Sleep Assessment in the Practice of School Psychology

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Abstract

Objective: The purpose of this thesis was to explore the sleep assessment and intervention practices of school psychologists in Nova Scotia, and to identify the sleep education they received during their school psychology training. Methods: Through an on-line questionnaire, school psychologists answered questions regarding the frequency with which they take a sleep history with students and caregivers, the frequency with which recommendations are made regarding sleep behaviours, and the types of recommendations made. The participants' education in sleep assessment and interventions was obtained. Demographic information, including gender, number of years in practice, and parental status, was also obtained. In addition, participants completed the HEXACO, a measure of personality traits. Results: 97% of the 30 participants indicated that they received no training in sleep assessment or interventions for sleep problems during their education. The largest groups of respondents reported taking sleep histories with students, and also with caregivers, only 0-20% of the time. The large majority (76%) of participants indicated they make recommendations involving sleep behaviours 0%-20% of the time. There were no gender differences in sleep assessment and intervention practices. The frequency with which school psychologists make sleep behaviour recommendations differed significantly between parents and non-parents and also correlated significantly with field experience. Parental status, years of experience and HEXACO personality variables did not show a significant relationship with sleep assessment practices. Conclusion: These results highlight the importance of strengthening the sleep curriculum within school psychology programs, and provide a strong, quantifiable, case for supporting continuing professional development in the area of sleep.

Sleep Assessment in the Practice of School Psychology

The impact of sleep on children's behaviour, academic performance, as well as emotion regulation has been a longstanding concern to psychologists. Almost a century ago, in 1913, Lewis Terman and Adeline Hocking of Stanford University published an article titled "The Sleep of School Children, Its Distribution According to Age, and Its Relation to Physical and Mental Efficiency" in the Journal of Educational Psychology (Terman & Hocking, 1913). The questions raised then continue to be investigated by researchers today (Mindell, Meltzer, Carskadon, & Chevrin, 2009; Moore, Kirchner, Drotar, Johnson, Rosen, Ancoli-Israel, & Redline, 2009; Owens, Belon, & Moss, 2010).

While Terman and Hocking (1913) did not find a relationship between sleep and a child's daytime functioning, current sleep researchers consider sleep to be of utmost importance to the growth, behaviour, learning, and emotional regulation in children (Meltzer & Mindell, 2006). Sleep, and its impact on children's well-being, is a historic concern which reaches into contemporary psychological research and practice.

In this study I aim to explore the extent to which school psychologists integrate sleep assessment and sleep management into their practice. A questionnaire developed for this project will identify the percentage of time school psychologists evaluate sleep, as well as the percentage of time the psychologist makes recommendations that reference sleep, and what type of recommendations are made. Using a questionnaire developed for this project, demographic variables including age, gender, number of years in practice, level of education, educational institution, and parental status will also be considered. As well, this study will identify some of the factors which define psychologists who consider the assessment and management of sleep to be an important facet of psychological practice. This study will also consider whether there are

dimensions of personality which may contribute to psychologists' consideration of sleep in their practice. Participants will complete the HEXACO Personality Inventory- Revised (Ashton & Lee, 2009) which provides insight into six "major dimensions of personality" as well as 24 "facet level scales" which allow an understanding of more narrowly defined personality traits.

Recommended Sleep Practices

While sleep needs vary among individuals, and at different developmental stages, it is generally recommended that children between the ages of three to five get 11 to 13 hours of sleep and children aged six to twelve should sleep between 10 to 11 hours (Meltzer & Mindell, 2006). Adolescence introduces two important shifts in sleep needs. First, the total sleep time required is reduced during adolescence, as it is recommended that adolescents should get between 8.5 to 9.5 hours of sleep. Second, a natural shift in circadian rhythm creates a delayed sleep onset during adolescence. In other words, adolescents are naturally programmed to go to bed later and sleep in later (Hagenauer, Perryman, Lee & Carskadon, 2009). Sleep hygiene is defined as "modifiable parent and child practices that promote good sleep quality, allow sufficient sleep duration, and prevent daytime sleepiness" (Mindell, Meltzer, Carskadon, & Chevrin, 2009). There are several behaviours that are considered good sleep hygiene practice, including independent sleep, consistent bedtime, consistent wake-time, consistent pre-sleep behaviours, consistent sleep environment, limited caffeine consumption, and limited electronic media use (Mindell et al., 2009). It has been established that good sleep hygiene facilitates good sleep in school-aged children. In 2004 The National Sleep Foundation conducted the Sleep in America Poll. Mindell et al. (2009) analyzed the results of this poll as they pertained to the impact of sleep hygiene on sleep in young children. The total sample included 1473 caregivers who provided reports of their children's sleep and sleep hygiene through a telephone survey.

Analysis of the poll results revealed that school-age children slept longer, with fewer night-time wake-ups, and shorter sleep onset latency, when recommended sleep hygiene routines were practiced. Parental presence when falling asleep, the presence of TV in the bedroom, caffeine consumption, and bedtime after 9:00 pm were all factors which interfered with good sleep. For example, in school-aged children, a late bedtime was associated with more frequent night-wakings, decreased total sleep time and increased sleep onset latency. Good sleep hygiene practices were associated with improved sleep. For example, children who experienced a consistent bedtime routine were found to have a longer total sleep time, by as much as approximately one hour. They concluded good sleep hygiene practices promote improved sleep quality and quantity. Unfortunately, the current social climate of school-aged children is not conducive to recommended sleep practices.

Obstacles to Recommended Sleep Practices

Many school-aged children do not accrue adequate sleep. A poll by the National Sleep Foundation recorded that 45% of adolescents in the United States are sleep deprived (2000). According to a summary of sleep disorders in children and adolescents (Mindell & Meltzer, 2006), the recommended amount of sleep for children age 12-18 years is between 9 and 9.25 hours, yet, research suggests that children in this age group are generally getting between seven hours (Mindell & Meltzer, 2006) and just under eight hours (Moore, Kirchner, Drotar, Johnson, Rosen, Ancoli-Israel, & Redline, 2009) of sleep. A survey conducted by The U.S. Centers for Disease Control in 2009 suggests that fewer than 10% of teens are getting the recommended eight hours of sleep each night. (American Psychiatric Association, 2011 Annual Meeting, Abstract NR01-23, Presented May 14, 2011). Children aged six to 12 years should generally sleep 10 to 11 hours at night, however, about 1/3 of children in this age group experience sleep

problems. Owens, Spirito, & McGuinn studied 494 children in grades kindergarten employing four, parent-, self- and teacher report measures to assess sleep problems (2000). Significant sleep problems were reported by 37% of children in this age group and 10% of the children were found to experience significant sleepiness in the daytime. The high frequency of sleep problems reported is supported by later studies. For example, a study of 3045 healthy children, ages six to 13, examined the sleep reports provided by caregivers. Within this large sample, 62% reported at least one sleep problem and approximately 1/3 reported disorders of excessive somnolence (daytime sleepiness), the most commonly reported sleep problem. Thirty percent of the children's caregivers reported 'difficulties initiating and maintaining sleep'. The researchers concluded that excessive daytime sleepiness is frequently reported in typically developing school-age children. (Spruyt, O'Brein, Cluydts, Verleye, & Ferri, 2005). Certainly, the literature indicates that non-clinical school-age children are experiencing sleep problems and do not accrue an adequate amount of sleep.

The structure of the school day itself creates an impediment to good sleep. As described, adolescence is a time when children naturally shift towards going to bed later and waking later. The tendency is towards falling asleep at approximately 11:00 pm. This normal shift in circadian rhythm is contradictory to the traditional early start to the school day of junior and senior high schools. Understanding this shift in sleep patterns can have an impact on learning. Recently, researchers found that a mere 30 minute delay in starting the school day can have a large impact on several behaviours. The researchers examined the impact of shifting the school start time from 8:00 to 8:30 in a senior high school (grades nine to 12). The 30 minute delay in school start time resulted in less absenteeism, longer sleep duration, improved daytime sleepiness and mood. In fact students reporting seven hours of sleep or less decreased by almost 80% and students

reporting 8 hours of sleep or more increased from 16% to 55% (Owens, Belon, Moss, 2010). This study highlights how a small schedule change can have a large impact on students' daytime functioning. An understanding of the changing sleep needs of students' would allow schools to provide an optimal learning environment.

Recently, sleep researchers have investigated some of the more modern, and more easily modifiable, obstacles to good sleep. Results from the 2009 Youth Risk Behavior Study conducted by the U.S. Centers for Disease Control revealed that teens who self-report heavy gaming and internet use (defined as more than three hours per day of combined gaming and internet use for activities that are not school-related) also report less sleep. The researchers found that "total sleep time was associated inversely with the amount of time in gaming or media use" (American Psychiatric Association, 2011 Annual Meeting, Abstract NR01-23, Presented May 14, 2011). For example, the mere presence of a television or gaming computer in a child's room has an impact on sleep habits (Van den Bulck, 2004). According to a self-report study of 3000 children aged 13 and 16, the presence of a gaming computer/ console or television in the child's room was associated with later bedtimes on weekdays and less time in bed on weekdays. This finding is important, considering that the National Sleep Foundation's Sleep in America Poll (2006) found that 97% of adolescents have either a TV, computer, phone or music device in their bedroom. Children in grade six have more than two electronics in their bedroom, while children in grade 12 average about four. The researchers conducting this same poll found that the number of electronic devices in the room of an adolescent was positively correlated with falling asleep while doing schoolwork. In fact, adolescents were two times more likely to fall asleep in school or while doing homework if they reported having four or more electronic devices in their rooms. Recently, Cain and Gradisar (2010) completed a review of studies that examined the impact of

electronic media use on the sleep of school-aged children. The studies included in the review, which numbered 36, examined the use of television, internet, computer, gaming consoles and mobile phones. While the results of those studies examining television watching were considered somewhat inconsistent, the reviewers concluded that television viewing is associated with 'decreased total sleep time, prolonged sleep onset latency, and delayed bedtime'. From this conclusion, the reviewers suggest that television viewing for school-aged children should be limited to two hours a day, with restricted television watching in the evenings. Those studies which examined computer use and electronic games were reviewed together, as computer use may, or may not, involve gaming. While the influence of gaming and computer use throughout the day has shown inconsistent results, night-time use has reliably been associated with "later bedtimes, shorter total sleep duration, later wake-up time on weekend days, increased daytime tiredness, and poorer overall sleep quality."

Cain and Gradisar (2010) also reviewed studies which examined the impact of internet use on sleep behaviours of school-aged children and adolescents. The reviewers found that internet use, either during the day or evening, was consistently associated with "delayed bedtimes, delayed weekend wake-up times or out-off-bed times, shorter total sleep times, shorter time in bed on weekdays, higher levels of tiredness, and higher levels of subjective insomnia". After reviewing the sleep literature, the reviewers concluded that, much like television viewing, computer and electronic game use should be limited to 2 hours a day, however no specific recommendations were made regarding internet use, other than that internet use at any time of day may be create sleep problems. Another increasingly popular electronic media device, the mobile phone, was reviewed. The reviewers determined that the literature surrounding mobile phone use was inconsistent and no specific recommendations could be made. However, the

authors do note that mobile phones are now being used for more diverse purposes, for example, internet access and games, which opens an area for future research. The overall conclusion reached by the review was that excessive electronic media use of any nature was consistently associated with 'delayed bedtime and shorter total sleep time'. As the reviewers note, there are few experimental studies that examine the impact of media-use on sleep in school-aged children. However, a recent study used an experimental design to examine the impact of one-time exposure to media use on sleep quality (Dworak, Schierl, Bruns, & Struder, 2010). When 11 boys, with an average age of 13, were exposed to merely 60 minutes of either computer gaming or television viewing, significant changes in sleep quality were observed. Singular use of computer gaming in the early evening resulted in increased sleep onset latency. As well, a shift in sleep architecture was observed, impacting slow wave sleep, but not REM sleep. Television viewing appeared to have an impact on sleep efficiency (the total time spent in bed in relation to the total time spent sleeping), but not other sleep measures. This study is important in two ways; first, it is an experimental study of the impact of media use on sleep, and second, this research demonstrates that merely singular exposure to excessive media consumption has an impact on sleep behaviours and architecture.

Obstacles to optimal sleep habits also include family variables. A study which examined the impact of chaotic living conditions (defined as residential crowding, residential noise, family instability) on approaches to academic tasks, found that chaos in the residential environment was associated with a helpless/hopeless response style to academic challenges and that this effect was partially mediated by sleep problems. The investigators concluded that chaos in the home environment impairs sleep. The sleep literature identifies other environmental factors that have an impact on sleep. For example, in a study which examined caregiver reports of 3045 healthy

students ages six to 13 years, both excessive noise and light were determined to increase levels of daytime sleepiness (Spruyt, O'Brien, Cluydts, Verleye, & Ferri, 2005). Caffeinated beverages, including popular energy drinks and sodas, are easily accessible to school-aged children and the sleep literature has explored the impact of the consumption of these drinks on sleep. A study of 100 adolescents aged 12-18 investigated the influence of both evening technology usage and caffeine consumption on sleep (Calamaro, Mason, & Ratclifffe, 2009). Researchers found that those students who consumed the most technology also consumed the most caffeine, which put them at a substantially greater risk for falling asleep in school (70%) and increased sleep onset latency (20%). Of those students who reported falling asleep in school, their caffeine intake was 76% higher. Similarly, a study of adolescent's use of caffeine concluded that amongst 15,686 students in grade six to 10, caffeine consumption was associated with "difficulty falling asleep and feeling tired in the morning". Caffeine consumption is a relevant concern, in view of a recent study which found that 85% of the students self-reported caffeine consumption in the form of tea, coffee, soda, or energy drinks (Calamaro, Mason, & Ratclifffe, 2009).

In addition, the academic demands of school can impact sleep behaviour. Zhang, Li, Fok, Wing (2010) examined the effect of homework on sleep behaviours. Sleep and extra-curricular asleep/wake patterns of 4470 school-aged children and their parents were examined through self-report. The researchers revealed that homework was associated with less time in bed. The importance of homework to academic success was exceeding the importance of sleep to academic success. The researchers also concluded that extracurricular activities were positively associated with time in bed, increasing the amount of time children spent in bed. However, this study was conducted in Hong Kong and caution must be exercised when generalizing results across countries and cultures.

Sleep and Learning

Teachers and parents have long-held the belief that sleep influences learning, and this anecdotal evidence is born out in the literature. Since Terman and Hocking (1913), the relationship between sleep and academic performance has been clearly established in the sleep research community. In a study which examined how sleep effects daytime functioning in adolescents, Wolfson & Carskadon (1998) examined the sleep habits and daytime functioning in over 3000 students aged 13-19. The researchers concluded that most adolescents do not accrue adequate sleep and, moreover, lack of sleep was predictive of poor academic performance. The relationship between sleep and academic performance in adolescents is consistent in the early elementary years. BaHammam, Al-Faris, Shaikh, & Bin Saeed (2006) examined the academic performance and sleep behaviours of six to eight year-olds concluded that good sleep hygiene practices, for example consistent bedtime, independent sleep, and no television or computer after 8:00 pm, were associated with better academic performance. In addition, longer total sleep time on weekdays was correlated with better academic functioning. Sadeh (2007) reviewed the sleep literature as it pertains to the consequences of sleep loss in children. A review of the impact of sleep loss on neurobehavioural functioning and academic performance was included in this study. The reviewers concluded that, while the evidence is primarily correlational, there is consistent support to suggest that both neurobehavioural functioning and academic performance are both compromised by poor sleep.

A recent review conducted by Walker (2008) suggests that there are two ways in which sleep impacts learning. First, sleep after learning has a significant impact on the consolidation of memories. Essentially, retaining new information is enhanced by sleeping after the information in learned. For example, a motor skill was taught and subsequently assessed after either a night

of sleep or sleep deprivation. Participants performed significantly better on the task if they had a good night sleep (Fischer, Nitschke, Melchert, Erdmann, & Born, 2005). Second, sleep before learning has been shown to impact memory encoding. For example, Yoo, Hu, Gujar, Jolesz, Walker (2007) studied the retention of memories after sleep deprivation. The researchers concluded that sleep deprivation prior to learning significantly impaired encoding new memories. Not only did sleep deprivation impair memory retention, but total sleep time was associated with the types of information recalled. The researchers observed that positive emotional memories were significantly less likely to be remembered than negative memories, in the sleep deprivation group.

Recently, the impact of sleep on children's performance on measures of intelligence has been demonstrated, an area which is especially relevant to the practice of school psychology (Gruber, Laviolette, Deluca, Monson, Cornish, & Carrier, 2010). The sleep of 39 healthy children aged seven to 11 years was monitored by "actigraph" measurement of sleep. The children's sleep was monitored in their usual sleep environment for four consecutive nights and their sleep behaviour was not manipulated in any way and, as such, could be considered indicative of their typical sleep behaviour. Parents completed the Child Behaviour Checklist, a measure of cognitive function and behaviour. The children were assessed for daytime sleepiness by measuring sleep onset latency when provided with the opportunity to nap two times each day. The Weschler Intelligence Scale for Children, (WISC IV) a common psychometric tool used by school psychologists to assess overall cognitive functioning, was administered to the children. This study revealed an association between amount of sleep and cognitive functioning: children who got more sleep had higher overall IQ scores and performed better on the tests of perceptual reasoning. In addition, those children who were recorded to sleep longer had higher scores on

measures of competence and academic performance. This research suggests that inadequate sleep may compromise the validity of the results of a psycho-educational assessment of intelligence. Importantly, this study provides some insight into the necessity of taking a detailed sleep history in the practice of school psychology.

Sleep and Psychosocial Functioning

"Oh, he is just overtired" is a comment often overheard in grocery store line-ups and sandboxes when ill-tempered children are nearby. According to the sleep literature, parents may have accurately identified inadequate sleep as contributing to difficult behaviours. A recent study of the sleep and behaviour of Canadian preschoolers aged two and three revealed that sleep problems were associated with higher internalizing/emotional problems, as well as externalizing/behavioural problems: researchers indicated that emotional and behavioural difficulties in preschoolers are heightened by inadequate sleep (Reid, Hong, & Wade, 2009). These results were replicated by a similar study in Japanese preschoolers, which found elevated CBCL (Child Behaviour Checklist) scores among children who experienced shorter total sleep duration (Yokomaku, Misao, Omoto, Yamagishi, Tanaka, & Kohyama, 2008). The relationship between sleep and emotion regulation and difficult behaviours has been established in older children as well. Adolescents who reported higher levels of sleepiness also reported increased symptoms of depression and anxiety (Moore, Kirchner, Drotar, Johnson, Rosen, Ancoli-Israel, & Redline, 2009). In a recent review of research, Sadeh (2007) concluded that disrupted sleep is associated with disruptive behaviours. According to the review, the relationship between sleep problems and problems of attention, concentration, and disruptive behaviour in typically developing children is quite common. In a similar vein, the reviewer cites evidence for a link between poor sleep and poor emotion regulation.

By extrapolation, inadequate sleep can become directly problematic in the school environment as the classroom makes heavy demands on attention, concentration, and the capacity for emotion regulation: the above noted converging evidence suggests that sleep and school behaviour/performance are inextricably linked.

Sleep Education

While the significance of sleep and its impact on learning, cognition, behaviour and mood has been established within the research community, sleep curriculum remains relatively underrepresented in professional study programs.

The extent to which professionals are trained in the area of sleep has been the subject of a number of studies. Primarily, sleep curriculum research has focused on the sleep medicine training received by medical students. In an opinion piece, Strohl, Haponik, Sateia et al (2000) express concern regarding the minimal representation of sleep and chronobiology education in the medical schools, stating that the high prevalence of sleep disorders, and the impact these sleep disorders, warrants more focus on sleep education in the medical school curricula. Several researchers have examined the depth of sleep education in medical schools. In 1993, a research group conducted a national survey of 126 medical schools in the United States: according to the researchers, at that time within the medical schools, on average students received approximately 2 hours of sleep education and about 30% of students did not receive any education in sleep medicine. The findings of this survey suggest that, at that time, "...physician education in sleep and sleep disorders in largely inadequate." (Rosen, Rosekind, Rosevear, Cole, & Dement, 1993). In 2007 a study examined the quantity and breadth of sleep content in major medical textbooks: they concluded that in terms of quantity, sleep occupies a relatively small proportion of text, and

issues such as sleep hygiene, sleepiness, and insufficient sleep receive little attention

(Teodorescu, Avidan, Teodorescu, et al, 2007).

While the sleep literature has primarily focused on medical school curriculum, a recent

study did examine the sleep curriculum taught within graduate psychology programs. Meltzer,

Phillips, and Mindell (2009) identified psychology graduate study programs accredited by

Canadian Psychological Association and American Psychological Association. With a

reasonable response rate of 30%, 212 graduate studies program coordinators responded to the

survey, providing information regarding both the quantity and quality of sleep curriculum

provided within their respective programs. While this study generated a large amount of

information on the state of sleep curriculum in psychology graduate programs, some information

disclosed by program coordinators is particularly notable. Critically, 41% of the programs "failed

to offer any training in the assessment, diagnosis, and treatment of sleep disorders." In fact, only

6% of the programs offered a formal didactic training course in sleep, while 41% of the

programs did not offer any supplementary education opportunities in the area of sleep, such as

sleep curriculum as a part of another course or guest lectures/ grand rounds. In fact, only 21% of

students across programs were trained in how to take a sleep history. As minimal as these

numbers appear, the authors suggest that this is even an overestimation of the actual amount of

sleep curriculum taught, as this is a self-selected sample.

Despite a stated interest in further sleep curriculum (39% of program co-ordinators

expressed an interest), program coordinators are inhibited by time constraints of training

programs, as well as faculty trained in the area of sleep. Only 17% of the programs employed at

least one faculty member with a specialization in any area of sleep. The authors assert that their

outcomes are consistent with findings across disciplines (for example, medical training) and

across time. Certainly, the literature has identified the underrepresentation of sleep curriculum in professional programs.

Interventions

Subsequent to screening for sleep problems, the provision of effective interventions for improving these problems is critical. According to Meltzer and Mindell (2006), most childrens' sleep disturbances will persist if left untreated and can have damaging effects on mood, behaviour, development, and functioning. A century ago, Terman and Hocking, (1913) wrote "As regards the school child, the wisest course in all probability is for us make the conditions such that the child will spontaneously sleep as many hours per day as he wants to sleep, while avoiding all conditions which would tend either to abbreviate or unduly prolong the sleep beyond this standard". While this recommendation may be considered idyllic, these authors recognized that it was not achievable in their time, and it certainly does not fit within the current social context of school- aged children.

However, there are interventions which are effective in improving sleep, with an established evidence-base. In the United States, researchers investigated prescribing trends and found that within their sample of physician visits for sleep related difficulties in children and adolescents, 81 percent resulted in a prescription (Stojanovski, Rasu, Balkrishnan, & Nahata, 2007) In a discussion of sleep curriculum in psychology graduate programs, Mindell, Phillips and Meltzer (2009) highlight several mechanisms through which psychologists can benefit clients experiencing a sleep problem, including, psychoeducation, behavioural treatments, and cognitive behavioural interventions. The American Academy of Sleep Medicine published a report in 2006, in which the practice parameters for insomnia are outlined (Morgenthaler, Kramer, Alessi, Friedman, Boehlecke, Browen, Coleman, Kapur, Lee-Chiong, Owens, Pancer, &

Swick, 2006). The Standards of Practice committee made several recommendations, including the use of cognitive behavioural therapy, stimulus control, sleep restriction, relaxation training, paradoxical intention, and biofeedback, in the treatment of both primary and secondary insomnia. The same committee noted that there is insufficient evidence for the use of cognitive therapy on its own, imagery, or sleep hygiene education. Thus, there are psychological and behavioural interventions that can be implemented within the scope of school psychology.

Sleep hygiene, which has been demonstrated to impact sleep, (Mindell at al., 2009) involves ameliorating modifiable environmental factors. The introduction of good sleep hygiene habits, for example, consistent bedtime routines, may enhance sleep. Likewise, the removal of obstacles to good sleep hygiene may enhance sleep, for example, caffeine consumption or electronic media use in the evening. Hence, there are some evidence-based interventions that are available to school psychologists, which can be implemented within the school context.

Sleep and the Practice of School Psychology

In a survey of 370 school psychologists, the most common referral concern was reading problems (57%), closely followed by problems with written expression (43%), task completion (39%), mathematics (27%), conduct (26%), and motivation (24%). Other common causes of referral included problems with defiance (17%), peer relationships (16%), listening comprehension (14%), oral expression (11%), truancy (8%), and violence (6%) (Bramlett, Murphy, Johnson, & Wallingsford, 2002). Internalizing problems were among the least common referrals. These concerns included depression (9%), anxiety (8%), shyness/withdrawal (6%) (Bramlett et al., 2002). A review by Meltzer and Mindell (2006) highlighted the impact of sleep on academic performance, learning, behaviour, and emotion regulation. Since, the majority of

referrals to school psychologists are for these problem areas, sleep is important in both assessment and intervention.

Without doubt, "Sleep is but one of the many needs of children, and it is foolish to make it the scape-goat for all kinds of physical and mental evils as hygienists have so often done." (Terman and Hocking, 1913). However, the significant impact of sleep on the daily functioning of children, in combination with the high prevalence of sleep problems, must be addressed by a thorough screening for sleep problems in each individual case, and subsequent intervention when necessary.

School psychologists are in the unique position to identify and address sleep problems in school-aged children. In an effort to highlight the importance of sleep behaviour in the practice of school psychology, Buckhalt, Wolfson, and El-Sheikh (2010) conducted a review of the sleep literature and concluded with several recommendations for school psychologists. First, they suggest that school psychologists should advocate for the importance of sleep, for example, in the development of policy regarding bus schedules and school start times. Second, they recommended that school psychologists receive professional development in the assessment of sleep. Third, they suggested that guidelines need to be developed to guide school psychologists in the assessment and intervention of sleep problems. Fourth, they suggested that school psychologists should incorporate preventive sleep education into the curriculum. Fifth, they suggest that school psychologists need to consider taking a sleep history prior to administering any diagnostic tests. As described by the reviewers, testing manuals frequently describe questioning children to ensure that they are in good physical health and are not recovering from an illness, but the manuals do not suggest taking a sleep history. Finally the authors note the school psychologist should be responsible for ensuring sleep is addressed in crisis management

plans. School psychologists are in a unique position to advocate for the importance of sleep in

the daytime functioning of school-aged children.

While the significance of sleep assessment within the practice of school psychology is

recognized, the extent to which school psychologists incorporate sleep into his or her practice

has yet to be investigated. Although the sleep knowledge, assessment and treatment practice of

paediatricians has been examined (Owens, 2001), the same questions have not been applied to

school psychologists.

It is also relevant to consider the characteristics of the psychologists who chose to

incorporate sleep assessment into their practice. The personality literature, as it pertains to school

psychologists, is relatively scant. To date, personality researchers have primarily focused on two

domains; the attributes of school psychologists who experience burn-out, and vocational

psychology. For example, Toomey, Levinson, & Morrison (2008) investigated the vocational

personality of school psychologists in the United States. In this study, the researchers confirmed

Holland's personality code SEI (Social, Enterprising, and Investigative) as the vocational

personality type of school psychologists. According to the Self-Directed Search, a measure of

vocational personality, school psychologists are primarily Social (value helping people),

secondarily Enterprising (value leadership and promoting things/ ideas), and finally Investigative

(value science and scientific problem-solving). In a more recent study, investigators considered

the role of personality traits and emotional intelligence relative to the level of success of school

psychology graduate students (Grehan, Flanagan, & Igady (2011). The researchers concluded

that while personality had no bearing on GPA, a marker of graduate school success,

Conscientiousness was significantly related to positive internship ratings. Mills and Huebner

(1998) explored the transactional nature of occupational stress in school psychology, considering

both environmental variables and personality factors. The researchers concluded that when

considering the Big Five personality domains, both Agreeableness and Extroversion were

protective factors in the experience of occupational stress. Agreeableness was associated with

lower scores on a measure of Depersonalization, and Extroversion was associated with lower

scores on measures of both Emotional Exhaustion, as well as Reduced Personal

Accomplishment. As yet, the personality characteristics of school psychologists have not been

investigated as they relate to specific parameters of practice. Yet, previous research does indicate

that personality factors do influence aspects of school psychologists' practices.

Purpose of the Current Study

Considering the impact of sleep on learning, behaviour and emotions, the evaluation of

sleep is an important element of the assessments conducted by school psychologists, yet sleep

curriculum has been identified as minimal to absent within professional programs (Meltzer &

Mindell, 2009). While sleep curriculum has been examined, sleep assessment and management

of sleep problems in school psychology practice has not yet been explored. Establishing the

current practices of school psychologists surrounding sleep assessment and intervention, as well

as identifying the educational background of school psychologists in the area of sleep, may help

shape future continuing education and professional development.

The purpose of this study was to explore the sleep assessment and sleep management

practices of school psychologists in Nova Scotia. One hypothesis tested was that the scant sleep

curriculum highlighted by previous research would be reflected in the current study as low rates

of sleep evaluation conducted by school psychologists. Likewise, low rates of sleep management

recommendations were hypothesized. The researcher also sought to establish whether the sleep

education reported by school psychologists in the current sample would correspond to the limited level of sleep curriculum highlighted in previous research.

In addition, demographic variables, including gender, level of education, number of years in practice, and parental status were obtained and explored as they relate to sleep assessment and interventions for sleep problems. Considering the absence of research in this area, it was difficult to hypothesize how these demographic variables will influence the frequency with which sleep assessments are performed by school psychologists, as well as how often recommendations are made regarding sleep management.

As well, the personality style of the psychologist was explored in relation to the frequency of sleep assessment and recommendations for sleep problems in practice. The HEXACO Personality Inventory- Revised (Ashton & Lee, 2009) was used to assess the personality style of participants. This personality inventory assesses six "major dimensions of personality" which include: honesty- humility, emotionality, extraversion, agreeableness, conscientiousness, and openness to experience. The HEXACO Personality Inventory allows each of the six major dimensions of personality to be described in terms of four "facet level scales". The facet level scales are more narrowly defined personality traits and include: sincerity, greed, avoidance, fairness, modesty, fearfulness, anxiety, dependence, sentimentality, social self-esteem, social boldness, sociability, liveliness, forgivingness, gentleness, flexibility, patience, organization, diligence, perfectionism, prudence, aesthetic appreciation, inquisitiveness, creativity, and unconventionality. The HEXACO Personality Inventory was developed with a college student and community adult population and the psychometric properties of the inventory have been evaluated (Ashton & Lee, 20009). Bearing in mind that the amount of research in this field is limited, specific hypothesis were not developed.

Methodology

Participants and procedure

The study sample consisted of 30 school psychologists practicing within Nova Scotia. The target sample for this survey was school psychologists in the province of Nova Scotia, which number approximately 82 according to the Association of Psychologists in Nova Scotia. This survey received 30 responses, thereby achieving a response rate of approximately 37%. Of the participants, 83% were female, 17% were male and 1 person did not disclose their gender.

An on-line questionnaire was sent by an e-mail to school psychologists in Nova Scotia through the Psychologists in Schools Association (PISA), as well as the Nova Scotia Association of Psychologists. Two weeks after the initial invitation to participate in the study was sent, a reminder e-mail was sent. Finally, two weeks after the reminder notice was sent, a final e-mail was sent reminding participants that the survey would soon close. The survey remained open for a total of 6 weeks, closing two weeks after the final reminder. The questionnaire took on average just over 10 minutes to complete.

The study was approved by the Research Ethics Board at Mount Saint Vincent University. Informed consent was obtained from all participants. Participants were given the option to discontinue participation by closing their web browser. The name and contact information for the researcher and thesis supervisor was provided to the participants.

Measures

Using a questionnaire developed for this survey, school psychologists were asked to self-report the percentage of time he or she assesses sleep with a student during an assessment, the percentage of time he or she elicits a sleep history from the student's caregiver, and the percentage of time he or she makes recommendations regarding sleep. As well, demographic

information was collected, including gender, number of years in practice, level of education, and parental status. In addition, participants completed the HEXACO Personality Inventory Revised. The 60 item inventory was administered, in consideration of the time taken to complete the survey.

Results

In an effort to best answer the thesis questions, descriptive analyses, t-tests, and correlations were used to explore the data. Demographic information is presented in terms of the gender, number of years in practice, level of education, as well as the parental status of the participants. The participants' background in sleep education is explored next and then the sleep assessment and sleep intervention practices of the participants are presented. Finally, correlation analysis was used to identify significant relationships between sleep assessment and intervention practices and some demographic variables, as well as the six major dimensions of personality.

Sample Demographics

The participants in this survey included 30 school psychologists currently working within the province of Nova Scotia. Of the respondents, 83% were female, 17% were male, and 1 person did not disclose their gender. Among the participants in this survey, 47% have been practicing school psychology for 0—5 years, 30% for 6-10 years, 13% for 11-15 years and 10% have been practicing in their field for more than 15 years. Within the group of school psychologists who responded to the survey, 97% hold a masters degree and 3% of the sample hold a doctorate. Of the participants, 48% replied that they are not parents and 52% of the school psychologists in the sample indicated that they are a parent, step-parent or caregiver. See Table 1 for a summary of the demographic information of the sample.

Table 1

Demographics of the sample.

Gender	Male	17%	n = 5
	Female	83%	n = 24
Parent, step-parent, caregiver	Yes	48%	n = 14
	No	52%	n = 15
Level of education	Masters	97%	n = 29
	Doctorate	3%	n = 1
Number of years in practice	0-5	47%	n = 14
	6-10	30%	n = 9
	11-15	13%	n = 4
	15 +	10%	n = 3

Sleep Education

Of the school psychologists who responded to the survey, 93% indicated that they were not instructed on how to take a sleep history in their school psychology education. Likewise, 93% of the respondents replied that they were not instructed on sleep interventions for sleep problems in their school psychology education.

Sleep Assessment

When asked what percentage of the time they take a sleep history with the student during an assessment, 47% of respondents indicated that they take a sleep history with the student 0%-20% of the time, 7% of the respondents take a sleep history with the student 21%-40% of the time, 13% replied that they take a sleep history with a student 41%-60% of the time, 17% ask about a sleep history with the student 61%-80% of the time, and 17% of the respondents answered that they take a sleep history with the student during an assessment 81%-100% of the time.

When asked what percentage of the time they take a sleep history with the caregiver during an assessment, 37% of respondents indicated that they take a sleep history with the caregiver 0%-20% of the time, 13% discuss sleep history with the caregiver 21%-40% of the time, 20% of those school psychologists who responded to the survey take a sleep history with the caregiver 41%-60% of the time, 13% ask about a sleep history with the caregiver 61%-80% of the time, and 17% of the respondents indicated that they take a sleep history with the caregiver during an assessment 81%-100% of the time.

Interventions

Within the sample of school psychologists surveyed in this thesis, 76% indicated that they make recommendations that involve sleep behaviours 0%-20% of the time, 10% responded that they make these recommendations 21%-40% of the time, 7% of participants make these

recommendations 41%-60% of the time, none of the respondents indicated that such

recommendations are made 61%-80% of the time, and 7% of the school psychologists who

responded to this survey indicated that they make recommendations that involve sleep

behaviours 81%-100% of the time. The recommendations made by the school psychologists who

responded to this survey are summarized in Table 2.

Table 2

Recommendations involving sleep behaviours made by school psychologists.

Recommendations	Response rate (n)
Earlier bedtime	48% (14)
Limiting amount of use of technology	48% (14)
Limiting caffeine consumption	34% (10)
More consistent bedtime routine	76% (22)
Relaxation training	76% (22)
Sleep restriction	7% (2)
Cognitive Behavioural Therapy	10% (3)
Psychoeducation regarding sleep hygiene	24% (7)
Visualization/ Imagery	28% (8)
Paradoxical Intention	3% (1)
Behavioural Therapy	21% (6)
Other	24% (7) • limiting evening sugar consumption • Follow-up with pediatrician regarding deviated septum • Follow-up with pediatrician regarding sleep apnea • Refer to colleagues with more experience in supporting sleep • Further investigations into sleep issues • Referral to family doctor • See family doctor • Environmental changes

Gender

      An independent samples t-test was conducted to compare the sleep assessment practices, as well as sleep intervention practices, of male and female school psychologists. No gender differences were found (see Table 3). Likewise, an independent samples t-test found no significant difference in the means between males and females on each of the six dimensions of personality (see Table 3).

Table 3

Sleep assessment and sleep intervention practices for males and females.

	Mean (N) Female	Mean (N) Male	t
In what percentage of assessments do you ask a student about their sleep history?	2.5 (24)	2.4 (5)	.122
In what percentage of assessments do you take a sleep history with the student's caregiver?	2.71 (24)	1.60 (5)	1.563
In what percentage of assessments do you make recommendations that involve sleep behaviours?	1.39 (23)	2.20 (5)	-1.471
Honesty/Humility	3.76 (24)	3.62 (5)	.614
Emotionality	3.45 (24)	3.23 (5)	.852
Extraversion	3.55 (24)	3.56 (5)	-.032
Agreeableness	3.41 (24)	2.96 (5)	1.899
Conscientiousness	3.91 (34)	3.85 (5)	.228
Openness to Experience	3.43 (24)	3.68 (5)	-.794

Experience

The relationship between field experience and sleep assessment/ intervention practices was examined using Pearson correlation coefficients. The participants' number of years working in school psychology practice was not significantly correlated with the percentage of time a sleep history is taken with the student (r (29) = .27, n. s.) or the percentage of time a sleep history is taken with the caregiver (r (29) = -.07, n. s.) However, there was a significant positive correlation between the number of years the participant's worked in the field of school psychology and the percentage of time recommendations were made involving sleep behaviours (r (29) = .53, p < .05).

Parental Status

An independent samples t-test was conducted to compare the percentage of time parents and non-parents make recommendations regarding sleep behaviours. There was a significant difference in means (t= -2.01, df= 27, p<.05), indicating parents/ caregivers make more recommendations involving sleep behaviours than school psychologists who are not parents. When comparing parental status, an independent samples t-test showed no significant difference in the means with regards to the percentage of time a sleep history is taken with the student (t=0.00. df= 28, p > .05) or the percentage of time a sleep history is requested from the caregiver (t= 0.57, df= 28, p > .05).

Level of education

A statistical analysis of the participants' level of education could not be reliably performed. An analysis examining level of education would not yield statistically sound results as only 1 participant held a doctorate while 29 held master's degrees as their highest level of education.

Personality

Pearson correlation coefficients were used to examine the relationship between each of the six dimensions of personality, sleep assessment practices, and sleep intervention practices. No significant relationship was found between any of the six personality dimensions and the percentage of time a sleep history is taken with the student, the percentage of time a sleep history is taken with the caregiver, or the percentage of time recommendations involving sleep behaviours are made (see Table 4).

Table 4

Correlations between the six dimensions of personality and sleep assessment/ sleep intervention.

		% of time you take a sleep history with the student	% of time you take a sleep history with the caregiver	% of time you make recommendations that involve sleep behaviours
Honesty/ Humility	Pearson Correlation N	-.15 30	-.13 30	-.02 . 29
Emotionality	Pearson Correlation N	-.15 30	.09 30	-.04 29
Extraversion	Pearson Correlation N	-.06 30	-.03 30	.10 29
Agreeableness	Pearson Correlation N	-.02 30	.14 30	-.21 29
Conscientiousness	Pearson Correlation N	.32 30	-.32 30	.10 29
Openness to experience	Pearson Correlation N	.13 30	-.15 30	.26 29

Discussion

The results of the current thesis are telling with regards to sleep assessment in the practice of school psychology. The findings regarding sleep education are discussed, and approaches to enhancing sleep curriculum are considered. Sleep assessment and sleep intervention practices are explored and suggestions are made regarding the direction of future research. Finally, the limitations of the current thesis are examined, and ways in which future research can overcome these shortcomings are suggested.

The results of the present study indicate that 93% of the school psychologists surveyed did not receive any training in taking a sleep history throughout their school psychology education. Similarly, 93% of respondents to the current study indicated that interventions for sleep problems were not included in their school psychology curriculum. Yet, it has been established that inadequate sleep is associated with challenges in learning, behaviour and emotion regulation (Sadeh, 2007). Within the practice of school psychology, the most common referrals include concerns regarding learning, behaviour, and emotional health (Bramlett, Murphy, Johnson, & Wallingsford, 2002). Considering that 25% to 40% of children and adolescents experience sleep problems (Meltzer & Mindell, 2006), teaching the ability to identify and address sleep problems should be an important component of a school psychology curriculum. The results of this study are consistent with previous research which has found limited sleep curriculum in undergraduate medical education (Rosen et al., 1993; Teodorescu et al., 2007) as well as graduate clinical psychology programs (Meltzer, Phillips, Mindell, 2009). An analysis of the sleep curriculum in graduate clinical psychology programs led Meltzer et al. (2009) to conclude that "psychology trainees receive minimal, if any, training about sleep and sleep disorders" (p. 313). This same study found that only 17% of the programs reported having at least one faculty member with

specialized knowledge in some aspect of sleep. It is difficult to implement effective sleep curriculum without faculty members who are knowledgeable in the area of sleep. This can become a vicious cycle as it is difficult to develop future faculty members with a specialized interest in sleep without mentors in this area. In addition, Meltzer et al. (2009) highlight further obstacles to effective sleep curriculum, including limited funding as well as time constraints within programs. It may be possible to overcome such obstacles by offering sleep training outside of the core curriculum. Also, rather than adding a course to an already taxing program, sleep education may be incorporated into existing curriculum. This is possible because sleep is related to many other aspects of mental health and assessment. Sleep education can also be enhanced by encouraging employers and professional associations to include sleep as a topic for professional development and continuing education.

This study of sleep assessment suggests that the current practices of school psychologists in Nova Scotia are limited. Almost half (47%) of the school psychologists surveyed indicated that they take a sleep history with a student between 0%-20% of the time. Over one third of the respondents replied that they take a sleep history with the caregiver 0%-20% of the time, even though information regarding a child's sleep and functioning is most likely to be presented by the parent or caregiver (Meltzer and Mindell, 2006). Assessing a student's sleep with his or her caregiver provides an opportunity to ascertain rich information that may help address questions regarding daytime functioning. Directly asking caregivers about their child's sleep can elicit relevant information that may otherwise not be obtained, as the connection between sleep and daytime functioning may not be readily apparent to the caregiver. As well, a thorough sleep history encompasses many aspects of the student's life. Consequently, taking a sleep history with a caregiver creates an opportunity for a dialogue that may provide insight into the student's

psycho-social environment, leading to recommendations that will improve their school experience.

These results demonstrate inadequate sleep assessment practices. It is widely recognized in the sleep literature that poor sleep has an impact on learning, behaviour, and emotional regulation (Sadeh, 2007), which are the primary concerns that comprise most school psychology referrals (Hall, 2002). Coupled with the high rate of sleep problems experienced by school-aged children (Spruyt et al., 2005), a sleep history is an important element of the assessment process. While currently no definitive guide regarding best practice for sleep assessment in the field of school psychology was located, Buckhalt, Wolfson, and El-Sheikh (2009) suggest that "practice guidelines for assessment and intervention need to be developed for school psychologists. These guidelines should be similar to existing guidelines for medical practice" (p. 66). In particular Buckhalt et al. (2009) highlight the importance of ascertaining information about a child's sleep for several nights prior to beginning a psycho-educational assessment, either through asking the student, asking the caregiver, or requesting the child to keep a sleep diary for a few nights prior to the start of the assessment. The importance of this practice is highlighted by research which found that short sleep duration can have an impact on performance on the WISC-IV, a measure of IQ commonly used by school psychologists (Gruber et al., 2010). An analysis of the sleep behaviour of elementary school aged children prompted Owens et al. (2000) to emphasize the importance of screening for sleep problems in this population in the clinical setting. The current study suggests that there is a gap between what the literature considers appropriate sleep assessment and the actualities of everyday practice in the field of school psychology.

According to the current thesis, 83% of the school psychologists included in this sample do not consider sleep assessment to be a standard component of their assessment process. An

examination of these findings prompts one to consider why sleep assessments are conducted so infrequently. The results of this thesis may reflect the limited sleep education received by the participants during their school psychology training. It is also possible that in some cases it is inappropriate to ask the child about their sleep because of their young age. A further possibility is that school psychologists only address sleep if it is a part of the referral concern, or, if concern regarding poor sleep becomes obvious during the assessment process. According to the current results, I would suggest that sleep assessment in not a standard component of the assessment process for the large majority of the school psychologists surveyed. Future researchers may attempt to understand more precisely the reasons why sleep assessment remains outside of the standard assessment procedure.

Despite a lack of training, 53% of school psychologists indicated that they assess sleep behaviours with the student at least some of the time. This figure may be much higher as 47% of participants indicated that they take a sleep history with students 0%-20% of the time, and it is not possible to know how many, if any, of the respondents in this group never take a sleep history. Likewise, 63% of the participants indicated that they assess sleep with the students' caregiver at least some of the time. This may be an underrepresentation, as 37% of respondents indicated that they take a sleep history with the caregiver between 0% and 20% of the time, and it is not possible to discern what percentage of this segment of participants never takes a sleep history with the caregiver.

According to Spruyt and Gozal (2010), the field of pediatric sleep is developing at a rapid pace and, consequently, so are the number of assessment tools available. In a review of 57 pediatric sleep history questionnaires, Spruyt and Gozal (2010) describe the psychometric properties of the measures, as well as an 11 step process that the authors consider critical to

selecting the appropriate assessment tool. Spruyt and Gozal's (2010) analysis of sleep

assessment measures demonstrates the complexities of taking an accurate sleep assessment.

Melzter and Mindell (2006) emphasize the importance of taking a sleep history which

encompasses a wide scope of details, describing not only the importance of understanding sleep

patterns and daytime functioning, but also the child's environment. As children's sleep is

affected by both their environment as well as parenting practices surrounding sleep, a complete

sleep history should include questions about parental marital status and living arrangements.

Because daytime sleepiness looks different at different developmental stages, with fatigue being

a marker for sleepiness in adolescents and higher energy being a marker for daytime sleepiness

in young children, parents may not necessarily recognize daytime sleepiness in their child and

the sleep history should directly ask questions about daytime behaviours. A complete sleep

history addresses different sleep patterns not only on school nights, but also over weekends and

holidays. A thorough sleep assessment describes bedtime behaviour, including evening routines,

bedtime routines, actual bedtime and the length of time in bed before falling asleep, behaviour at

bedtime, and the sleep environment. Not only does a sleep history detail night-time behaviours,

for example, snoring, pauses in breathing, night terrors, enuresis, waking, sleep walking, but a

complete assessment of sleep also addresses daytime behaviours. For example, wake-up time,

any challenges with morning wake-up time, sleepiness, naps, and caffeine or energy drink

consumption. Mood, school performance and the psycho-social environment should also be

examined as part of a complete sleep assessment. (Meltzer and Mindell, 2006). In their

description of sleep assessment, Meltzer and Mindell (2006) also highlight the impact that both

the home and school environment can have on sleep quantity and quality, and suggest that a

sleep assessment should also include questions regarding any changes or stressors, including a

death in the family, social pressures, academic expectations, a new sibling, a move, family

problems, or current events. Meltzer and Mindell (2006) also point out the relevance of asking

about the impact of a student's sleep problems on other family members, including both parents

and siblings. The authors also emphasize the rich information that can be obtained when a

detailed sleep history is coupled with a sleep diary. Objective measures of sleep are also

available, including actigraphy and PSG, although not always accessible.

Researchers in the field of pediatric sleep present sleep assessment as a process that

encompasses tremendous detail and careful thought, which requires education. While the current

thesis reasonably answers several questions regarding sleep assessment in the field of school

psychology, the results also generate many questions. For example, future researchers may

attempt to discern the quality of the sleep assessments administered by school psychologists

through providing a more detailed understanding of the methods used for sleep assessment. For

example, are valid and reliable psychometric tools being used, what questions are asked, and are

sleep diaries requested. As well, future researchers may address the question of whether

appropriate recommendations are made in response to a thorough sleep assessment. In addition,

future research may attempt to understand if school psychologists receive sleep education outside

of the core school psychology curriculum. Also, research that builds on these results may

consider the motivation for school psychologists to pursue further education in the field of sleep.

According to the results of the current study, 76% of respondents stated that they make

recommendations that involve sleep behaviours between 0%-20% of the time. Considering that

the rate of sleep problems in school-aged children is estimated to be between 25% and 40%

(Mindell et al., 2009), this result is seemingly low. This finding may be a reflection of the lack of

education regarding interventions for sleep problems as only 7% of the sample indicated that

their school psychology curriculum included interventions for sleep problems. In addition, it may be that school psychologists refer students to another professional for treatment of sleep problems. 7% of the school psychologists surveyed included 'referral to family doctor' among the recommendations they have made regarding sleep behaviours. Future researchers may attempt to better understand the reasons why recommendations regarding sleep behaviours are suggested so seldom relative to the prevalence of sleep problems in school aged children.

Nonetheless, almost one-quarter (24%) of school psychologists indicated that they make recommendations regarding sleep behaviours at least some of the time. This figure may be much higher as 76% of participants indicated that they make recommendations regarding sleep behaviours 0%-20% of the time, and it is not possible to know how many, if any, of the respondents in this group never make such recommendations. Yet, only 7% of the respondents to the survey indicated that they received training for interventions for sleep problems in their school psychology education. A large body of research exists regarding interventions for sleep problems and, for example, practice parameters for the psychological and behavioural treatment of insomnia were developed by the American Academy of Sleep Medicine (Morgenthaler et al., 2006), rating interventions according to the evidence-base. The field of pediatric sleep research is both large and steadily growing, and education is required for thoughtful, evidence-based recommendations regarding sleep behaviour. The results of the current study may be further developed through future research which seeks to clarify if school psychologists seek out additional training in the area of interventions for sleep problems, and, if so, what motivated them to do so.

Both sleep assessment and sleep intervention practices were examined in relationship to gender, number of years in practice, the six major dimensions of personality, as well as parental

status. According to the current results, male and female school psychologists did not differ significantly in the frequency with which they elicit a sleep history from a student or caregiver, or the frequency with which they make recommendations involving sleep behaviours. No significant gender differences were detected on any of the six dimensions of personality. It should be noted that the sample included only five males, which can be considered a limitation of this thesis.

There were no significant differences found between parents and non-parents and the percentage of time each group takes a sleep history with the student, or requests a sleep history from the caregiver. Likewise, sleep assessment practices with students and caregivers did not differ significantly according to the number of years working in the field of school psychology.

However, the frequency with which school psychologists make recommendations that involve sleep behaviours is significantly different between school psychologists who are parents/ caregivers and those who are not. School psychologists who are parents/caregivers are more likely to make recommendations that pertain to sleep behaviours. As well, the number of years in practice is significantly related to the percentage of time interventions for sleep behaviours are recommended. The longer a school psychologist has been practicing in their field, the more frequently they suggest interventions regarding sleep behaviours.

No previous research could be located that has examined the role of sleep interventions and sleep assessment in relationship to length of time in practice or parental status. It is possible that both parents and experienced school psychologists become self-taught in the area of sleep interventions. In both instances it may be the case of 'necessity is the mother of education'. As a school psychologist, despite an absence of formal training in the area of sleep, experience in the field may create an awareness of the frequency, as well as the impact, of sleep problems.

Likewise, as a parent, experience is the teacher, serving to educate parents in the importance of sleep. The experiences of school psychologists as a parent, and the knowledge they gain in this role, may spillover into their practice. Witnessing the impact of sleep problems likely creates a strong motivation to learn about interventions that will improve the school experience of their students.

Why sleep interventions, but not sleep assessment, is influenced by parental status and field experience is notable. Focusing on interventions that will improve a student's school experience may be of more immediate concern than addressing methods of sleep assessment. While the motivation to address sleep assessment may be present, the time to do so may not be. The demands on the time of school psychologists are significant, allowing time only to address the immediate demands of practice, and little time to pursue other interests. It may be the case that time limits the education, and consequently practice, of sleep assessment.

In a summary of the importance of sleep in the practice of school psychology, Buckhalt et al. (2009) provide several recommendations for school psychology practice. These recommendations include the importance of developing practice guidelines surrounding both sleep assessment and intervention. As well, the authors discuss the necessity for enhancing sleep curriculum and providing continuing education to school psychologists in the area of sleep. Buckhalt et al. (2009) suggest that sleep curriculum for school psychologists needs to address several aspects of sleep, including assessment, recognition of sleep disorders, and recognition of students who are at high-risk for sleep problems. As well, Buckhalt et al. (2009) assert that integrating sleep education into the curriculum of all students in an effort to prevent sleep problems is a role that can be assumed by school psychologists.

The results of this thesis support the recommendations of Buckhalt et al. (2009). The present study indicates a low rate of sleep education in school psychology training which is reflected as low rates of sleep assessment, as well as low rates of intervention for sleep problems. The recommendations of Buckhalt et al. (2009) were based on a literature review of pediatric sleep problems, the relationship between sleep and cognitive/ academic performance, clinical disorders commonly seen in school psychology practice, and health, as well as the sleep needs of adolescents. The results of this thesis allow one to put a figure on the current practice of sleep assessment and interventions within school psychology, as well as the sleep curriculum received by school psychologists. This thesis contributes to the field of pediatric sleep research as it provides a quantifiable basis for the recommendations being made in the field of school psychology regarding sleep.

While the results of this thesis are of utmost practical importance, there are some limitations. The target sample for this survey was school psychologists in the province of Nova Scotia, which number approximately 82 according to the Association of Psychologists in Nova Scotia. This survey received 30 responses, thereby achieving a response rate of approximately 37% (which exceed the normative response rate of any given sample). While the sample size is reasonable, the sample consisted of responses from school psychologists in Nova Scotia only. The survey did not examine where the respondents received their training. It is possible that the data may be influenced by a training bias as many of the respondents may have received their education at the same institution. Although, the data does reflect the responses of school psychologists who received their training at different points in time. While this study offers a reflection of the experiences of school psychologists in Nova Scotia, the results of this survey cannot be generalized to other settings. The limitations of this study could be addressed with

future research through a survey of school psychologists across Canada, thereby limiting any training bias. In addition, it may be possible to increase the sample size by incorporating methods shown to be effective in increasing response rates for online data collection, for example offering a prize, shortening the questionnaire, and enhancing the questionnaire with visual elements (Deutskens, Ruyter, Wetzels, & Oosterveld, 2004).

The results of this thesis provide insight into the current practices surrounding sleep assessment and interventions for sleep problems. The findings revealed that only 3% of participants received training in the area of sleep assessment or sleep interventions during their school psychology education, suggesting that there is a void in the school psychology curriculum that needs to be addressed. The largely absent sleep education is reflected as a low percentage of the school psychologists surveyed who consider sleep assessment a standard part of the assessment process. A sleep curriculum should encompass the identification of sleep disorders and appropriate interventions for sleep problems. In addition, education in sleep assessment is an important component of a sleep curriculum, including training in the sleep assessment measures available, as well as how to take a thorough sleep history. Meltzer and Mindell (2006) highlight the intricacies of a thorough sleep history, which include not only questions regarding night-time behaviours, but also a complete examination of daytime behaviours and an exploration of the students' psychosocial environment. As well, according to Buckhalt et al. (2009) not only should school psychologists be educated in sleep, but school psychologists should work to educate others in sleep, including administration and students, in an effort to prevent future sleep problems. Sleep education within school psychology programs can be enhanced through incorporating sleep curriculum into existing courses, as well as seeking out faculty members with specialized knowledge in the area of sleep. In addition, emphasizing the impact of sleep on

learning, behaviour and emotions, all critical areas within the practice of school psychology, may help shape the continuing education offered to school psychologists by professional associations and employers. Strengthening the sleep curriculum offered to school psychologists let's everyone sleep well.

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Appendix A

HEXACO Items

DIRECTIONS On the following pages you will find a series of statements about you. Please read each statement and decide how much you agree or disagree with that statement. Then indicate your response in the drop-down box beneath the statement using the following scale: 5 = strongly agree 4 = agree 3 = neutral (neither agree nor disagree) 2 = disagree 1 = strongly disagree Please answer every statement, even if you are not completely sure of your response.

I would be quite bored by a visit to an art gallery.

--- ▾

I plan ahead and organize things, to avoid scrambling at the last minute.

--- ▾

I rarely hold a grudge, even against people who have badly wronged me.

--- ▾

I feel reasonably satisfied with myself overall.

--- ▾

I would feel afraid if I had to travel in bad weather conditions.

--- ▾

I wouldn't use flattery to get a raise or promotion at work, even if I thought it would succeed.

--- ▾

I'm interested in learning about the history and politics of other countries.

--- ▾

I often push myself very hard when trying to achieve a goal.

--- ▾

People sometimes tell me that I am too critical of others.

--- ▾

I rarely express my opinions in group meetings.

--- ▾

I sometimes can't help worrying about little things.

--- ▾

If I knew that I could never get caught, I would be willing to steal a million dollars.

--- ▼

I would enjoy creating a work of art, such as a novel, a song, or a painting.

--- ▼

When working on something, I don't pay much attention to small details.

--- ▼

People sometimes tell me that I'm too stubborn.

--- ▼

I prefer jobs that involve active social interaction to those that involve working alone.

--- ▼

When I suffer from a painful experience, I need someone to make me feel comfortable.

--- ▼

Having a lot of money is not especially important to me.

--- ▼

I think that paying attention to radical ideas is a waste of time.

--- ▼

I make decisions based on the feeling of the moment rather than on careful thought.

--- ▼

People think of me as someone who has a quick temper.

--- ▼

On most days, I feel cheerful and optimistic.

--- ▼

I feel like crying when I see other people crying.

--- ▼

I think that I am entitled to more respect than the average person is.

[--- ▼]

If I had the opportunity, I would like to attend a classical music concert.

[--- ▼]

When working, I sometimes have difficulties due to being disorganized.

[--- ▼]

My attitude toward people who have treated me badly is "forgive and forget".

[--- ▼]

I feel that I am an unpopular person.

[--- ▼]

When it comes to physical danger, I am very fearful.

[--- ▼]

If I want something from someone, I will laugh at that person's worst jokes.

[--- ▼]

I've never really enjoyed looking through an encyclopedia.

[--- ▼]

I do only the minimum amount of work needed to get by.

[--- ▼]

I tend to be lenient in judging other people.

[--- ▼]

In social situations, I'm usually the one who makes the first move.

[--- ▼]

I worry a lot less than most people do.

[--- ▼]

I would never accept a bribe, even if it were very large.

[--- ▼]

People have often told me that I have a good imagination.

--- ▼

I always try to be accurate in my work, even at the expense of time.

--- ▼

I am usually quite flexible in my opinions when people disagree with me.

--- ▼

The first thing that I always do in a new place is to make friends.

--- ▼

I can handle difficult situations without needing emotional support from anyone else.

--- ▼

I would get a lot of pleasure from owning expensive luxury goods.

--- ▼

I like people who have unconventional views.

--- ▼

I make a lot of mistakes because I don't think before I act.

--- ▼

Most people tend to get angry more quickly than I do.

--- ▼

Most people are more upbeat and dynamic than I generally am.

--- ▼

I feel strong emotions when someone close to me is going away for a long time.

--- ▼

I want people to know that I am an important person of high status.

--- ▼

I don't think of myself as the artistic or creative type.

--- ▼

People often call me a perfectionist.

[--- ▼]

Even when people make a lot of mistakes, I rarely say anything negative.

[--- ▼]

I sometimes feel that I am a worthless person.

[--- ▼]

Even in an emergency I wouldn't feel like panicking.

[--- ▼]

I wouldn't pretend to like someone just to get that person to do favors for me.

[--- ▼]

I find it boring to discuss philosophy.

[--- ▼]

I prefer to do whatever comes to mind, rather than stick to a plan.

[--- ▼]

When people tell me that I'm wrong, my first reaction is to argue with them.

[--- ▼]

When I'm in a group of people, I'm often the one who speaks on behalf of the group.

[--- ▼]

I remain unemotional even in situations where most people get very sentimental.

[--- ▼]

I'd be tempted to use counterfeit money, if I were sure I could get away with it.

[--- ▼]

Appendix B

Sleep Assessment Questionnaire

What is your highest level of education?

- ◯ Masters
- ◯ Doctorate

How many years have you been working in school psychology since completing studies?

- ☐ 0-5
- ☐ 6-10
- ☐ 11-15
- ☐ 15 +

Please indicate your sex.

- ☐ Male
- ☐ Female

Are you a parent/ step-parent or caregiver of a child or adolescent?

- ☐ No
- ☐ Yes

In your school psychology education, were you instructed on how to take a sleep history?

- ☐ Yes
- ☐ No

In what percentage of assessments do you take a sleep history with a child's caregiver?

- ◯ 0-20
- ◯ 21-40

- ○ 41-60
- ○ 61-80
- ○ 81-100

In what percentage of assessments do you ask a child about their sleep history?

- ○ 0-20
- ○ 21-40
- ○ 41-60
- ○ 61-80
- ○ 81-100

In your school psychology education, were you instructed on interventions for sleep problems?

- ☐ Yes
- ☐ No

In what percentage of assessments do you make recommedations that involve sleep behaviours?

- ○ 0-20
- ○ 21-40
- ○ 41-60
- ○ 61-80
- ○ 81-100

Which of the following are similar to recommendations you have made for students in the past?

- ☐ Visualization/ Imagery
- ☐ Limiting caffeine consumption
- ☐ Cognitive Behavioural Therapy
- ☐ Behavioural Therapy
- ☐ Relaxation training

- ☐ Paradoxical Intention

- ☐ More consistent bedtime routine
- ☐ Psychoeducation regarding sleep hygiene
- ☐ Sleep restriction
- ☐ Earlier bedtime
- ☐ Limiting amount of use of technology
- ☐ Other, please specify: [_____]

Submit