of running around or exercise before bedtime?
2. Do you drink soda/pop during the day?
 - a. Do you drink soda/pop at night before bedtime?
3. What do you usually do right before bedtime? (give examples of: watch TV? Read? Play video games? Do homework?)

Cognitive:

1. How can you tell when you feel tired?

Behavioral:

1. Are there things you do every night before bedtime?
 - a. If yes, what do you do?
2. Do you get sad or mad when your mom or dad tells you it is time to go to sleep?
3. Does it take you a long time to fall asleep?
 - a. If yes, how long?
 - b. If yes, what do you do if you cannot sleep?
4. Do you wake up a lot during the night?
 - a. Do you know why you wake up during the night? (i.e. go to the bathroom, to get a glass of water, bad dreams)
 - b. Every night? Or just sometimes?
5. Do you wake up at the same time each day?
6. How do you wake up in the morning?
 - a. Do your parents wake you or do you have an alarm clock?

Relationships:

1. Do you fall asleep alone?
 - a. If not, who is in the room with you?
2. Do you sleep in your own bed every night?
 - a. If no, where do you sleep?

In the last section I will ask you questions about where you sleep and the things that are in your bedroom.

1. Tell me about your room:
 - a. What does it look like?
 - b. What kinds of toys are in your room?
2. Do you play on your bed during the day?
 - a. What do you play on your bed?
3. When you fall asleep, is it noisy?
 - a. If yes, what noises do you hear? (Give examples such as TV, fan, the living room TV)
4. Do you fall asleep with a nightlight on?

APPENDIX C

Case Study: Christian

Case Study: Christian

Christian is an eight-year-old boy in second grade. Christian was referred to occupational therapy due to functional limitations from his diagnosis of ADHD. Christian is active in after school soccer practices and is in an after school daycare program. Christian has a younger sister and brother and they all live with his mother and father in a two-story home. Christian also enjoys playing video games with his friends and watching cartoons on the weekends. According to Christian's parents, Christian has been having increased numbers of tantrums throughout the day. Christian's parents have received concerns from his teacher that he is more argumentative with other children in school and is having trouble focusing and staying awake in school. According to Christian's parents, Christian is having increased tantrums when told it is time for bed, and is resistant to falling asleep.

Pre- Screening Sleep Problem Checklist

The Pre-Screening Sleep Problem Checklist is designed for the occupational therapist to look at the risk factors that are present within the child that may be impacting the child's sleep performance

Child's Name: <i>Christian</i>	Age: <i>8 years old</i>	Diagnosis: <i>ADHD</i>
Child's Current Medication: <i>Concerta 36 mg</i> <i>(Important to know side effects of medication, often times medication can effect sleep)</i>	Date: <i>03/ 16/2012</i>	

Risk factors that affect sleep performance include: (Please check all that apply)

- Attention Deficit Hyperactivity Disorder (ADHD)
- Autism
- Child suffering from Anxiety or Depression
- Child has had a recent change in behavior or mood (seen by therapist or informed by caregivers of child)
- Child has difficulty concentrating on a task
- Child is currently overweight
- Other: _____

Comments:

Christian's parents have been receiving comments from his teacher, on his ability to concentrate on simple tasks within the classroom. They also stated that he has been falling asleep during reading time.

Decision- Making:

If two or more of the following risk factors were checked by the occupational therapist, the child would benefit from further screening using the OT-SST to address the overall impact of sleep.

Occupational Therapy Sleep Screening Tool- Take Home Caregiver Questionnaire

Caregivers of _____ *Christian* _____: My name is _____ *Sarah* _____, I am the occupational therapist currently working with _____ *Christian* _____. This questionnaire is designed to provide the occupational therapist with information regarding your child's sleep and to further understand problems your child may or may not be facing. It is asked that the caregiver fills out this questionnaire at home and be brought in on your child's next therapy session. The caregiver, child and therapist will follow up with a short interview to further understand your child's sleep and sleep patterns in order to enhance your child's overall quality of life.

What difficulties is your child facing in regard to sleep? (i.e. nighttime tantrums, resistance to sleep, nightmares, etc.)

Christian has been having a difficult time going to bed at night. He frequently has tantrums and will kick and scream when his father or I put him to bed.

How many hours of sleep does your child get on a typical night?

Christian gets approximately 7-8 hours a sleep a night. However, the weekends vary since we often go to the cabin and Christian will sleep in longer into the morning.

Describe what bedtime looks like for your child.

Bedtime is a challenge in our household. Bedtime varies between 7:30 and nine o'clock depending on how quickly we can get through after school activities, dinner and homework. Christian is able to get himself ready for bed but often needs reminders to do things such as brush his teeth and get his school bag ready for the next day. Christian is then tucked into bed and it will take him anywhere from 45 minutes to 3 hours to fall asleep.

(Turn page)

Does your child fall asleep at inappropriate times throughout the day? If yes, explain.

Christian's teacher has reported to us that he has been falling asleep during quiet times in school such as homework times or reading times. We have also noticed Christian taking naps on the weekends more frequently especially when driving to the cabin, which is unusual for Christian.

What is your child's bedroom set-up like? (i.e. shares a bedroom, lighting in child's room, electronics etc.)

Due to Christian now having a new baby brother, Christian now shares a room with his sister. Christian has his own bed but shares the space, which is about 12x13 ft. Christian has a ceiling fan, and sleeps with a sheet, blanket and comforter. Christian has a TV and play station in his room along with a lot of toys that are either stored away or left out depending on if it could be cleaned up before bedtime. During the summer Christian's room is more lighted due to the summer light and during the winter it is dark in his room when he goes to bed.

Are there any other concerns you have regarding your child's sleep?

Christian's sleep problems have been occurring for four months and have appeared to be getting worse as time goes on. We are concerned about his ability to perform at school and get along with his family and peers.

Occupational Therapy Sleep Screening Tool (OT-SST):

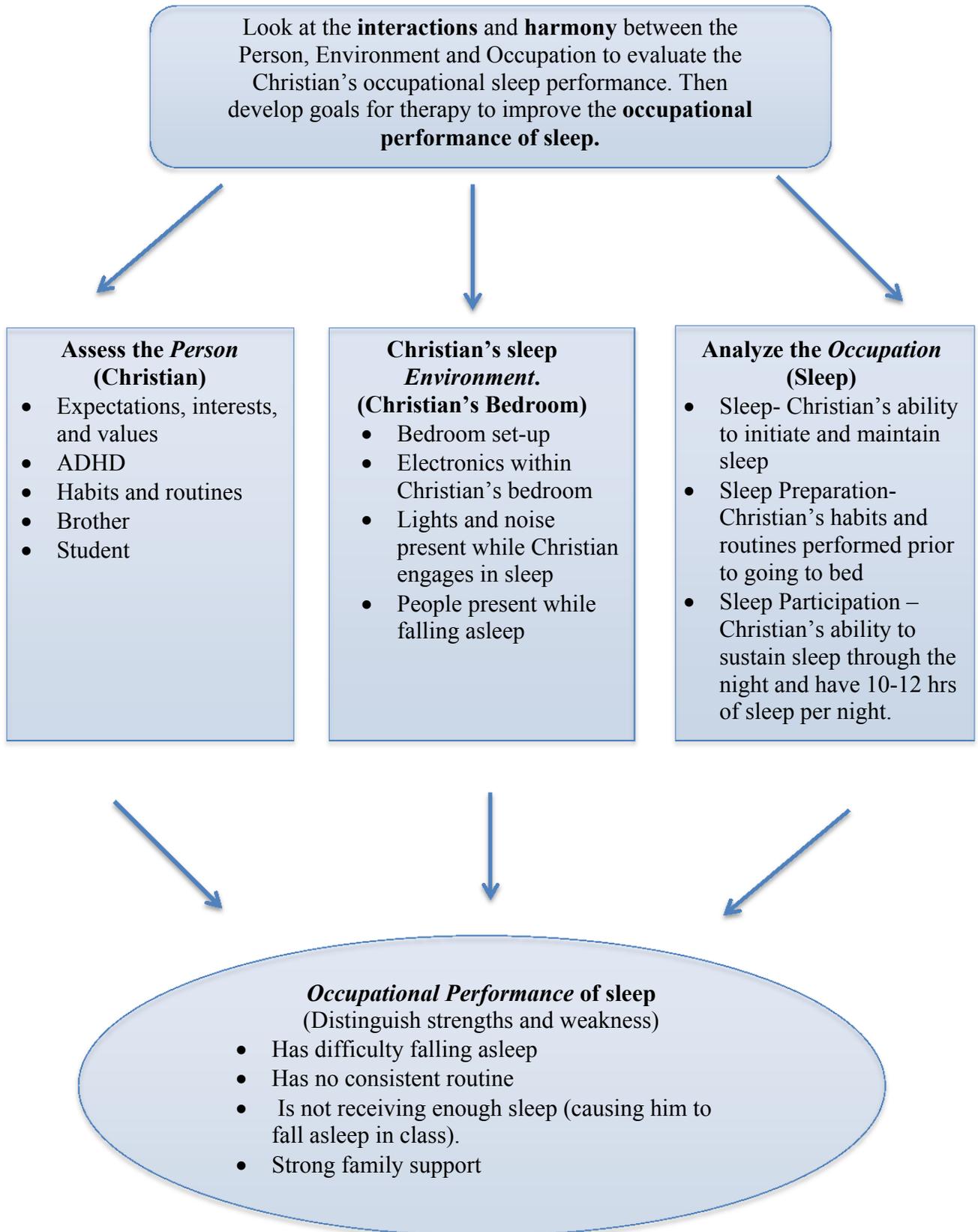
Narrative of OT-SST-Caregiver Interview

After completing the 20-minute OT-SST caregiver interview with Christian's parents, the therapist found that Christian is becoming more resistant to falling asleep at night and is "fighting us to go to bed." Christian's parents reported that it is beginning to cause stress within the family and that they are not able to complete daily tasks in time due to caring to Christian's sleep resistance. They reported more on the findings about Christian's school problems and reported that he is having difficulty getting homework done at school and is resistant to doing it at home due to increase irritability. Christian's parents reported that Christian typically has a can of pop to drink after school and can have up to three cans on the weekends. Christian has been going to bed at later hours on the weekend due to trips to the cabin and staying up late with his friends when they are at home.

After completed the 20-minute OT-SST child interview with Christian, the therapist found that Christian doesn't like going to bed at night time due to not feeling tired at night and not wanting to share a room with this sister. He reported that he has been getting in arguments with other children at school and doesn't want to do his homework because he thinks it's "stupid." Christian reported that he "really likes" his room and he has "a TV, video games and lots of toys" in it, and spends a lot of time in his room when he is at home. He said that he plays a lot of games and toys in his bed at night and sometimes plays in his bed when his parents want him to go to sleep.

Once Christian's parents and Christian have identified occupational performance issues related to sleep through both the caregiver interview and self-report from Christian. Christian and his parents sit down with the therapist to look at the strengths and problems associated with Christians sleep performance. This is done by assessing the environmental conditions, analyzing the occupational elements of sleep and aspects of Christian's performance components related to his overall sleep performance. Figure 2.1 is the concept map to illustrate how the PEO model is used to identify how the person, environment and occupation all effect occupational performance of sleep for Christian.

Figure 2.1



Looking at the interactions between the P-E-O for Christian

Interactions	Examples of interactions
P-E	<ul style="list-style-type: none"> • Christian sharing a room with his sister having an effect on Christian due to limited space and distractions. • Family support • Matching Christian’s wants and needs with his parents’ goals and objectives for sleep
P-O	<ul style="list-style-type: none"> • Feelings of self-efficacy • Task requirements for sleep, matching Christian’s skills and abilities.
O-E	<ul style="list-style-type: none"> • Layout and space in Christians bedroom for sleep participation • Impact sleep has on daytime and nighttime performances • Electronics effecting habits and routines performed prior to bedtime

Goals for Christian and his parents to improve the Christian’s sleep performance would be:

- 1) Christian will engage in 10-12 hours of sleep per night (including weekends) through the use of a consistent bedtime routine.
- 2) Recommend removing electronics from Christian’s bedroom.
- 3) Christian and his family keep a daily positive reinforcement schedule utilizing cartoon-themed stickers and/or privileges to record performance in sleep.

CHAPTER V

SUMMARY

Sleep is an occupation taking up nearly one-third of a person's life (Pierce & Summers, 2011). As of 2008, sleep and rest were included among the occupations listed in the Occupational Therapy Practice Framework: Domain and Process (American Occupational Therapy Association [AOTA], 2008). However, many therapists have overlooked addressing this occupation, which is needed in order for an individual to carry out other daily occupations (West, 2009). Limited assessments and screening tools addressing sleep problems are available for occupational therapists to utilize specifically with school-aged children. The purpose of this scholarly project was to review the occupational therapy literature and develop a guide to instruct occupational therapists in screening children with sleep problems and associated occupational performance issues.

The OT-SST was created based off findings from a solid literature review revealing the limited amount of sleep screening tools available for occupational therapists to utilize. The OT-SST includes a five-step process, which includes a pre-screening risk checklist, a caregiver take home questionnaire, a caregiver interview, a self-report child interview and instructions for interpretation of findings through the use of the Person-Environment-Occupation (PEO) model.

Limitations

The OT-SST was designed for school-aged children ages 6-12. Use with individuals outside of this range will necessitate adaptation or revision of the screen to reflect the unique sleep concerns of other populations.

The OT-SST relies on the combination of qualitative findings and clinical reasoning skills. The OT-SST relies on the therapist's ability to interpret findings based on understanding of the PEO model (rather than numerical scoring) to determine barriers and supports to create optimal occupational performance.

A final limitation to the developed product was that it has not been clinically tested. A review of the occupational therapy and health sciences literature was used to determine the need for occupational therapy-specific sleep screening methods.

Recommendations

It is recommended that future efforts be directed toward revising and expanding the OT-SST in order to determine sleep problems in a wider age range. It is recommended that an experienced occupational therapist utilize the OT-SST due to the therapists need to use clinical reasoning skills to interpret narrative and qualitative findings. Guided by the PEO model, the therapist will then interpret findings to determine how to create harmony between the person, environment and occupation. Due to time limits, field-testing of the OT-SST has not been completed. It is recommended that future efforts be directed towards field-testing the screening tool to refine and determine utility of the tool with children ages 6-12.

Future Implementation

The “Occupational Therapy Sleep Screening Tool” is designed as a narrative and self report tool utilized by occupational therapists to screen for school-aged children sleep problems. The tool is designed to be utilized in an outpatient pediatric setting, however may be equally useful in other community-based settings, such as school-based therapy. In order to reach this population, occupational therapy professionals will need to market and consult with other therapists in out patient clinics and schools to increase its utilization and provide occupational therapists with the OT-SST for school-aged children.

The “OT-SST” is a narrative interview and questionnaire tool that provides the occupational therapist with examples on how to administer the multiple steps of the screening tool, and how to interpret the findings. It is suggested that the occupational therapist make adaptations as needed to the caregiver and child interviews based on the findings from the pre-screening checklist and caregiver take home questionnaire.

Conclusions

Sleep is an important daily occupation that if successfully completed assists an individual with completing other daily occupations. The Person-Environment-Occupation model looks at the person, his/her occupations and the environment(s) in which the person participates, and allows the therapist to enable the individual to seek harmony among the three components. Guided by the PEO model, the “OT-SST” is utilized as a screening method for occupational therapists to successfully screen school-aged children for possible sleep problems impacting their occupational performance.

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