6-29-2017 1:00 PM

Parental Help-seeking for Pediatric Insomnia: Where, When, and Why Do Parents Seek Help?

Adam T. Newton, *The University of Western Ontario*

Supervisor: Graham J. Reid, *The University of Western Ontario*

A thesis submitted in partial fulfillment of the requirements for the Master of Science degree in Psychology

Abstract

Pediatric insomnia affects approximately 25% of children and can impact both child and parent functioning. Despite its prevalence and impact, next-to-nothing is known about help-seeking mechanism for pediatric insomnia. These mechanisms are expected to mirror models from the children's mental health help-seeking literature. Both studies in this thesis gathered data from an online multinational project. Manuscript 1 investigated the informal, informational, and formal sources of help for pediatric insomnia and the factors that motivated parents to seek professional help. Parents utilized or expected to utilize a variety of informal (most commonly their partner, friends, or family members) and informational (most commonly the internet and books) help sources. Further, parents were most likely to begin formal help-seeking with a primary care provider. Most parents reported child behavioural problems and the impact on their own daytime functioning as the main reason for seeking help. Manuscript 2 identified (1) predictors of problem perception and help-seeking, (2) reasons why parents did not seek help, and (3) factors that differentiated parents who did and did not seek help. Sleep problem severity and child mental health problems were significant predictors of parents perceiving pediatric insomnia; whereas parental mental health problems were a significant predictor of seeking professional help. Parents who perceived a moderate-to-severe sleep problem were most often impeded from help-seeking by logistic barriers (e.g., treatment too expensive). Help-seeking and non-help-seeking parents were differentiated by sleep problem severity, and child and parent mental health problems. The results of this thesis can be used to inform the design and applicability of interventions for pediatric insomnia and in the design of a model of care for pediatric insomnia.

Key Words: Pediatric insomnia, children, sleep, help-seeking, parents, mental health

Acknowledgements

First, I would like to express my gratitude and appreciation for my supervisor, Dr. Graham Reid. Your diligence and emphasis on the scientific process has already had a great impact on my work and this thesis. Thank you for your guidance during the process of conceptualizing, implementing, and understanding this project. Additionally, thank you for your unwavering support and belief in me to complete this thesis.

Second, thank you to the co-investigators on this project, Drs. Penny Corkum and Sarah Blunden for their willingness to adapt the larger project and for me to coordinate the project and for their suggestions throughout recruitment and the presentation of preliminary findings.

Third, I thank the members of my committee, Drs. Nick Kuiper, Jim Neufeld, and Kelly Anderson for volunteering their time to review and offer suggestions on this work. A special thanks to Dr. Kuiper for his insights during the proposal stage of this thesis.

Fourth, thank you to all the parents who participated in this study. Your insights were extremely valuable in the understanding of help-seeking for pediatric insomnia and I am hopeful that these results will increase our ability to aid those who are in need of help for sleep problems.

Lastly, I am grateful for my parents (Barbara and Wayne), brother (Ian), and fiancée (Rachel). I would not be who I am today without each of you in my corner. Mom and Dad, thank you for your patience, support, and willingness to proofread dozens of pages throughout this process. Rachel, thank you for being a constant support during the years of my masters and for your commitment to the road ahead. And thank you for your patience and willingness to listen to page after page of my work. I am excited to see what the future holds for us!

Table of Contents

List of Tables

List of Figures

List of Appendices

List of Abbreviations

AASM	American Academy of Sleep Medicine
ICSD	International Classification of Sleep Disorders
CAD	Canadian Dollar
CRTTC	Canadian Radio-Television Telecommunications Commission
CSHQ	Children's Sleep Habits Questionnaire
DASS-21	Depression Anxiety Stress Scale (21 Item Version)
GP	General Practitioner
LR	Likelihood Ratio
PSKQ	Parent Sleep Knowledge Questionnaire
Revised NEM	Revised Network Episode Model
SABS	Sleep Attitudes and Beliefs Scale
SDQ	Strengths and Difficulties Questionnaire

Chapter 1

General Introduction

Adam T. Newton

Parental Help-seeking for Pediatric Insomnia: Where, When, and Why Do Parents Seek Help?

1.1 Overview of Thesis

This thesis investigated the help-seeking processes for pediatric insomnia. An overarching aim of the thesis is to identify ways to increase the access to, and usability of, interventions for pediatric insomnia.

This thesis followed the integrated article format outlined by the School of Graduate and Postdoctoral Studies at Western University. There are four chapters. Chapter 1 is a general introduction. Chapters 2 and 3 are stand-alone manuscripts focusing on help-seeking processes for pediatric insomnia using data collected via a multinational longitudinal internet-based study. Chapter 2 investigates where parents turn, or would turn for help, and the factors that influence decisions to seek help. Chapter 3 builds on the findings from Chapter 2 and investigates the factors that influence parents' decisions to seek help by applying predictors from the children's mental health help-seeking literature (e.g., Costello, Pescosolido, Angold, & Burns, 1998; Ryan, Jorm, Toumbourou, & Lubman, 2015). Chapter 4 presents an integration of the results of both manuscripts and a general discussion.

1.2 Introduction Overview

Parenting around bedtime is difficult – especially during preschool and early childhood. Approximately 25% of children aged 2-10 have problems going to sleep (bedtime resistance and delayed sleep onset), staying asleep (night-waking), or with early morning waking (Blader, Koplewicz, Abikoff, & Foley, 1997; Simola et al., 2012; Meltzer, Johnson, Crosette, Ramos, & Mindell, 2010; Zuckerman, Stevenson, & Bailey, 1987), with 25-30% of preschool children waking at least once per night, each night of the week (Adair & Bauchner, 1993; Simola et al.,

2012). Bedtime resistance, delayed sleep onset, night-waking, and early morning waking among children are more broadly characterized as pediatric insomnia. These sleep problems impact both children's and parents' sleep quality (e.g., sleeping less and having frequently interrupted sleep), daytime functioning (e.g., excessive sleepiness, decreased concentration), and can strain the family relationship (Erath & Tu, 2011).

Insomnia is prevalent among children, but parents rarely raise these concerns with their primary care provider (i.e., family physicians in Canada; pediatricians or family physicians in the United States). Blunden and colleagues (in an Australian sample) found that among families with a child (4.5-16.5 years) who had a clinically significant sleep problem, only 14% of parents had discussed the sleep problem with their general practitioner (the equivalent to a family physician in Canada; Blunden et al., 2004). Virtually nothing is known about how parents seek help for pediatric insomnia. Specifically, research has yet to investigate where parents look for help when insomnia occurs, or why some choose to seek help for child sleep difficulties, while others do not. The current thesis presents some of the first research to investigate parental help-seeking processes for childhood sleep problems. After reviewing the relevant literature on pediatric sleep issues and models of parental help-seeking, a conceptual framework for understanding help-seeking for insomnia for preschool and early school-aged children is presented, which frames the hypotheses for the present studies.

1.3 Pediatric Insomnia

1.3.1 Definitions. Pediatric insomnia involves difficulties initiating and maintaining sleep resulting in poor sleep for the child and daytime functional impairment for the child or parents (e.g., Mindell et al., 2006; Moore, Meltzer, & Mindell, 2007; Vriend & Corkum, 2011). Operational definitions often include bedtime resistance lasting 20 minutes or longer and

significant night-waking or early morning waking, which refers to the waking being noticed by a caregiver and/or very frequent wakings (i.e., most nights of the week). For example, the child may require a parent to be present in the room to fall asleep, or the child may only be able to fall asleep in the parent's room. At a consensus conference, Mindell et al. (2006, p. e1225) defined pediatric insomnia as "repeated difficulty with sleep initiation, duration, consolidation, or quality that occurs despite age-appropriate time and opportunity for sleep and results in daytime functional impairment for the child and/ or family". This definition provides a broad conceptualization of pediatric insomnia and identifies the importance of daytime impairment (e.g., excessive sleepiness, lack of concentration) in the child, or other family members, in addition to sleep-related difficulties.

The International Classification of Sleep Disorders (ICSD) provides diagnostic guidelines for disorders related to sleep issues for both children and adults [American Academy of Sleep Medicine (AASM), 2001; AASM, 2014]. The previous version of the ICSD (2nd Edition; ICSD-2; AASM, 2001) included three diagnostic categories specifically related to pediatric insomnia; these diagnoses emphasized the behavioural elements of these sleep problems. Specifically, (1) Sleep Onset Association Disorder (characterized by an impairment in sleep onset due to the absence of a given object or set of circumstances), (2) Limit-Setting Sleep Disorder (characterized by the poor enforcement of bedtimes and bedtime routines by the primary caregiver leading to the child delaying or refusing to go to bed at their given bedtime), and (3) a combined presentation of these disorders (AASM, 2001). The current version, ICSD-3 (AASM, 2014), no longer emphasizes the behavioural elements of pediatric insomnia. Instead, the classification system characterizes insomnia much more broadly by focusing on the chronicity of the disorder, rather than its etiology. Three terms are now used to classify *both* pediatric and adult insomnia: (1) "chronic" (insomnia

occurring for at least 3 months, 3 times per week); (2) “short-term” (insomnia occurring for less than 3 months, any number of nights per week); and (3) “other” insomnia (AASM, 2014). The research utility of this new classification has yet to be established. Combining the ICSD-3 (AASM, 2014) and consensus definition (Mindell et al., 2006), pediatric insomnia must include: (1) difficulty initiating or maintaining sleep for the child (e.g., bedtime resistance, sleep onset delay requiring the presence of caregiver to fall asleep/reinitiate sleep, early morning waking), (2) daytime impairment for the child or caregiver (e.g., fatigue, poor concentration, social/academic/occupational impairments, mood irritability), and (3) the insomnia must not be explained by inadequate sleep opportunity.

1.3.2 Prevalence, course, and developmental differences. Among preschool children (2-5 years old), the prevalence of insomnia is estimated at 14-29% (Simola et al., 2012; Zuckerman, Stevenson, & Bailey, 1987). The prevalence of insomnia is similar (11-27%) among elementary school aged children (5-12 years old; Blader, Koplewicz, Abikoff, & Foley, 1997; Simola et al., 2012). In studies on the prevalence and natural history of pediatric insomnia, night waking and bedtime resistance are often reported separately. Occasional night-waking is common amongst children. Most children will wake once every one to four hours (AASM, 2001; Petit, Touchette, Tremblay, Boivin, & Montplaisir, 2007). However, there is often a prolonged delay to fall back asleep after night-waking among children with insomnia, and children are typically unable to fall back to sleep without help from a parent. Children with insomnia may call out and frequently make requests of their parents (e.g., ask for a drink or to go to the washroom) or require assistance from their caregiver before the child can fall back to sleep (e.g., back rubbing, cuddling, bedtime story; Coulombe & Reid, 2013). Approximately 65% of preschool-aged children wake occasionally (i.e., at least once per week) and make a request during the night; 28-33% of preschool children wake

once per night, every night (Beltramini & Hertzig, 1983; Petit et al., 2007). Occasional (i.e., once per week, or less) bedtime resistance is also common, peaking around age 3-to-4 and occurring in 50-75% of children in this age range (Beltramini & Hertzig, 1983; Blum & Carey, 1996). Prevalence estimates for children with significant (i.e., occurring most nights of the week) bedtime resistance and night-waking vary with age. The ICSD-3 reported that insomnias occur in 10-30% of children aged 6 months to 10 years (AASM, 2014).

The prevalence of pediatric insomnia typically decreases from preschool through elementary school ages (Petit et al., 2007); however, for some children, insomnia can persist into early adolescence (Gregory & O'Connor, 2002). Following children from 4 to 15 years old, Gregory and O'Connor (2002) demonstrated a steady decrease in sleep problems across childhood, with the largest decrease in mean sleep problems occurring between 4 and 7 years old. Subsequent research has corroborated these findings. For example, Petit and colleagues (2007) note the prevalence of night-waking, bedtime resistance, and sleep onset delay decreases significantly from preschool age to early school age (Petit et al., 2007).

The most typical course of pediatric insomnia appears to be a decrease in symptoms as the child ages, with approximately two thirds of children who had symptoms during their preschool years no longer having symptoms during school years (Petit et al., 2007). However, for approximately one third of children, symptoms for pediatric insomnia persist (Gregory & O'Connor, 2002; Petit et al., 2007).

1.3.3 Consequences of Pediatric Insomnia. Child sleep problems place both children and their parents at risk for daytime functional impairment. Children with pediatric insomnia are at risk for: (a) academic difficulties in school age children [see Astill, Van der Heijden, Van Ijzendoorn, & Van Someren (2012) or Curcio et al. (2006) for a review], (b) problems with

receptive language and non-verbal reasoning (Touchette et al., 2007), (c) an increased likelihood of becoming overweight (Taveras et al., 2008), (d) emotional problems (El-Sheikh et al., 2007; Reid, Hong, & Wade, 2009), and (e) the development of concurrent and later behavioural problems (Astill et al., 2012; Gregory & O'Connor, 2002; Zuckerman et al. 1987). Further, the relations between behavioural problems and pediatric insomnia are likely bidirectional (e.g., Astill, et al., 2012). When parents are awakened frequently by their child, they are likely to experience reduced concentration, and increased sleepiness, stress, and irritability during the daytime, along with impaired sleep quality at night (Bayer et al., 2007; Meltzer & Mindell, 2007; Mindell, Sadeh, Kwon, & Goh, 2015). Additionally, pediatric insomnia can strain the parent-child relationship, having negative influences on parenting style and parent reactivity (Erath & Tu, 2011). Again, this influence is most likely bidirectional (Bell & Belsky, 2008; Erath & Tu, 2011). These negative impacts can be avoided using effective, short-duration interventions (Meltzer & Mindell, 2014). Additionally, despite high likelihood that pediatric insomnia will not persist for the child, it is likely that these consequential concerns will remain (Gregory & O'Connor, 2002).

1.3.4 Pediatric Insomnia Etiology. Current ecological frameworks for pediatric insomnia include genetic, environmental, and behavioural factors. A large twin sample aimed to disentangle the unique contributions of these factors among preschool-age, mono- and dizygotic twins (Gregory, Eley, O'Connor, & Plomin, 2004). Although the concordance of sleep problems (broadly defined) was higher for monozygotic twins than for dizygotic twins, this difference was small (.93 and .83, respectively). Given the high concordance rates for both types of twins, shared environmental factors are stronger than genetic factors in the development of children's sleep problems. Thus, it is not surprising that most pediatric insomnia etiology research has focused on behavioural and environmental causes (Blum & Carey, 1996).

Environmental factors that may contribute to pediatric insomnia include a noisy, bright, or excessively cool/ warm bedroom (Blum & Carey, 1996). Two key behavioural factors have been related to pediatric insomnia: (a) poor bedtime routines and (b) difficulties with caregivers setting limits on children's inappropriate behaviours at bedtime (e.g., child frequently leaving the room). In addition, pediatric insomnia likely stems from interactions between the parent, child, and the environment. For example, a fussy child demands more attention from his parent, resulting in lax bedtime routines, which results in delayed sleep onset and problems initiating sleep independently. Children who have problems re-initiating sleep independently also have problems reinitiating sleep following normal night waking. Ideally, children develop positive associations between bedtime routines (e.g., read a bedtime story, have a glass of milk, cuddle with stuffed toy) and sleep which facilitate sleep onset. One of the most common problematic pediatric insomnia presentations involves sleep onset associations with parental presence. If a child requires the parent's presence at bedtime to fall asleep, the he is highly likely to have difficulty falling back to sleep without the presence of his parent both at bedtime and when he wakes during the night (Blum & Carey, 1996).

In correlational studies, parenting style has been related to pediatric insomnia (Owens-Stively et al., 1997). Parenting style refers to the attentiveness, consistency, and emotional stability of primary caregivers while interacting with children. Specifically, lax parenting (few rules enforced with children) predicts behavioural sleep disturbance in general and clinical populations (Owens-Stively et al., 1997). This relation likely arises from the inconsistent daytime and bedtime routines lax parenting is associated with.

Empirically-supported interventions for pediatric insomnia largely support behavioural underpinnings of these sleep problems. Pediatric insomnia greatly improves when routines are followed and limits are appropriately enforced (e.g., Kuhn & Elliott, 2003; Mindell et al., 2009;

Moore et al., 2007; Owens, Palermo, & Rosen, 2002). Parents are the implementers of these behaviour-based interventions (AASM, 2001; Kuhn & Elliott, 2003). Thus, parenting style is important to consider when investigating help-seeking for pediatric insomnia.

1.3.5 Treatment. Behavioural interventions are the recommended best practice addressing pediatric insomnia. Intervention review studies have shown that approximately 80% of children show clinically significant improvements following behavioural interventions (Ramchandani et al., 2000). However, few parents access behavioural inventions. Under the assumption that most parents would turn to a primary care provider for help with pediatric insomnia, several studies have looked at primary care providers' management practices. In primary health care settings, medication is the most commonly implemented intervention (Stojanovski et al., 2000). Despite this practice, there are currently no approved medications for pediatric insomnia and these medications have failed to demonstrate long term effectiveness (e.g., Owens, Rosen, & Mindell, 2003; Owens & Moturi, 2009; Weiss & Garbutt, 2010). Research has yet to confirm that most parents do, in fact, first access care from their primary care provider.

1.4 Help-Seeking for Pediatric Insomnia: Insights from Theoretical Models of Help-Seeking in Children's Mental Health

Although there has been very little research on help-seeking mechanisms for pediatric sleep problems, it is likely that the help-seeking mechanisms for pediatric insomnia mirror factors from the children's mental health help-seeking literature. Three children's mental health help-seeking models are relevant to this thesis: The Revised Network Episode Model (Revised NEM; Costello et al., 1998), the Gateway Provider Model Stiffman, Pescosolido, & Cabassa, 2004); and the Pathways to Care Model [first proposed by Goldberg & Huxley (1980), applied to children's mental health by Pavuluri et al. (1996)]. Additionally, a recent model within pediatric sleep

research proposed connections between parental cognitions about sleep (e.g., knowledge, beliefs, and attitudes), child sleep behaviour, and parents' appraisal of children's sleep (Parental Cognitions and Child's Sleep Model; Coulombe et al., 2012). This provides theoretical insights into the importance of parental cognitions when modelling parents' perceptions of a child sleep problem and subsequent help-seeking, and complements the Revised NEM. Each of these models are briefly described below.

1.4.1 Revised Network Episode Model. The Revised Network Episode Model (Revised NEM; Costello et al., 1998) is a mental health help-seeking model that has the family unit, led by the parent, navigate treatment seeking. The Revised NEM is a complex and comprehensive model of help-seeking that includes parent and child sociodemographic factors, family social support systems, and treatment systems (see Figure 1.1 for the Revised NEM diagram). However, key attitudinal and knowledge factors are underrepresented in the Revised NEM. Therefore, an additional model was applied to complement the shortcomings of this model (See Parental Cognitions and Child Sleep Model below).

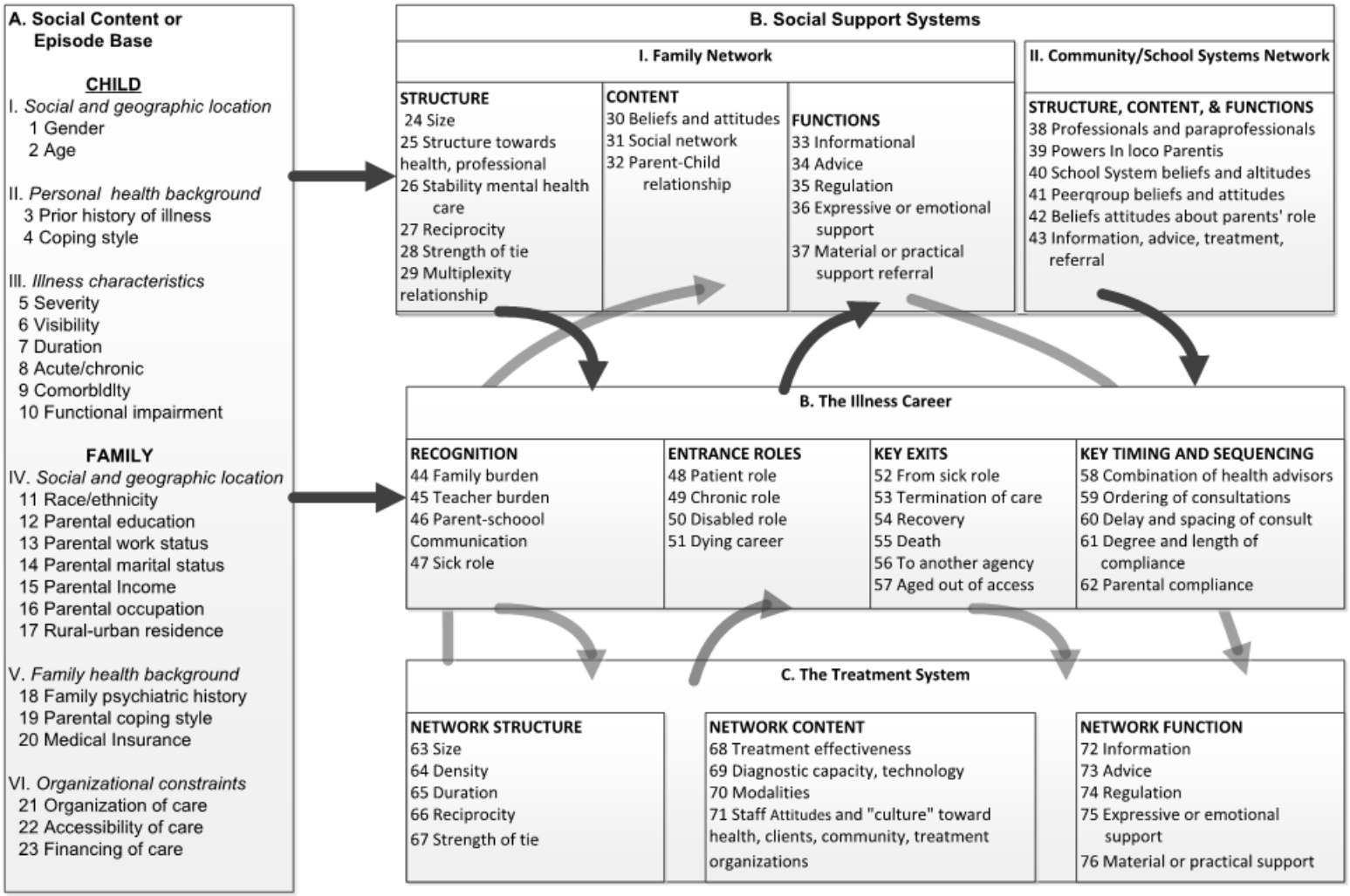

Figure 1.1. Depiction of Revised NEM (Costello et al., 1998).

1.4.2 Gateway Provider Model. The Gateway Provider Model (Stiffman et al., 2004) was developed as a testable extension of the Revised NEM. The unique contribution of this model is its identification of key individuals within the child or parents' social network who first identify the problem and suggest the child seeks treatment. Key individuals may be formal health professionals (e.g., family doctors) or informal persons (e.g., child's teacher, family friend). This model proposes that these key individuals should have resources or information to provide to parents, if concerns are to arise. These key individuals act as the "gateway" to specialized or nonspecialized service use. As such, the Gateway Provider Model provides insight into the processes by which parents enter help-seeking networks.

1.4.3 Pathways to Care Model. The Pathways to Care Model provides a theoretical account of the reasons parents may not seek help. The original model (Goldberg & Huxley, 1980) was applied to adult psychiatric help-seeking to explain how individuals moved from informal to formal help-seeking, or chose not to seek help. The application of this model to children's mental health (Pavuluri et al., 1996) provides similar insights. Specifically, Pavuluri and colleagues propose a series of barriers parents must overcome to access services. These include recognizing the problem, considering seeking help, and negotiating logistic barriers (e.g., "treatment is too expensive") or stigma-related cognitions (e.g., "I am too embarrassed to discuss with anyone"). In this model, parents are thought to traverse the "filters" in order (e.g., parent must recognize a problem before considering logistic barriers), and parents may not seek help due to any inability to overcome a barrier. See Figure 1.2 for a depiction of the Pathways to Care Model used by Pavuluri et al. (1996).

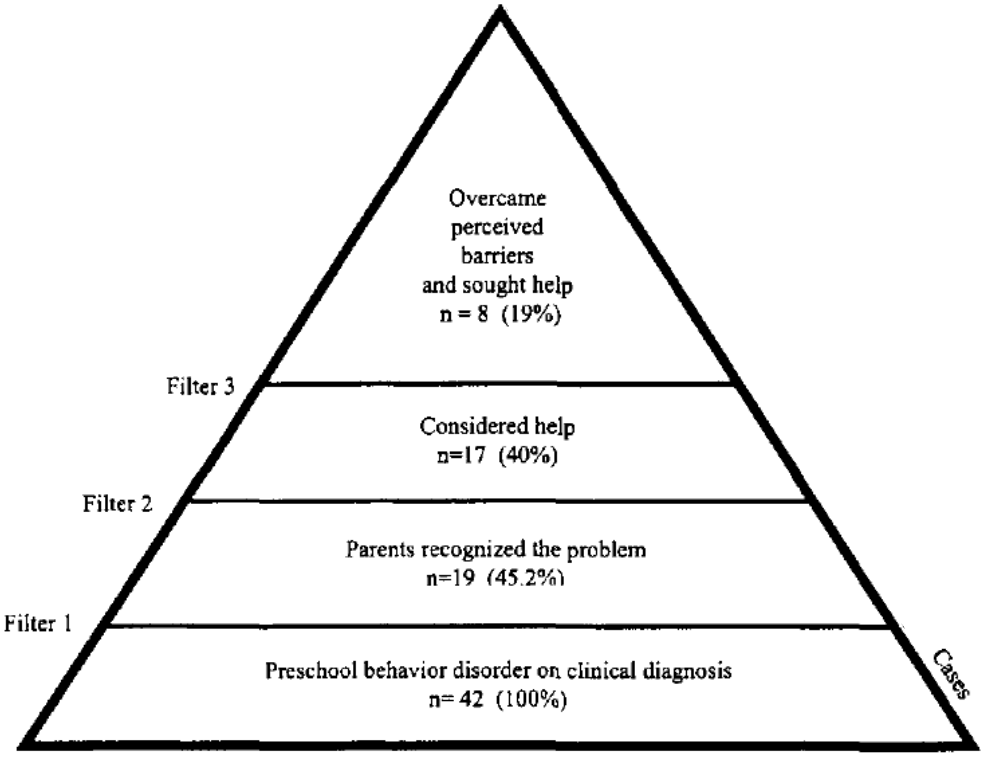

Figure 1.2. Pathways to Care Model, reproduced from Pavuluri et al. (1996, p. 219). The *n*'s in this figure represent the number of parents who traversed the prior filter; whereas, the percentages indicate the proportion of parents who traversed the prior filter.

1.4.4 Parental Cognitions and Child's Sleep Model. This recent model (Coulombe et al., 2012) suggests parental cognitions influence parents' appraisals of child sleep and child sleep behaviour. In a feedback loop, parents' cognitions develop through evaluating the child's sleep behaviour, implementing parenting strategies, and reacting to strategies' effectiveness. In turn, parents' sleep cognitions are thought to influence parental appraisals of child sleep. However, this model has yet to undergo empirical evaluation. This model complements the Revised NEM. The cognitions identified in this model can be applied to the attitudinal and knowledge factors underrepresented in the Revised NEM. See Figure 1.3 for a depiction of the Parental Cognitions and Child's Sleep Model.

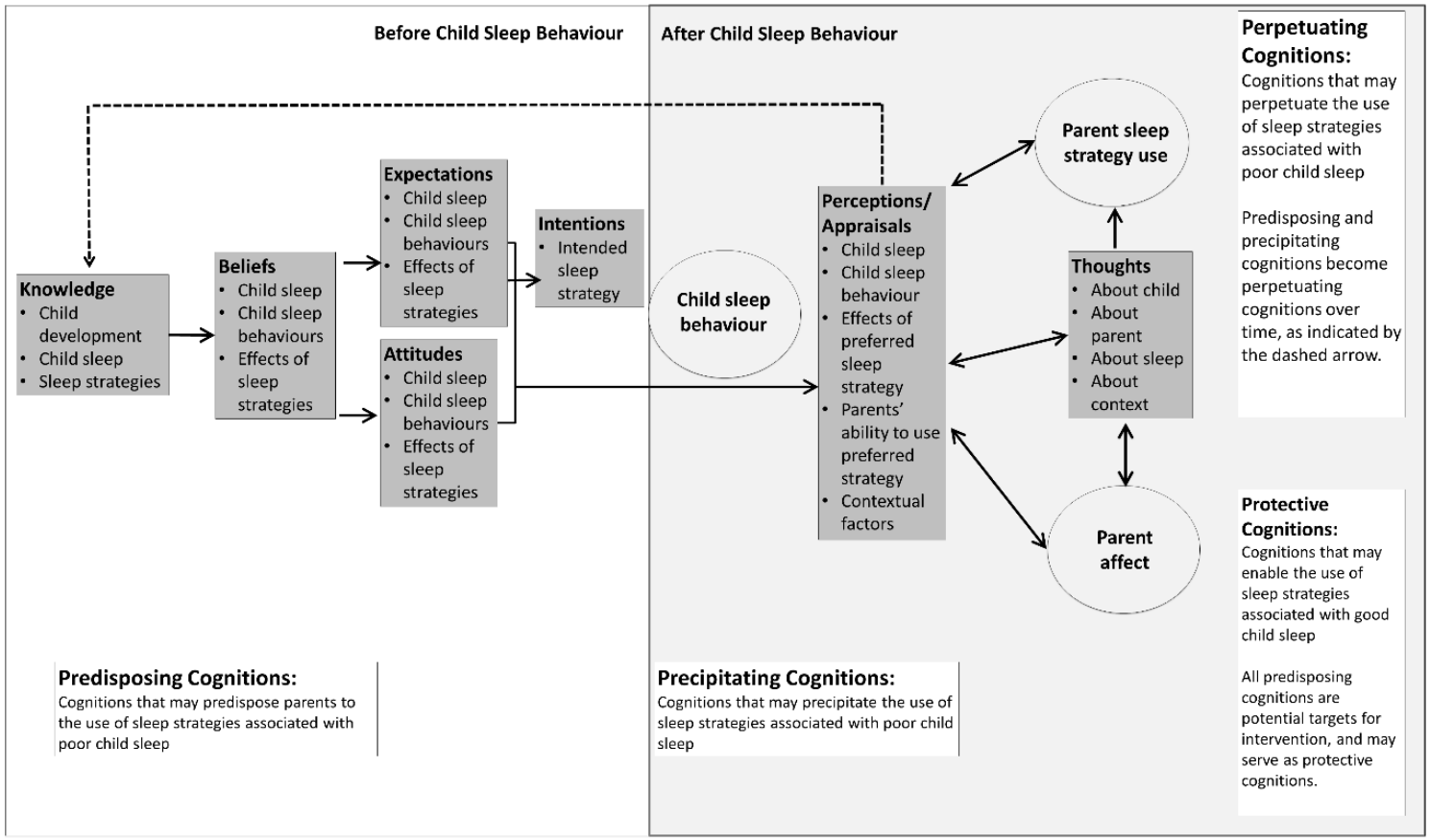

Figure 1.3. Parental Cognitions and Child Sleep Model (Coulombe et al., 2012).

1.5 An Integrated Model of Help-Seeking for Pediatric Insomnia.

An integrated model of help-seeking was used as the conceptual framework for this study. It is heavily predicated on the Revised NEM, but also incorporates elements from the other models. The relevant subsections of the Revised NEM are discussed along with supporting research from the children's mental health help-seeking literature and pediatric sleep literature (where applicable). See Figure 1.4 for a depiction of the integrated model.

1.5.1 Social Content. Applying the Revised NEM to pediatric insomnia, we predict that as pediatric insomnia severity and other child/ parental stresses increase (e.g., comorbid issues with the child, parent mental health status, and negative parenting style), help-seeking will be more likely. The connection between these factors and help-seeking are consistently supported for a range of mental health problems [see Ryan et al. (2015) for a review]. For example, Costello et al. (1996) reported that children with comorbid mental health problems were twice more likely to use services than children with a single mental health problem, and that higher problem severity predicted an increased likelihood of service use. Parental mental health problems have also predicted service use. Higher parental emotional difficulties predict an increased likelihood of help-seeking for their children (e.g., Mowbray, Lewandowski, Bybee, & Oyserman, 2004). Additionally, child and parent sociodemographic factors influence help-seeking. Younger children, minority families, and families with lower income are less likely to use services than older children, white families, and higher income families (Costello et al., 1998; Mowbray et al., 2004). In the present model, child demographic characteristics (i.e., sex and age), illness characteristics (i.e., severity, comorbidity), parent demographics (i.e., parent education, income, employment status, and age), and parent health (i.e., parental mental health problems) are may to contribute to problem recognition and help-seeking.

1.5.2 Family Network Content. The Revised NEM also incorporates "family network – content" factors, including beliefs and attitudes about the problem and parenting style. The Parental Cognitions and Child Sleep Model and the Revised NEM both reference "the family network – content". Specifically, the Parental Cognitions and Child Sleep Model incorporates the relationships between parents' beliefs, attitudes, and knowledge of children's sleep on help seeking. Parental sleep cognitions (i.e., sleep knowledge, beliefs, and attitudes) have been linked to poorer child sleep hygiene (Biggs et al., 2010; Owens & Jones, 2011; Tikotzy & Sadeh, 2009). Stronger beliefs in some parenting strategies for responding to children sleep issues [e.g., complying with children's request for comfort during the night (referred to as active comforting)] are associated with poorer child sleep (e.g., Coulombe & Reid, 2011; Tikotzky & Sadeh, 2009). In contrast, parents' belief that sleep is important for children is correlated with (a) earlier bedtimes and longer time in bed for children (Biggs et al., 2010) and (b) greater knowledge about beneficial sleep practices (e.g., regular bedtime, limited screen time around bedtime, the amount of sleep required for children; Owens & Jones, 2011).

Given that best practice interventions for pediatric insomnia are dependent on establishing consistent sleep routines (Kuhn & Elliott, 2003; Moore et al., 2007; Owens, Palermo, & Rosen, 2002), parents' knowledge and beliefs in these techniques are likely related to their children's sleep. If sleep knowledge is low, and beliefs about the importance of sleep are also low, sleep problem severity may be greater, in turn leading to increased need for help-seeking. Conversely, if parents believe their child will not respond to sleep treatments, or if sleep problems are believed to be unlikely to change, help-seeking maybe less likely. Thus, the knowledge, attitudes, and beliefs parents have about their child's sleep are likely to influence help-seeking. In addition, child, parent, and problem-related factors identified in the Revised NEM also contribute to help seeking.

In the present model, both parent sleep cognitions (i.e., beliefs, attitudes, and knowledge) and child, parent, and sleep problem factors are expected to contribute to pediatric insomnia severity and influence parent recognition of the problem.

Parenting style has also been shown to influence pediatric insomnia severity and help-seeking. Lax and over-reactive parenting can increase the likelihood of a child developing pediatric insomnia. Lax (very permissive) and over-reactive (responding rapidly with intense emotion) parenting may lead to poor night- and daytime routines and poor limit-setting, which in turn may lead to pediatric insomnia (Owens-Stively et al., 1997). The children's mental health help-seeking literature also suggests these parenting styles are associated with an increased probability of service use (Ezpeleta, Granero, De La Osa, Domenech, & Guillamón, 2002; Staghezza-Jaramillo, Bird, Gould, & Canino, 1995). In the proposed model, the parenting style is viewed as influencing pediatric insomnia severity and having a bidirectional relationship with parent sleep cognitions. Lax and over-reactive parenting may contribute to negative sleep cognitions and sleep cognitions may influence parenting style.

1.5.3 Problem Recognition. Parental recognition of a sleep problem is expected to be essential for help-seeking, based on the Revised NEM and the Pathways to Care Model. Parents must recognize that the child has a problem, and that the problem is interfering with the functioning of the child or others in the family to seek help (Costello et al., 1998; Pavuluri et al., 1996). In the context of mental health services, parental recognition of the problem has been associated with a doubled rate of service utilization (Costello et al., 1998) and was found to be a consistent significant predictor of service use in a recent systematic review (Ryan et al., 2015). Conversely, most parents who do not perceive their child as having a problem do not seek help (Logan & King, 2001; Oh, Mathers, Hiscock, Wake, & Bayer, 2015; Zwaanswijk, Van der Ende, Verhaak,

Bensing, & Verhulst, 2005). It is expected that help-seeking for pediatric insomnia will be similar. Further, among parents who perceive a sleep problem, but do not seek help, specific reasons for not seeking help are anticipated based on the Pathways to Care Model. For example, parents who perceive their child to have a mild sleep problem may not seek help if they believe their child will grow out of it.

In the present model, pediatric insomnia severity, child mental health problems, parental mental health problems, parent sleep cognitions, and the parenting style are expected to contribute to parental recognition of pediatric insomnia. Additionally, similar reasons for not seeking help (as observed in the Pathways to Care Model) are expected among parents who did perceive a sleep problem.

1.5.4 The Treatment System. Among parents who do seek help, parents are likely to access several different types of support including informational (e.g., the internet or books), informal (e.g., family or child's teacher), or formal (e.g., family doctor or psychologist; Costello et al., 1998). Previous help-seeking research suggests approximately half of parents will utilize informal help-seeking sources (Zwaanswijk et al., 2005). It is unclear which informational and informal sources would be utilized by parents for pediatric insomnia. Previous research has suggested children's teachers to be key informal help sources for mental health problems and that teachers often function as gateway providers (Stiffman et al., 2004; Zwaanswijk et al., 2005). However, teachers are less likely to play a role with preschool-aged children, and, unless the child is clearly falling asleep in class, it is highly unlikely that teachers would discuss child sleep issues with parents. Parents who accessed formal help (i.e., from health professionals) were expected to seek help from a primary care provider first (e.g., family doctor or general practitioner in Canada

and Australia, family doctor or pediatrician in the United States). These professionals act as gatekeepers to formal health care (Stiffman et al., 2004).

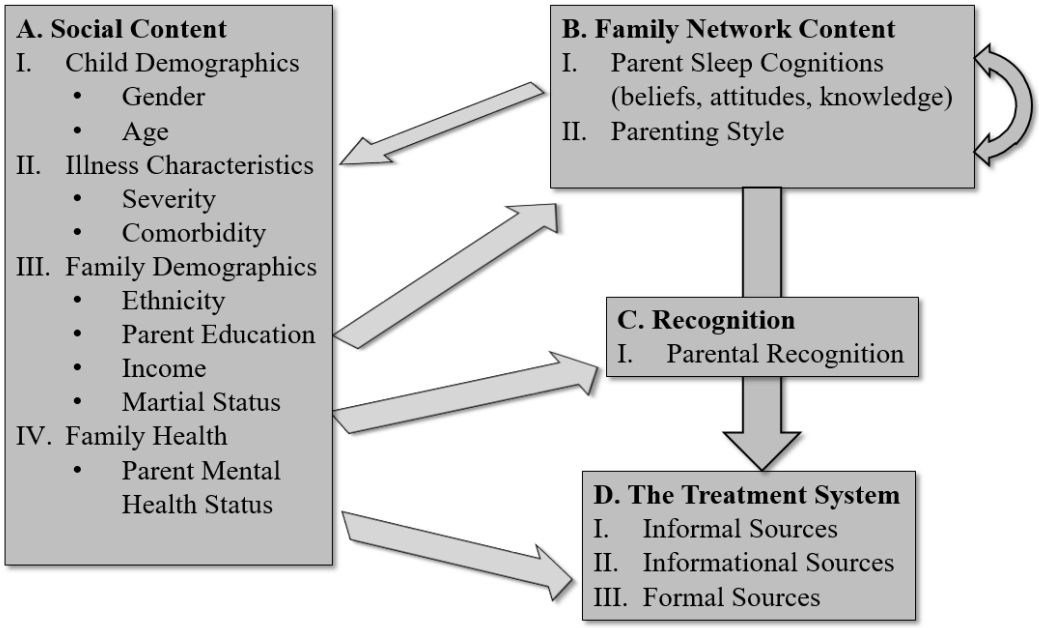

Figure 1.4. Integrated help-seeking model for pediatric insomnia.

1.6 Summary and the Current Thesis

Pediatric insomnia is a common and impactful problem affecting children and parents. Despite its high prevalence and impact, next-to-nothing is known about help-seeking mechanisms for pediatric insomnia. Several theoretical models can be applied to aid in the conceptual understanding of pediatric insomnia help-seeking. This thesis drew from each of these models in the development of research questions and in the interpretation of results. This thesis contains two manuscripts. Chapter 2 identifies informal and formal help-seeking sources for pediatric insomnia, as well as primary motivating factors for seeking professional help. Chapter 3 identifies (1) predictors for sleep problem recognition and help-seeking, (2) reasons why parents did not seek professional help for pediatric insomnia, and (3) child, parent, and sleep factors that were distinguishable between parents who sought and did not seek help. Together, this thesis aims to provide insight into help-seeking for pediatric insomnia.

1.7 References

Achenbach T., & Edelbrock C. (1983). *Manual for the Child Behavior Checklist and Revised Child Behavior Profile*. Burlington, VA: University of Vermont Department of Psychiatry, American Psychiatric Association.

Adair, R. H. & Bauchner, H. (1993). Sleep problems in childhood. *Current Problems in Pediatrics*, 147-170.

The American Academy of Sleep Medicine (2001). *The international classification of sleep disorders (2nd ed.)*. Chicago, IL: American Academy of Sleep Medicine.

The American Academy of Sleep Medicine (2014). *The international classification of sleep disorders (3rd ed.)*. Chicago, IL: American Academy of Sleep Medicine.

Astill, R. G., Van, d. H., Van IJzendoorn, M. H., & Van Someren, Eus J. W. (2012). Sleep, cognition, and behavioral problems in school-age children: A century of research meta-analyzed. *Psychological Bulletin, 138*(6), 1109-1138. doi:http://dx.doi.org/10.1037/a0028204

Bell, B. G., & Belsky, J. (2008). Parents, parenting, and children's sleep problems: Exploring reciprocal effects. *British Journal of Developmental Psychology*, *26*(4), 579-593. doi:10.1348/026151008X285651

Beltramini, A. U. & Hertzig, M. E. (1983). Sleep and bedtime in preschool-aged children. *Pediatrics, 71*(2), 153-158.

Biggs, S. N., Pizzorno, V. A., van den Heuvel, Cameron J, Kennedy, J. D., Martin, A. J., & Lushington, K. (2010). Differences in parental attitudes towards sleep and associations

with sleep-wake patterns in Caucasian and southeast Asian school-aged children in Australia. *Behavioral Sleep Medicine, 8*(4), 207-218. doi:10.1080/15402002.2010.509197

Blader, J. C., Koplewicz, H. S., Abikoff, H. & Foley, C. (1997). Sleep problems of elementary school children: A community survey. *Archives of Pediatric Adolescent Medicine, 151,* 473-480.

Blum, N. J. & Carey, W. B. (1996). Sleep problems among infants and young children. *Pediatrics in Review, 17*(3), 87-93.

Blunden, S., Lushington, K., Lorenzen, B., Ooi, T., Fung, F., & Kenny, D. (2004). Are sleep problems under-recognised in general practice? *Archives of Disease in Childhood, 89,* 708-712.

Costello, E. J., Pescosolido, B. A., Angold, A., & Burns, B. J. (1998). A family network-based model of access to child mental health services. *Research in Community and Mental Health, 9,* 165-190.

Coulombe, J.A., Corkum, P., Reid, G.J., & Bessey, M. (2012, October). *Thinking about sleep: A theoretical model of parental cognitions and children's sleep.* Poster session presented at the 21st Annual Department of Psychiatry Research Day (Dalhousie University), Halifax, Nova Scotia.

Coulombe J. A. & Reid G. J. (2013). What do preschool-aged children do when they wake at night: Toward an understanding of night-waking behaviors among community children. *Behavioural Sleep Medicine, 12,* 89-105.

Curcio, G., Ferrara, M., & De Gennaro, L. (2006). Sleep loss, learning capacity and academic performance. *Sleep Medicine Reviews, 10*(5), 323-337.

Dumont-Mathieu, T. M., Bernstein, B. A., Dworkin, P. H., & Pachter, L. M. (2006). Role of pediatric health care professionals in the provision of parenting advice: A qualitative study with mothers from 4 minority ethnocultural groups. *Pediatrics, 118*(3), e839-e848. doi:10.1542/peds.2005-2604

Erath, S. A. & Tu, K. M. (2011). The parenting context of children's sleep. In El-Sheikh, M. (Ed.), *Sleep and development: familial and socio-cultural considerations* (29-47). Toronto: Oxford University Press.

El-Sheikh, M., Buckhalt, J. A., Keller, P. S., Cummings, E. M., & Acebo, C. (2007). Child emotional insecurity and academic achievement: The role of sleep disruptions. *Journal of Family Psychology, 21*(1), 29-38. doi:10.1037/0893-3200.21.1.29

Ezpeleta, L., Granero, R., De La Osa, N., Domenech, J. M., & Guillamón, N. (2002). Perception of need for help and use of mental health services in children and adolescents. do they share the same predictors? *Psicothema, 14*(3), 532-539.

Goldberg, D., & Huxley, P. (1980). *Mental Illness in the Community: The Pathway to Psychiatric Care.* London, United Kingdom. Travistock Publications.

Gregory, A. M., Eley, T. C., O'Connor, T. G., & Plomin, R. (2004). Etiologies of associations between childhood sleep and behavioral problems in a large twin sample. *Journal of the American Academy of Child & Adolescent Psychiatry, 43*(6), 744-751. doi:10.1097/01.chi/0000122798.47863.a5

Gregory, A. M., & O'Connor, T.,G. (2002). Sleep problems in childhood: A longitudinal study of developmental change and association with behavioral problems. *Journal of the American Academy of Child and Adolescent Psychiatry, 41*(8), 964-971.

Kuhn B. R. & Elliott A. J. (2003). Treatment efficacy in behavioral pediatric sleep medicine. *Journal of Psychosomatic Research, 54*(6), 587–597.

Logan, D. E., & King, C. A. (2001). Parental facilitation of adolescent mental health service utilization: a conceptual and empirical review. Clinical Psychology Science Practice *8*, 319–333.

Meltzer, L. J., Johnson, C., Crosette, J., Ramos, M., & Mindell, J. A. (2010). Prevalence of diagnosed sleep disorders in pediatric primary care practices. *Pediatrics, 125*(6), e1410-e1418.

Meltzer, L. J., & Mindell, J. A. (2014). Systematic review and meta-analysis of behavioural interventions for pediatric insomnia. *Journal of Pediatric Psychology, 39*(8), 932-948.

Mindell J. A., Emslie G., Blumer J. et al. (2006). Pharmacologic management of insomnia in children and adolescents: consensus statement. *Pediatrics, 117*(6), e1223–e1232.

Mindell, J. A., Telofski, L. S., Wiegand, B., & Kurtz, E. S. (2009). A nightly bedtime routine: Impact on sleep in young children and maternal mood. *Sleep, 32*(5), 599-606.

Moore M., Meltzer L. J., & Mindell J. A. (2007). Bedtime problems and night wakings in children. *Sleep Medicine Clinical*, *2*(3), 377–385.

Mowbray, C. T., Lewandowski, L., Bybee, D., & Oyserman, D. (2004). Children of mothers diagnosed with serious mental illness: Patterns and predictors of service use. *Mental Health Services Research, 6*(3), 167-183.

Oh, E., Mathers, M., Hiscock, H., Wake, M., & Bayer, J. (2015). Professional help seeking for young children with mental health problems. *Australian Journal of Psychology, 67*(3), 187-195. doi:http://dx.doi.org/10.1111/ajpy.12072

Owens, J. A. & Jones, C. (2011). Parental knowledge of healthy sleep in young children: Results of a primary care clinic survey. *Journal of Developmental and Behavioral Pediatrics, 32*(6), 447.

Owens, J.A. & Moturi, S. (2009). Pharmacologic treatment of pediatric insomnia. *Child and Adolescent Psychiatry*, *8*(4), 1001-1016.

Owens, J. A., Palermo, T. M., & Rosen, C. L. (2002). Overview of current management of sleep disturbances in children: II—Behavioral interventions. *Current Therapeutic Research, 63*, B38-B52.

Owens, J.A., Rosen, C.L., & Mindell, J.A. (2003). Medication use in the treatment of pediatric insomnia: Results of a survey of community-based pediatricians. *Pediatrics, 111*.

Owens-Stively, J., Frank, N., Smith, A., Hagino, O., Spirito, A., Arrigan, M., & Alario, A. J. (1997). Child temperament, parenting discipline style, and daytime behavior in childhood sleep disorders. *Journal of Developmental and Behavioral Pediatrics, 18*(5), 314-321.

Pavuluri, M. N., Luk, S.L., & McGee, R. (1996). Help-seeking for behavior problems by parents of preschool children: A community study. *Journal of American Academic Child and Adolescent Psychiatry, 35*, 215-222.

Petit, D., Touchette, E., Tremblay, R. E., Boivin, M., & Montplaisir, J. (2007). Dyssomnias and parasomnias in early childhood. *Pediatrics, 119*(5), e1016-e1025.

Ramchandani, P., Wiggs, L., Webb, V., & Stores, G. (2000). A systematic review of treatments for settling problems and night waking in young children. *BMJ: British Medical Journal, 320*(7229), 209-213. doi:10.1136/bmj.320.7229.209

Reid, G.J., R.Y. Hong, & T.J. Wade (2009). The relation between common sleep problems and emotional and behavioral problems among 2-and 3-year-olds in the context of known risk factors for psychopathology. *Journal of Sleep Research, 18*, 49-59.

Ryan, S. M., Jorm, A. F., Toumbourou, J. W., Lubman, D. I. (2015) Parent and family factors associated with service use by young people with mental health problems: A systematic review. *Early Intervention in Psychiarty, 9*, 433-446.

Simola, P., Laitalainen, E., Liukkonen, K., Virkkula, P., Kirjavaninen, T., Pitkaranta, A., Aronen, E. T. (2012). Sleep disturbances in a community sample from preschool to school age. *Child: Care, Health, and Development*, *38*(4), 572-580.

Staghezza-Jaramillo, B., Bird, H. R., Gould, M. S., & Canino, G. (1995). Mental health service utilization among Puerto Rican children ages 4 through 16. *Journal of Child and Family Studies, 4*(4), 399-418.

Stiffman, A. R., Pescosolido, B., & Cabassa, L. J. (2004). Building a model to understand youth service access: The gateway provider model. *Mental Health Services Research, 6*, 189–198.

Stojanovski, S. D., Rasu, R. S., Balkrishnan, R., & Nahata, M. C. (2007). Trends in medication prescribing for pediatric sleep difficulties in US outpatient settings. *Sleep, 30*(8), 1013. doi:10.1093/sleep/30.8.1013

Taveras, E. M., Rifas-Shiman, S. L., Oken, E., Gunderson, E. P., & Gillman, M. W. (2008). Short sleep duration in infancy and risk of childhood overweight. *Archives of Pediatrics & Adolescent Medicine, 162*(4), 305-311. doi:10.1001/archpedi.162.4.305

Tikotzky, L., & Sadeh, A. (2009). Maternal sleep-related cognitions and infant sleep: A longitudinal study from pregnancy through the 1st year. *Child Development, 80,* 860-874.

Touchette, É., Petit, D., Séguin, J. R., Boivin, M., Tremblay, R. E., & Montplaisir, J. Y. (2007). Associations between sleep duration patterns and behavioral/cognitive functioning at school entry. *Sleep: Journal of Sleep and Sleep Disorders Research, 30*(9), 1213-1219.

Vriend, J., & Corkum, P. (2011). Clinical management of behavioral insomnia of childhood. *Psychology Research and Behavior Management, 4*, 69–79.

Weiss, S.K., & Garbutt, A. (2010). Pharmacotherapy in pediatric sleep disorders. Adolescent Medicine State Art Review, *21*(3), 508-550.

Zuckerman, B., Stevenson, J., & Bailey, V. (1987). Sleep problems in early childhood: Continuities, predictive factors, and behavioral correlates. *Pediatrics, 80*(5), 664-671.

Zwaanswijk, M., Van Der Ende, J., Verhaak, P. F. M., Bensing, J. M., & Verhulst, F. C. (2005). Help-seeking for child psychopathology: Pathways to informal and professional services in the Netherlands. *Journal of the American Academy of Child & Adolescent Psychiatry,44*(12), 1292-1300.

Chapter 2

Help-Seeking for Pediatric Insomnia: Motivators and Locations for Help

Adam T. Newton

2.1 Introduction

Parenting around bedtime is challenging – especially during preschool and early-school ages. Approximately 25% of children age 2-10 have problems going to sleep (bedtime resistance), staying asleep (night-waking), or with early morning waking (e.g., Meltzer, Johnson, Crosette, Ramos, & Mindell, 2010). Collectively, these sleep problems are known as pediatric insomnia. Pediatric insomnia can affect both children's and parents' sleep quality and daytime functioning (e.g., daytime sleepiness, decreased concentration), lead to concurrent or future behavioural problems among children (Gregory & O'Connor, 2002; Touchette et al., 2007; Zuckerman, Steveson, & Bailey, 1987), impact academic functioning (Curcio, Ferrara, & De Gennaro, 2006), and can stress the parent-child relationship (Erath & Tu, 2011). Although pediatric insomnia is prevalent and impactful, next-to-nothing is known about how parents seek help and where parents turn for help for pediatric insomnia. This study was the first, to our knowledge, to explore help-seeking networks for pediatric insomnia. This study investigated the informal, informational, and formal help sources related to pediatric insomnia, as well as the factors that motivate parents to seek help for pediatric insomnia.

Despite the paucity of research on help-seeking for pediatric insomnia, it is likely that these help-seeking mechanisms and models mirror those from the children's mental health help-seeking literature. The Revised Network Episode Model (Revised NEM; Costello et al., 1998) is a mental health help-seeking model which describes a family unit, led by the parent, navigating a health care system. The Revised NEM is a complex model of help-seeking that includes child and parent sociodemographic factors, family social support systems, and treatment systems. Explicit in this model is the involvement of informational, informal, and professional help-seeking. In this model,

help-seeking is not an isolated process, but rather it involves a network of individuals and sources of information.

The children's mental health help-seeking literature also provides some guidance for how help-seeking for pediatric insomnia may progress. For example, the Gateway Provider Model (Stiffman, Pescosolido, & Casbassa, 2004), which was derived from the Revised NEM, asserts the presence of key members within the parent and child's community who identify health problems and motivate the parent to seek treatment (e.g., family members, friends, and teachers).

As such, help-seeking often begins with informal (e.g., family, friends, teacher) or informational (internet, books) sources. Previous help-seeking research suggests that approximately half of parents will utilize informal sources. Family members, friends, and teachers are key sources of informal help (Zwaanswijk, Van Der Ende, Verhaak, Bensing, & Verhulst, 2005). The key sources for informal help when pediatric insomnia is a concern are not yet known.

When parents recognize a problem, they may also seek formal help. Parents who perceive a child mental health problem are much more likely to seek help than parents who do not (Logan & King, 2001; Pavuluri et al., 1996; Zwaanswijk et al., 2005). It is expected that help-seeking for pediatric insomnia will be similar. However, pediatric insomnia often involves specific daytime consequences on child behaviour or child/ parent functioning that may be different from children's mental health problems in general. The presence of these additional and unique concerns may also motivate formal help-seeking. Many studies have found that behavioural problems (i.e., externalizing symptoms) are often more likely to lead parents to seek help than mood disturbances (i.e., internalizing symptoms; e.g., Wichstrom et al., 2014). Further, if the problem impacts others, the likelihood of help-seeking increases (e.g., Ford et al., 2008). Caregiver burden is frequently cited as a motivating factor for pediatric problems (e.g., Costello et al., 1998; Godoy & Carter,

2013) and it is reasonable to expect that burden may also motivate help-seeking for pediatric insomnia. Again, these motivating factors have yet to be investigated for pediatric insomnia concerns, but are valuable to explore in understanding the influence of diverse motivating factors on parents' decisions to seek help for pediatric insomnia concerns.

Where do parents seek formal help first? Help-seeking for most pediatric problems often begin with a primary care provider [e.g., family physician/ General Practitioner (GP) in Canada, Australia; family physician/GP or pediatrician in the United States]. In the context of pediatric insomnia, this primary care provider may provide an intervention or refer the parent to more specialized services (e.g., sleep clinic, psychologist). However, other formal help-seeking options do exist and can be accessed without referral from a primary care provider. These options include psychologists and other allied health professionals (e.g., occupational therapists, social workers), nurse practitioners, and sleep consultants (also known as sleep coaches). Sleep consultants are relatively new professionals and have been growing in number and legitimacy in recent years. Despite this, the level of training for sleep consultants varies widely, the title is not regulated, and it is a pay-for-access service (Blackburn, 2016; Ingram, Plante, & Matthews, 2015). Regardless of this trend, primary care providers are likely to be the most frequent first contact when pediatric sleep concerns arise, regardless of sociodemographic or child/parent motivating factors.

2.1.1 Study Questions and Hypotheses

This study compared parents who sought formal help for pediatric insomnia ("help-seeking" parents), parents who intended to seek professional help, but did not see a professional ("help wanted, not sought" parents), and parents who did not want professional help for their child ("help not wanted" parents). This design allowed for the comparison between help-seeking intentions (i.e., among "help wanted, not sought" and "help not wanted" parents) and actual help-

seeking behaviours (i.e., among "help-seeking" parents). There were four primary questions in this study:

1. ***Which informal and informational sources do parent seek/ expect to seek help from?***

Parents were expected to seek support from a variety of informal (e.g., partner, friends, family) and informational (e.g., internet, books, pamphlets) sources. There is next to no research exploring where families turn for help for pediatric insomnia.

2. ***Which professionals do parents seek/ expect to seek help from first?***

It was expected that most families will begin help-seeking with their family physician/ GP (Canada, Australia, United States) or pediatrician (United States). These professionals are considered primary care physicians.

3. ***Which factors motivate/ would motivate parents to seek help?***

The child and parent factors that motivate help-seeking were investigated. The factors that motivated help-seeking (e.g., among "help-seeking" parents) were expected to be similar to factors expected to motivate parents to help-seek (e.g., among "help wanted, not sought" and "help not wanted" parents). In other words, the factors that parents expected to motivate help-seeking are expected to be similar to the factors that actually motivated help-seeking.

4. ***Do Sociodemographic Factors or Motivating Factors Predict Where Parents Would Seek Help First?***

This study explores whether sociodemographic or motivating factors predict where parents sought/ expected to seek help first. Family doctors/ GPs/ pediatricians are expected to be the dominant first source of help-seeking, regardless of sociodemographic or motivating factors.

2.2 Method

2.2.1 Participants

Participants were the primary caregivers (i.e., parents) of children age 2-10 years old, who were responsible for the night time care of the child reported on (N = 407). Exclusion criteria were: (a) parents unable to read health-related information in English with little to no assistance; (b) child had a parent-reported diagnosis of a mental or physical health condition that could account for a sleep disturbance; specifically, (i) Attention Deficit Hyperactivity Disorder (e.g., Sung, Hiscock, Sciberras, & Efron 2008), (ii) Autism Spectrum Disorders (e.g., Tudor, Hoffman, & Sweeney, 2012), (iii) developmental delay (e.g., Goodlin-Jones, Tang, Lui, & Anders, 2008), or (iv) childhood cancers (e.g., Linder & Christian, 2013); or (c) child taking any medication that could negatively influence sleep (e.g., stimulant medication; Becker, Froehlich, & Epstein, 2016).

2.2.2 Recruitment

Parents were recruited using online social media sources (e.g., Facebook, Twitter), parenting blogs, and online classified advertisement sites (e.g., Kijiji, RedFlagDeals). Paid Facebook advertisements targeted to parents of children 2-10 years old, who resided in Canada, the United States, or Australia, using Facebook's Ad Manager Tool. Parenting blogs and online classified advertisements also targeted Canadian, Australian, and American parents (see Appendix L for recruitment advertisement text).

2.2.3 Procedure

This study was part of a larger project (Corkum, Reid, Coulombe, & Blunden, 2015) which examined validation of recently developed questionnaires (e.g., Bessey, Coulomber, Smith, & Corkum, 2013; Coulombe & Reid, 2014) as well as help seeking. Ethics approval for the larger

study was received from the Western University Health Science Research Ethics Board and the IWK Health Centre Research Ethics Board (See Appendix A for ethics approval letters).

Interested parents were directed to an online screening questionnaire that determined their eligibility for the study. This screener ascertained whether the parent/child met the study criteria. Situations for which the eligibility was uncertain were reviewed by A. Newton and G. J. Reid. "Ballot stuffing" situations (where one person was believed to complete the screener multiple times) were screened by identifying duplicate IP Addresses and longitude/latitude location data. The Letter of Information/ Consent Form is presented in Appendix B.

In the larger project, parents completed three online steps, supported by the Qualtrics Survey Management Platform (Qualtrics, 2017). Step 1 involved a series of questionnaires on child sleep habits, parents' thoughts and knowledge of children's sleep, general child and parent functioning, and parents' help-seeking behaviours for pediatric insomnia. As this study was internet-based, steps were taken to ensure the respondent was a credible, human respondent. These steps included comparing respondent-stated postal codes to Qualtrics-generated location data and verifying the email address used by the participant. Parents were compensated with a $10 CAD gift card for completing Step 1. Step 2 was completed two weeks later; parents completed a 7- day sleep diary. Parents were compensated with a further $5 CAD gift card for completing this step. Step 3 was completed immediately after Step 2 and had parents complete a subset of the child sleep habits and parents' thoughts and knowledge of children's sleep questionnaires again, to establish test-retest reliability for the larger project. Parents were compensated with a further $10 CAD gift card for completing this step. This study only used measures from Step 1. Figure 2.1 presents parents' progress to Step 1.

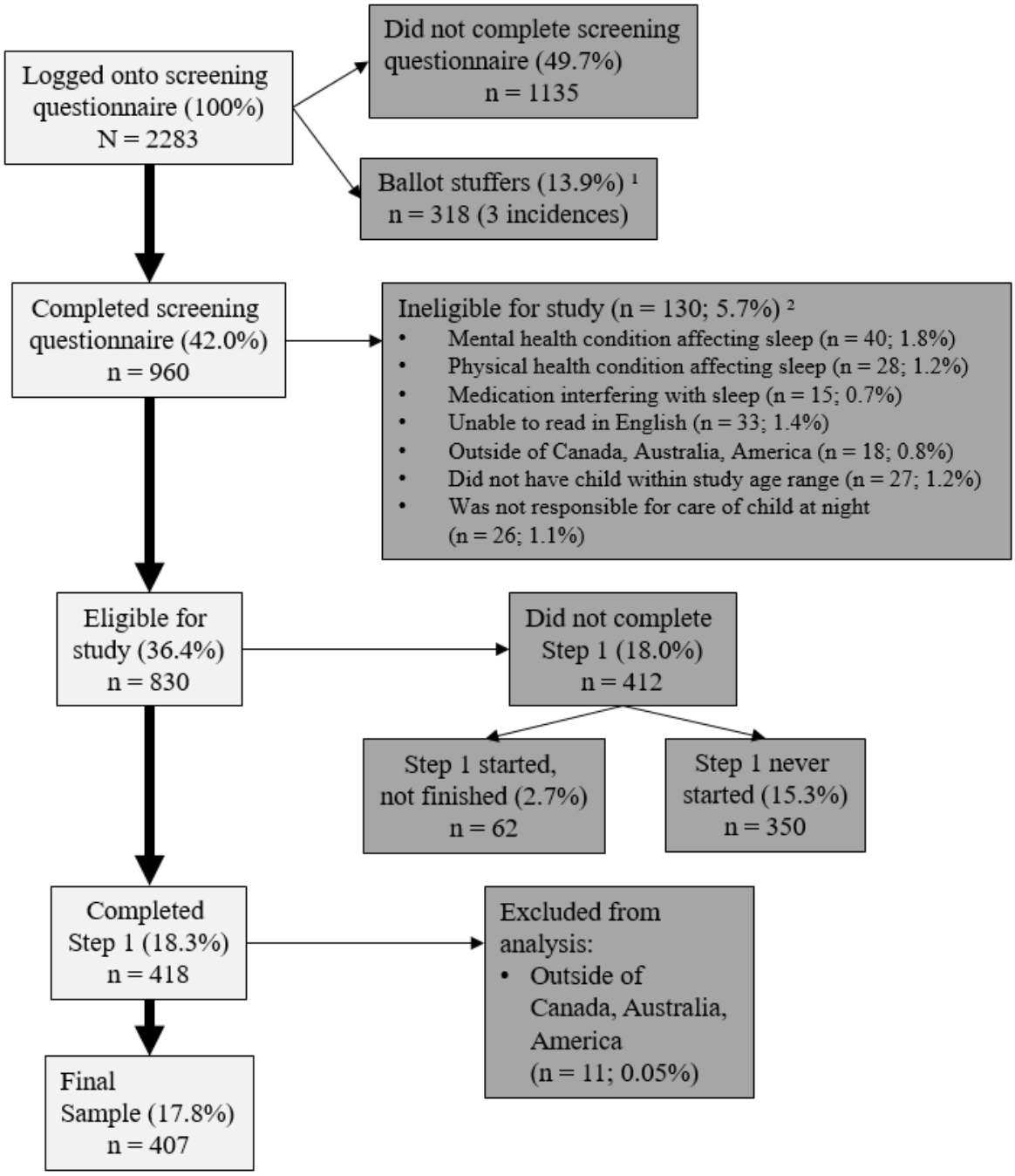

Figure 2.1. Thinking About Sleep study participant flowchart. Note: [1] the n =318 ballot stuffing situations were believed to be the result of three individuals completing the screening survey multiple times with fake credentials; [2] 57 respondents (2.5%) met more than one exclusion criteria.

2.2.4 Measures

Only the measures used in the present study are described.

Demographics. Parents reported on their age, employment status, relationship with the child, ethnicity, education level, country of residence, and family income. Categories for ethnicity, educational attainment, and family income were based on the 2011 Canadian Census (Statistics Canada, 2011) with adjustments made to capture variation across the three countries. Parents also reported on their child's age, sex, and birth order.

Help-seeking

Parents were asked about their help-seeking for their child's sleep problem. Questions were developed for the current study based on previous work on help-seeking for children's mental health services (Reid et al., 2006; Reid, Tobon, & Shanley, 2008; Shanley, Reid, & Evans, 2008). Parents were first asked, "In the past 6 months, did you ever talk to a professional for help with your child's sleep problem?" A series of follow-up questions were worded slightly differently for these two groups of parents.

Parents who sought help for a child sleep problem were asked two questions that reflected their past behavior; parents who had not sought help were asked questions that reflected what they would do, if the child had problems with sleep. All parents were asked questions related to the following: (1) non-health-care-professional sources of help-seeking (i.e., the informal advice and informational sources used); (2) the first professional contacted for help with pediatric insomnia; and (3) motivating factors for help-seeking (which consequence of the sleep problem for the child and parent was most influential on the parent's decision).

Details on each of these questions are presented below and the full text versions of these questions are available upon request.

Help-seeking status. Parents who reported talking to a professional for help with their child's sleep problem in the past 6 months were classified as "help-seeking." These parents reported on their actual help-seeking behaviours for subsequent questions. Parents who did not seek help, were asked "In the past 6 months, was there ever a time where you felt professional help might be needed, but you did not seek help?" Parents who responded "yes" were classified as "help wanted, not sought" parents. In other words, these parents contemplated seeking help for their child's sleep problem but did not follow through to actually obtain professional help. Parents who responded "no" to the second question were classified as "help not wanted" parents. In other words, these parents did not feel that professional help was warranted. Similar approaches have been used in the children's mental health help-seeking literature (e.g., Oh & Bayer, 2017; Oh, Mathers, Hiscock, Wake, & Bayer, 2015; Verhulst & van der Ende, 1997). "Help wanted, not sought" and "help not wanted" parents reported on the help-seeking behaviours they would expect, if the parent did decide to seek help.

Non-health-care-professional sources of help-seeking. Parents were asked about informal (i.e., sources that did not include health care professional) sources which included informal persons they sought/would seek advice from (e.g., family members, friends, teachers, religious leaders, alternative practitioners) and about informational sources they utilized/would utilize (e.g., internet, phoneline, books). Parents selected all informal/ informational sources that applied. This question was based on previous studies investigating parents' mental health help-seeking behaviour (Angermeyer, Matschinger, & Riedel-Heller, 1999; Pavuluri, Luk, & McGee,

1996; Reid et al., 2006). The frequency of each informal and informational help-seeking source was used to index informal help-seeking.

First professional contacted. Help-seeking parents reported the first professional the pediatric insomnia was discussed with (e.g., Family Doctor/ General Practitioner, psychologist, public health unit). Non-help-seeking parents reported the first professional they *would* consult if their child had pediatric insomnia that required professional assistance. Specifically, non-help-seeking parents were asked "If you felt you needed professional help for your child's sleep problem, which professional or agency would you talk to first?" This question was based on previous studies investigating parents' mental health help-seeking behaviour (Reid et al., 2006; Shanley et al., 2008).

Motivating factors for help-seeking. Help-seeking parents reported on the main negative impact of the pediatric insomnia on the child's functioning (e.g., fatigue, mood disturbance, behavioural problems) and the main negative impact of the pediatric insomnia on their own/family functioning (e.g., parent's sleep, daytime functioning, partner's sleep) that influenced their decision to seek help. Non-help-seeking parents reported on the impact on their child's functioning and on their own/ family functioning that would make the parent more likely to seek help. These items were based on the Behavioural Insomnia Questionnaire (e.g., Corkum et al., 2016). Parents were asked to select one negative impact on the child's functioning and one negative impact on the parent/family functioning from a list of options.

2.3 Data Analyses

Data analyses were conducted in SPSS (Version 23; IBM, 2015). First, descriptive statistics (e.g., frequencies) were used to examine the help-seeking outcome variables (i.e.,

informal/informational sources of help, first professional contacted, and motivators for help-seeking). Second, differences in the help-seeking outcome variables between help-seeking statuses (i.e., "help-seeking", "help wanted, not sought", and "help not wanted") were examined using chi-square. Where chi-square analyses were significant, post-hoc comparisons were made between help-seeking statuses and outcomes using standardized residuals. Standardized residuals are interpreted like z-scores (e.g., MacDonald & Gardner, 2000; Sharpe, 2015). Bonferroni methods were used to adjust for multiple comparisons. Third, two univariate multinomial logistic regression were used to determine if help-seeking status predicted the main child and parent/family motivating factors for help-seeking. Finally, a multivariate multinomial logistic regression analysis was used to determine if sociodemographic variables and factors that motivated help-seeking predicted the first professional parents contacted or would contact.

2.4 Results

2.4.1 Sample Characteristics

Parent demographic characteristics. Parents were from Canada (82.1%), the United States (13.7%), and Australia (4.2%). Parents were mostly white (90.4%). Most parents were 35-39 years old (36.6%) or 30-34 years old (35.9%). Nearly all parents were the birth mother of the child being reported on (93.9%). Most parents were either employed full-time (42%) or homemakers/ at home parents (23.8%). Table 2.1 provides descriptive statistics for parents' demographics.

Child demographic characteristics. On average, the children were 4.17 years old (*SD* = 1.92 years old). The majority, 84%, were preschool aged (2 - 5.5 years old); 55.5% were boys. Table 2.1 provides descriptive statistics for children's demographics.

Table 2.1

Child, Parent, and Family Demographic Characteristics

Characteristic	Category	% (*n*) or *M* (*SD*)
Parent		
Age		
	21-24 years	2.2% (9)
	25-29 years	11.5% (47)
	30-34 years	35.9% (146)
	35-39 years	36.6% (149)
	40-44 years	11.5% (47)
	45 years or older	2.2% (9)
Employment Status		
	Employed full-time	42.0% (171)
	Employed part-time	16.2% (66)
	On maternity leave	11.8% (48)
	Homemaker/at-home parent	23.8% (97)
	Other (e.g., student, unemployed)	6.2% (25)
Relationship with Child		
	Birth Mother	93.9% (382)
	Birth Father	4.4% (18)
	Other (e.g., grandparent, adoptive parent)	1.5% (7)
Ethnicity		
	White/Caucasian	90.4% (368)
	Asian (e.g., Chinese, Japanese, South Asian, West Asian)	3.5% (14)
	Black	0.5% (2)
	Native/ Aboriginal/ Indigenous	1.4% (6)
	Other	4.2% (17)
Education Level		
	Some high school	1.0% (4)
	High school graduate/ GED	4.7% (19)
	Some post-secondary	10.3% (42)
	Diploma/ certificate from college or nursing school	12.7% (52)
	Undergraduate degree	41.5% (169)
	Master's degree	18.6% (76)
	Professional degree (e.g., MD, Law degree)	0.9% (4)
	Earned doctorate (e.g., PhD., D.Ed., D.Sc.)	5.3% (22)
	Other (e.g., Graduate degree after undergraduate)	5.0% (19)
Country of Residence		
	Canada	82.1% (334)
	United States	13.7% (56)

	Australia	4.2% (17)
Family		
*Income**		
	Under $40,000	12.5% (51)
	$40,000 - $60,000	11.2% (46)
	$61,000 - $80,000	13.9% (57)
	$81,000 - $100,000	18.4% (75)
	Over $100,000	39.5% (160)
	Prefer not to answer	4.4% (18)
Child		
Age		4.17 (1.92)
	Preschool Age	84.0% (342)
	School Age	16.0% (65)
Sex		
	Male	55.5% (226)
Birth Order		
	Oldest	43.9% (179)
	Middle	8.1% (33)
	Youngest	20.8% (85)
	Only	25.9% (105)
	Multiple (e.g., twin, triplet)	1.2% (5)

Note. N = 407; *Income was not converted to a common currency, rather it was left in the currency of the participant's country (i.e., Canadian Dollars, Australian Dollars, or US Dollars).

2.4.2 Preliminary Analyses

Help-seeking status. Parents were classified as "help-seeking", "help wanted, not sought", or "help not wanted" (see Method for full details). Twenty-two parents were "help-seeking" parents (5.4%); these parents had reported seeking professional help for pediatric insomnia at some point during the past six months and thus reported on their actual help-seeking experience. In addition, 46 were "help wanted, not sought" parents (11.3%); these parents had not sought professional help for pediatric insomnia, but indicated that they had considered seeking help at some point during the past six months. Finally, 339 were "help not wanted" parents (83.3%); these parents did not seek professional help for pediatric insomnia, nor did they consider seeking professional help at any point during the past six months. Thus, "help wanted, not sought" and "help not wanted" parents reported on their expected help-seeking behaviour. There were no significant differences in demographic variables across the three help-seeking groups. (See Table C.1 in Appendix C).

Coding for multinomial logistic regressions. The original frequencies for demographic variables are described above. To conduct the multinomial logistic regressions to determine (1) help-seeking status predicting the main child and parent motivating factors for help-seeking and (2) the predictors of first professional contact for help-seeking, the above variables had to be recoded. Both the outcome and the predictor variables needed to be re-grouped; this was done conceptually and ensured adequate cell sizes prior to multinomial logistic regression analyses (e.g., Tabachnick & Fidell, 2001).

The first outcome variable was child factors motivating help-seeking, which were combined into five categories (0 = mood/irritability, 1 = impaired social/ academic functioning, 2 = behavioural problems, 3 = inattention/ proneness for errors, and 4 = fatigue/daytime sleepiness/

reduced energy). This grouping allowed for the comparison of factors to do with child tiredness (i.e., fatigue, daytime sleepiness, and reduced energy) to be compared to other negative impacts of pediatric insomnia on the child's functioning (e.g., behavioural problems, irritability).

The second outcome variable was parent factors motivating help-seeking, which were combined into three categories (0 = parent's own sleep, 1 = parent's own daytime functioning, 2 = impact on the rest of the family or impact on a partner's sleep/daytime functioning). This grouping allowed for the comparison of two distinct consequences of pediatric insomnia on the parent (i.e., their own sleep and their own daytime functioning) to impacts external to the parent (e.g., their partner's daytime functioning or impacts on other family members). See Table F.1 in Appendix F for the distribution of these values in these revised categories.

The final outcome variable, professional contacted, was combined into three categories (0 = primary provider (family doctor/ GP and pediatrician), 1 = allied health professionals (i.e., psychologist, social worker, occupational therapist, chiropractor, mental health clinic/agency, nutritionist), and 2 = other professional/ agency (i.e., sleep consultant, practitioner nurse/ public health nurse/ nurse, public health unit, counsellor, naturopath/homeopath, another professional/agency). These groups represented conceptual groupings of health care professionals. For example, family doctors and pediatricians are primary providers in the United States.

Predictor variables were also recoded. Sociodemographic variables were recoded as follows: (1) Parent age was combined into three categories (0 = 20-29 years old, 1 = 30-39 years old, 3 = 40 years and older). (2) Parent employment status was combined into four categories (0 = employed full-time, 1 = unemployed/ student/ employed part-time, 2 = on maternity leave, 3 = at-home parent). (3) Parent education categories were combined to four categories (0 = high school graduate or below, 1 = some post-secondary and college/vocational school graduate, 2 = obtained

undergraduate degree, 3 = obtained an undergraduate degree & further education (e.g., graduate degree/diploma)). (4) Family income was combined into three categories (0 = <$40,000; 1 = $40,000 - $100,000; 2 = >$100,000); parents who responded "prefer not to answer" had their family income imputed (using parent age, education, and country). (5) Child birth orders were combined into four categories (0 = oldest, 1 = middle/multiple (e.g., twins), 2 = youngest, 3 = only child). Ethnicity and the parent's relationship with the child were excluded from the multinomial logistic regression analyses due to poor variability in these variables (i.e., most of the sample was white birth mothers of the child reported on).

2.4.3 Which informal and informational sources do parent seek/ expect to seek help from?

Parents often seek help or support from informal and informational sources before formal help-seeking. Therefore, these informal and informational help sources are investigated first.

Informal sources. Across help-seeking statuses, the most frequently endorsed expected/actual informal sources of help were partner/ friend (70.4% overall) and family members (69.5% overall). Parents differed in some of their actual and expected informal help sources. Specifically, a greater proportion of "help wanted, not sought" (37.0%) and "help not wanted" (20.9%) parents expected to seek help from an alternative practitioner than "help-seeking" parents (9.1%; Standardized Residual = 6.26, $p < .001$). A greater proportion of "help seeking" parents (13.6%) reported that they did not seek help from any informal persons, than "help wanted, not sought" (2.2%; Standardized Residual = -2.10, $p = .018$) and "help not wanted parents" (3.2%; Standardized Residual = -5.17, $p < .001$). A greater proportion of "help-seeking" parents (22.7%) reported seeking informal support from other sources (i.e., listed as "other" with an open text box in the questionnaire) than "help wanted, not sought" (8.7%; Standardized Residual = -1.99, p =

.023) and “help not wanted” parents expected to (5.3%; Standardized Residual = -5.17, $p < .001$). The frequencies for informal help sources are shown in Figure 2.2.

Informational. Across the three help-seeking statuses, the most frequently endorsed actual/ expected sources of informational help were the internet (87.3% across all 3 groups combined), books (78.2%), and pamphlets (37.7%). Parents differed in some of their expected and actual informational help sources. Specifically, a greater proportion of “help wanted, not sought” parents (34.8%) indicated they would seek sleep information from magazines compared to “help-seeking” parents (9.1%; Standardized Residual = -2.04, $p = .020$). Similarly, a greater proportion of “help not wanted” parents (22.4%) indicated they would seek sleep information from magazines compared to “help-seeking” parents (9.1%; Standardized Residual = 8.13, $p < .001$). Lastly, a greater proportion of “help-seeking” parents (9.1%) reported seeking no informational help than “help not wanted” parents (0.6%; Standardized Residual = -5.19, $p < .001$). These results are summarized in Figure 2.3.

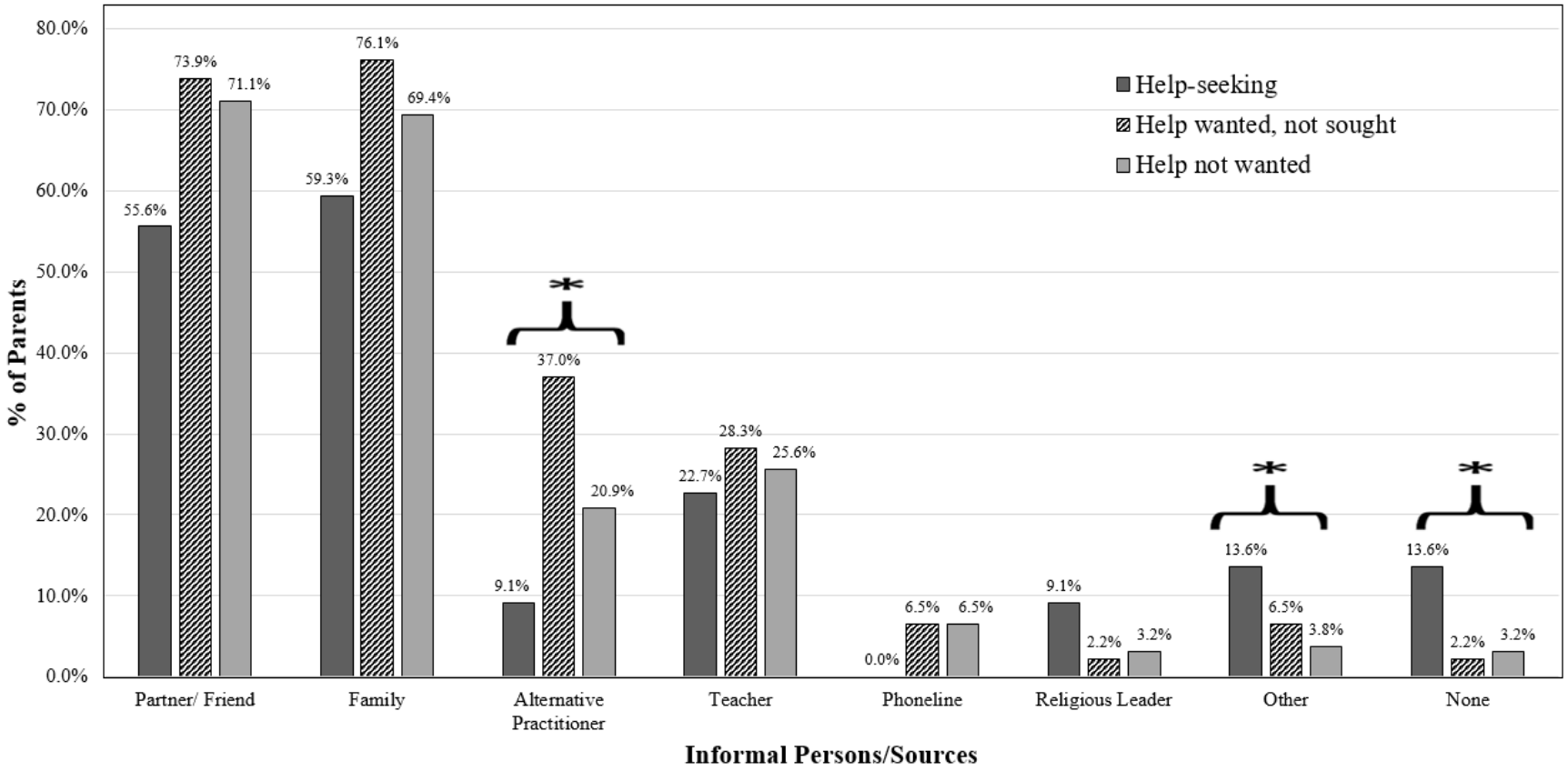

Figure 2.2. Actual/ expected source of informal help or support for pediatric insomnia by help-seeking status.
Note. * $p < .05$. See Appendix D for "Other" Informal Persons parents reported seeking help from.

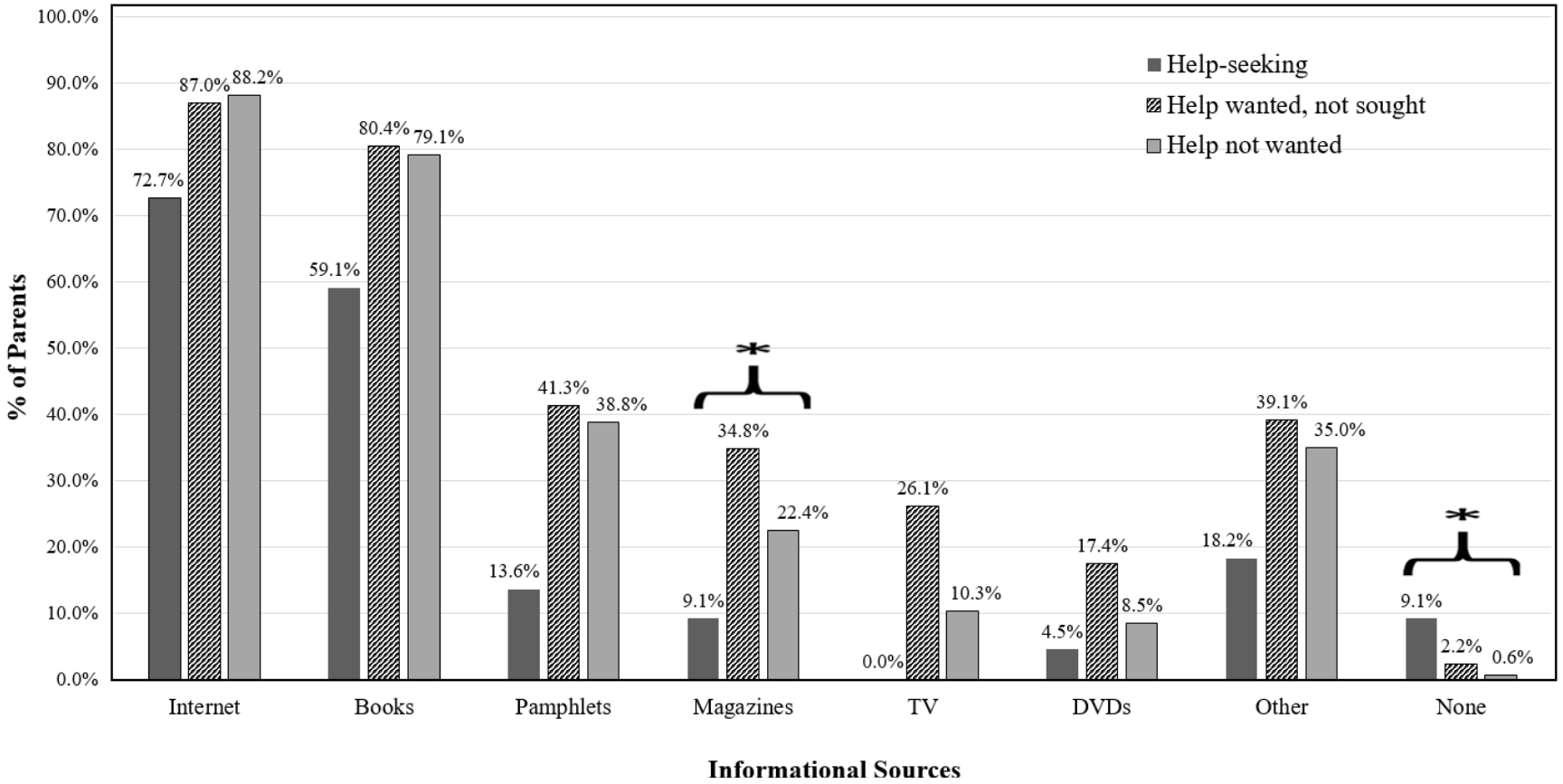

Figure 2.3. Actual/ expected source of informational help or support for pediatric insomnia, by help-seeking status.
Note. * $p < .05$. See Appendix D for "Other" informational sources parents reported seeking help from.

2.4.4 Which professional do parents seek/ expect to seek help from first?

Some parents progress from informal help-seeking to formal help-seeking by contacting a health care professional. Parents did not differ in the professional they first sought help from or expected to seek help from (χ^2 (12) = 11.70, p = .502). Most parents, regardless of help-seeking status, indicated they saw, or would see, a primary care provider (i.e., family doctor, general practitioner, or pediatrician) as their first point of professional contact (79.9% overall). The frequencies for the first actual/ expected professional contacts are presented in Figure 2.4.

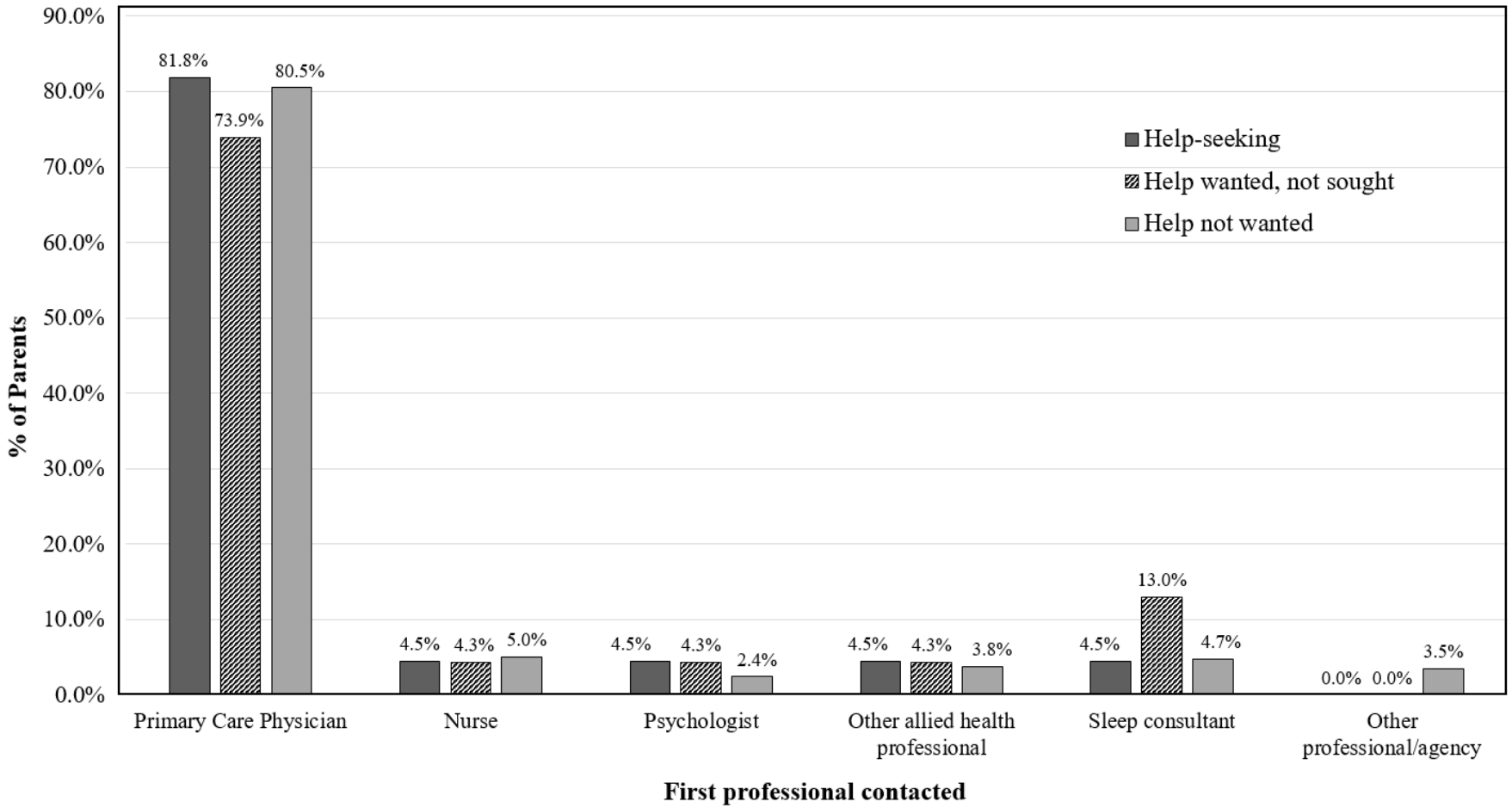

Figure 2.4. Parents' actual/expected first point of professional contact for pediatric insomnia by help-seeking status.

2.4.5 Which factors motivate/ would motivate parents to seek help?

The child and parent factors that motivate help-seeking were also investigated.

Child motivating factors. The most frequently endorsed child factors that motivated help-seeking (i.e., among "help-seeking" parents) were mood/irritability concerns (35.0%) and behavioural problems (30.0%). In contrast, the most frequently endorsed child factor that was expected to motivate help-seeking (i.e., among "help wanted, not sought" and "help not wanted" parents) was behavioural problems (43.5% and 33.8%, respectively).

Help-seeking statuses differed in the distributions of main child factors that motivated or would motivate help-seeking (χ^2 (14) = 25.87, p = .027). There were 18 post-hoc comparisons made to investigate these differences (Bonferroni correction for multiple comparisons: p = .00278). These results are summarized in Figure 2.5. There were two significant differences. First, a greater proportion of "help-seeking" parents endorsed the impact of mood/irritability concerns (35.0%) on their decision to seek help than "help wanted, not sought" (8.7%; Standardized Residual = 3.02, p = .00256) and "help not wanted" parents (7.1%; Standardized Residual = 8.71, p < .001). Second, a greater proportion of "help not wanted" parents endorsed the impact of their child's fatigue (19.7%) on their expected decision to seek help than "help wanted, not sought" (10.9%; Standardized Residual = 4.94, p < .001) and "help-seeking" parents (10.0%; Standardized Residual = 5.66, p < .001).

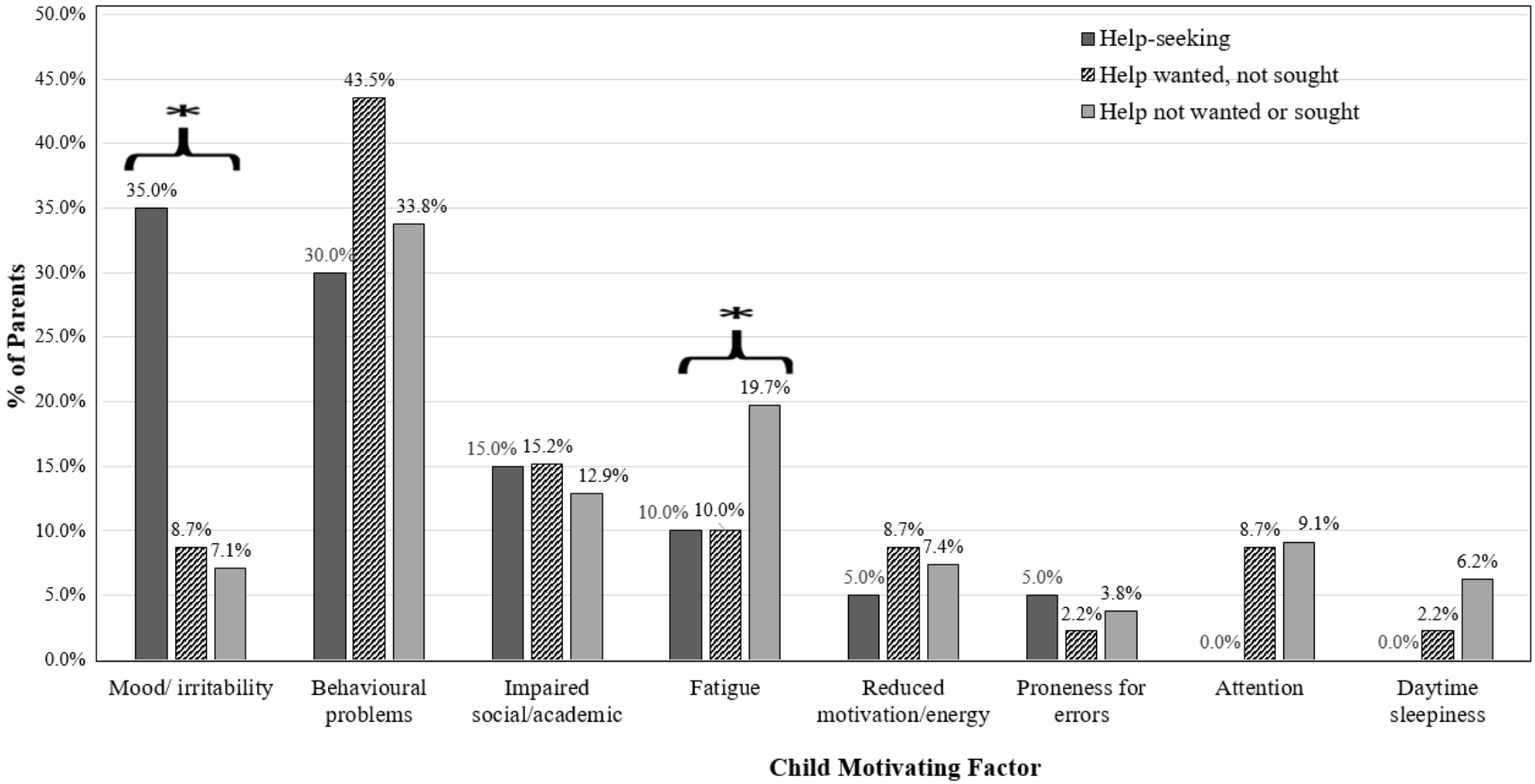

Figure 2.5. Actual/ expected child factors that motivate help-seeking for pediatric insomnia, by help-seeking status.
Note. * $p \leq .00278$ (with Bonferroni correction).

Predicting main child motivating factor from help-seeking status. A multinomial logistic regression was used to determine if help-seeking status predicted the main child factor that motivated/ would motivate help-seeking. Overall, help-seeking status was a significant predictor of the main motivating child factor that would motivate help-seeking [Likelihood Ratio (LR) χ^2 (8) = 16.62, Nagelkerke Pseudo R^2 = .04, p = .034]. The unadjusted odds ratios for this model are presented in Table 2.2 (Table E.1 in Appendix E presents the full results from the regression). Relative to fatigue/daytime sleepiness, "help not wanted" parents were .11 times (95% CI = .02-.38) less likely as "help-seeking" parents to endorse mood disturbance/ irritability concerns as the main negative impact on the child's functioning that led/would lead the parent to seek help, compared to children's fatigue/daytime sleepiness as the reference category.

Table 2.2

Unadjusted Odds Ratios Predicting Main Child Factor Motivating Help-Seeking from Help-Seeking Status

Predictor	**Behavioural Problems** [b]	**Attention/ concentration/ error proneness** [b]	**Impaired academic/ social functioning** [b]	**Mood disturbance** [b]
	OR [95% CI]	*OR [95% CI]*	*OR [95% CI]*	*OR [95% CI]*
Help-seeking status				
Help wanted, not sought [a]	1.00 [.21-4.86]	1.50 [.12-18.36]	.70 [.11-4.54]	.17 [.03-1.02]
Help not wanted [a]	.51 [.13-2.10]	1.18 [.12-11.64]	.39 [.08-2.02]	.11 * [.02-.38]

Note. [a] "Help-seeking" is category group; [b] Fatigue/ daytime sleepiness is reference category.
* $p < .05$.

95% CI = 95% Confidence Interval.

Parent motivating factors. The most frequently endorsed parent factor that motivated help-seeking (i.e., among "help-seeking" parents) and that was expected to motivate help-seeking among "help not wanted" parents was the impact of pediatric insomnia on the parent's own daytime functioning (57.9% and 45.5%, respectively). The most frequently endorsed parent factors that were expected to motivate help-seeking among "help wanted, not sought" parents were the impact of the pediatric insomnia on the parent's own daytime functioning (32.6%) and on the rest of the family (37.0%). However, the distributions of main parent factors that motivated or would motivate help-seeking did not differ by help-seeking status (χ^2 (8) = 15.28, p = .054). These results are summarized in Figure 2.6.

Predicting main parent motivating factor from help-seeking status. A multinomial logistic regression was used to determine if help-seeking status predicted the main parent factor that motivated/ would motivate help-seeking. As described in Preliminary Analyses, some motivating factors were combined conceptually prior to analysis. Overall, help-seeking status was not a significant predictor of the main motivating parent factor that would motivate help-seeking [LR χ^2 (4) = 8.32, p = .08]. The unadjusted odds ratios for this model are presented in Table 2.3. The betas and Wald statistics are presented in Table E.2 in Appendix E. These multinomial logistic regression results suggest that help-seeking status does not predict differential odds in the motivating parent factors that led/ would led parents to seek help for a child sleep problem.

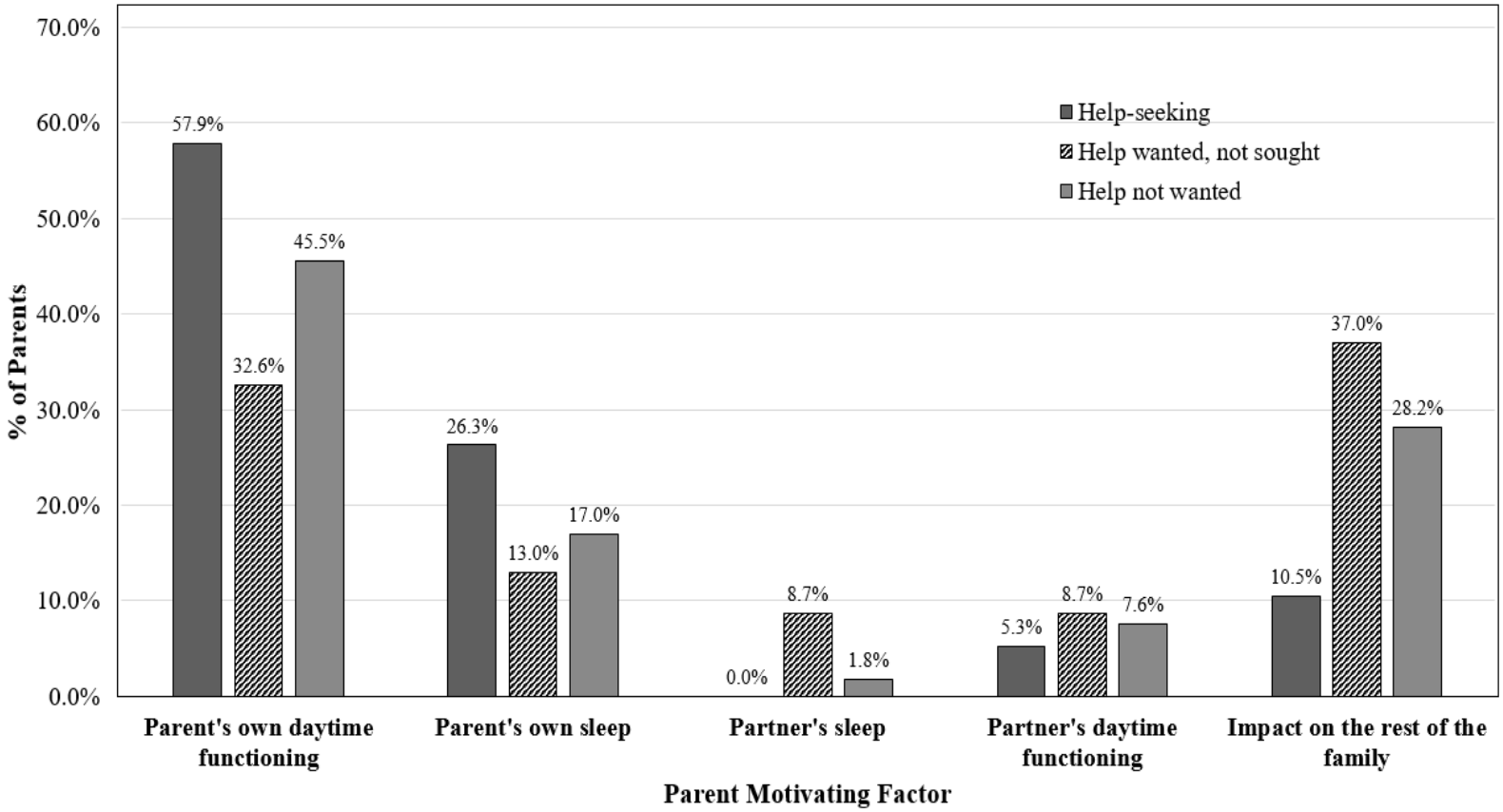

Figure 2.6. Actual/ expected parent factors that motivate help-seeking for pediatric insomnia, by help-seeking status.

Table 2.3

Unadjusted Odds Ratios Predicting Main Parent Factor Motivating Help-Seeking from Help-Seeking Status

	Parent's own sleep [b]	**Parent's own daytime functioning [b]**
	OR *[95% CI]*	*OR* *[95% CI]*
Help-seeking status		
Help wanted, not sought [a]	.16 * [.03-.89]	.17* [.04-.73]
Help not wanted [a]	.28 [.06-1.19]	.33 [.09-1.22]

Note. [a] "Help-seeking" is reference category; [b] "Partner's daytime functioning or sleep and impact on rest of the family" is reference category.

* $p < .05$.

95% CI = 95% Confidence Interval

2.4.6 Do Sociodemographic Factors or Motivating Factors Predict Where Parents Would Seek Help First?

Parents most frequently begin help-seeking with their primary care provider. A minority of parents began/would begin help-seeking with an allied health professional (e.g., psychologist or social worker) or another health professional (e.g., public health nurse, sleep consultant). Sociodemographic factors and main child and parent motivating factors were used to predict the first professional parents sought or would seek help from, using multinomial logistic regression.

First, the relations between each factor and first professional contact were assessed in univariate models. Only child age was a significant univariate predictor of first professional contacted [LR χ^2 (2) = 9.08, Nagelkerke Pseudo R^2 = .03, p = .011]. Second, the sociodemographic variables and main child and parent motivating factors were entered into a multivariate multinomial logistic regression. Child age remained the only significant predictor – none of the other sociodemographic factors, nor the child or parent motivating factors were significant. The multivariate Likelihood Ratio chi-square did not reach significance and the model had a poor fit [LR χ^2 (46) = 52.43, p = .239; Pearson Goodness of Fit χ^2 (682) = 789.19, p = .003]. In the adjusted model, parents of preschool-age children were .11 times (95% CI = .02-.61) less likely than parents of school-age children to go/ intend to go to an allied health professional, compared to another health professional. The unadjusted and adjusted odds ratios are presented in Table 2.4 (see Appendix F for all relevant statistics for the univariate and multivariate multinomial logistic regressions).

Table 2.4

Multinomial Logistic Regression Predicting First Professional Contact from Sociodemographic and Motivating Factors

Factors	**Primary Care Provider [a]**		**Allied Health Professional [a]**	
	Unadjusted ORs [95% CI]	*Adjusted ORs [95% CI]*	*Unadjusted ORs [95% CI]*	*Adjusted ORs [95% CI]*
Child age [b]				
Preschool age	.29 * [.09-.96]	.36 [.10-1.31]	.14 * [.03-.57]	.11 * [.02-.61]
Child sex [c]				
Male	1.64 [.92-2.91]	1.68 [.89-3.15]	1.11 [.44-2.80]	1.39 [.46-4.22]
Child birth order [d]				
Only	1.57 [.72-3.42]	1.59 [.65-3.90]	1.33 [.43-4.12]	.88 [.22-3.47]
Middle or multiple (e.g., twins)	.52 [.22-1.24]	.56 [.21-1.51]	.37 [.07-1.95]	.43 [.07-2.64]
Youngest	1.18 [.55-2.53]	1.07 [.44-2.62]	.30 [.06-1.56]	.28 [.05-1.66]
Country of residence [e]				
Australia	.66 [.18-2.46]	.36 [.08-1.67]	2.53 [.47-13.64]	1.83 [.25-13.60]
United States	2.12 [.73-6.16]	1.89 [.60-5.99	3.16 [.77-13.04]	1.92 [.37-9.84]
Family income [f]				
<$40,000	.88 [.35-2.21]	.68 [.25-1.90]	.86 [.18-4.04]	.49 [.07-3.34]
>$100,000	.55 [.30-1.02]	.62 [.29-1.31]	1.00 [.37-2.70]	1.06 [.30-3.74]
Parent education [g]				
High school graduate or below	.86 [.27-2.75]	.51 [.13-2.00]	.52 [.05-5.18]	.25 [.02-3.45]
Some post-secondary or vocational/ college graduate	1.67 [.78-3.55]	1.02 [.44-2.37]	1.14 [.34-3.81]	.73 [.17-3.08]
More than undergraduate	1.01 [.50-2.02]	.95 [.43-2.08]	1.11 [.37-3.34]	.85 [.23-3.20]
Parent age [h]				
20-29 years old	1.78 [.67-4.74]	2.17 [.69-6.82]	2.50 [.65-9.69]	3.99 [.75-21.26]

40 years or older	1.78 [.67-4.74]	1.35 [.47-3.93]	2.00 [.48-8.31]	.86 [.15-5.12]
Parent employment status [i]				
Unemployed/ student/ employed part-time	2.00 [.01-3.00]	1.25 [.46-3.38]	.74 [.74-1.74]	.98 [.22-4.36]
On maternity leave	.77 [.32-1.88]	1.07 [.37-3.12]	.19 [.02-1.67]	.19 [.02-1.67]
At-home parent	.67 [.34-1.33]	.65 [.29-1.47]	.50 [.16-1.57]	.36 [.08-1.66]
Main child factor motivating help-seeking [j]				
Behavioural problems	.48 [.23-.98]	.52 [.24-1.13]	.72 [.21-2.46]	.74 [.18-2.99]
Attention/ concentration/ memory problems/ errors	.93 [.31-2.79]	.73 [.22-2.39]	2.60 [.56-12.02]	1.51 [.24-9.32]
Impaired social/ academic functioning	.92 [.33-2.57]	.99 [.34-2.92]	1.08 [.20-5.87]	1.24 [.20-7.71]
Mood disturbance/ irritability	.86 [.26-2.84]	.92 [.26-3.19]	1.63 [.27-9.66]	1.99 [.28-14.04]
Main parent factor motivating help-seeking [k]				
Parent's own sleep	.59 [.27-1.30]	.46 [.19-1.09]	.35 [.08-1.48]	.24 [.05-1.16]
Parent's own daytime functioning	1.01 [.52-2.00]	.93 [.45-1.94]	.55 [.18-1.62]	.53 [.16-1.77]

Note. [a] Other (non-allied) health professional is reference category; [b] School-aged is reference category; [c] Female is reference category; [d] Oldest is reference category; [e] Canada is reference category; [f] $40,000-$100,000 is reference category; [g] Undergraduate is reference category; [h] 30-39 years old is reference category; [i] Employed full-time is reference category; [j] Fatigue/ daytime sleepiness is reference category; [k] Impact on the rest of the family/ partner's sleep or daytime functioning is reference category. * $p < .05$.

95% CI = 95% Confidence Interval

2.5 Discussion

This study was the first, to our knowledge, to investigate help-seeking networks for pediatric insomnia. The results of this study revealed parents' actual and expected informal, informational, and first professional sources of help were, in many respects, very similar to help seeking for child mental health problems. The main negative impacts on child and parent functioning that motivated or were expected to motivate help-seeking were explored. Unique motivating factors specific to pediatric insomnia were identified and interesting differences emerged between parents who had sought help versus those that did not.

Overall 5.4% of parents reported having sought help for their child's sleep problems in the past six months. This proportion of help-seeking parents was similar to what would be expected, given the children's mental health help-seeking literature. This literature suggests that approximately 20% of parents with a child with a mental health problem will seek help. As a general sample of parents (with and without child with pediatric insomnia) was collected in this study, and given that 20-30% of children will have pediatric insomnia, it was expected that 4-6% of our sample would have sought help for pediatric insomnia.

Informal and Informational help-seeking. Parents sought and expected to seek informal help from a variety of sources, with the most common being from a partner or friend and from family members. Although there was diversity in the specific informal help sources parents sought or expected to seek help from, the majority of parents reported seeking help from at least one informal person. Research from the children's mental health help-seeking literature has also suggested friends and family members as key sources of informal help (e.g., Pavuluri et al., 1996; Reid et al., 2006; Zwaanswijk et al., 2005). However, the rates of seeking help from these sources appears to be lower than among parents who seek help for children's sleep problems. Specifically,

Pavuluri and colleagues (1996) reported about 38% of help-seeking parents reported seeking help from a family member, compared to about 56% in the present sample. More "help-seeking" parents reported that they did not receive support from ***any*** informal person, than was anticipated by parents who did not seek help. This suggests that the informal support help-seeking parents wanted from individuals within their social networks may not have been present or available while pediatric insomnia was a concern. This in turn may have led them to actually seek professional help. Alternatively, the non-help seeking parents may have been overestimating the actual help that would provided if they sought help for their child's sleep problems from informal sources.

Parents also sought and expected to seek information from a range of sources and most commonly endorsed the internet, books, and pamphlets as key informational sources. It is quite possible that this internet-based study overrepresented parents who would utilize the internet for sleep-related information. Recent research from the children's mental health help-seeking literature is consistent with this finding. For example, Oh, Jorm, and Wright (2009) identified the internet and books as sources of mental health information frequently reported as helpful among parents of children with and without mental health problems. The internet houses a broad range of information about children's sleep and certainly not all this information is scientifically sound. However, as parents become increasingly reliant on the internet for sleep information, empirically-driven organizations have responded by establishing informative, research-based web platforms (e.g., babysleep.com published by the Pediatric Sleep Council). There is a need to guide parents toward these research-based sites and away from more controversial content. Website recommendations may come from the office of a primary care provider or from trusted informal sources, such as a child's school.

Seeking help from professionals. Not surprisingly, most parents sought or expected to seek help from their primary care provider first. With the exception of parents of preschool-age children being less likely than parents of school-age children to go to an allied health professional first (over another health professional), this result did not differ by sociodemographic characteristics or the actual/ expected child or parent motivating factor. Again, this result is largely consistent with the children's mental health help-seeking literature (Issakidis & Andrews, 2006; Pavuluri et al., 1996; Reid et al., 2006). In an Ontarian sample, Reid and colleagues indicated that family physicians were the second most common first professional contact, behind a children's mental health centre, and that physicians were the most common source of referral to mental health services (Reid et al., 2006). Additionally, results from a large Australian sample suggest that primary care physicians are the first professional contact made for child mental health problems (Issakidis & Andrews, 2006). However, previous research has shown parents rarely raise pediatric insomnia concerns with their primary care provider. In an Australian sample, among families with a child who had a clinically significant sleep problem, only 14% of parents discussed the problem with their primary care provider (Blunden et al., 2004). A recent review of sleep in primary care suggests that primary provider pediatric sleep knowledge varies widely, but is generally below 75% correct (Honaker & Meltzer, 2016). Additionally, the review suggests primary care providers' comfort in assessing and intervening for pediatric sleep concerns is "low to moderate" (Honaker & Meltzer, 2016, p. 37). Further, this review suggests although primary providers are often knowledgeable of best practices for pediatric sleep problems (e.g., graduated extinction and stimulus control), they rarely implement this care (Honaker & Meltzer, 2016). There seems to be somewhat of a lack of knowledge of sleep and sleep interventions among parents and primary providers. At present, there are very few published studies regarding sleep interventions within

primary care (e.g., Reid et al., 2009). Given primary care providers observed lack of knowledge and comfort in assessing and intervening for child sleep problems (Honaker & Meltzer, 2016), distance-based interventions may contribute to the treatment of children begin formal help-seeking through primary care.

Motivating factors in seeking help for pediatric insomnia. A significant minority of parents endorsed "behavioural problems" as the main negative impact of pediatric insomnia that motivated or would motivate help-seeking. A significant proportion of "help-seeking" parents also reported the impact of child mood/ irritability concerns on decisions to seek help. Relatively few parents endorsed impacts to do exclusively with child tiredness (e.g., fatigue, daytime sleepiness, or reduced motivation/ energy); however, a greater proportion of "help not wanted" parents endorsed "fatigue" compared to either "help-seeking" and "help wanted, not sought" parents. These results may suggest that parents who have actively sought help (i.e., "help-seeking") or who have considered seeking help (i.e., "help wanted, not sought") are more likely to believe impacts on the child's functioning beyond tiredness were or would be necessary before seeking professional help. The children's mental health help-seeking literature supports behavioural problems as a predictor of help-seeking (Ford et al., 2008; Wichstrom et al., 2014).

2.5.1 Limitations

This study was limited in some key aspects. First, despite a series of steps to minimize the likelihood of disingenuous respondents, there is ultimately no mechanism to verify with complete certainty that all study respondents were who they reported to be. It is our belief that the respondents who comprised the final sample were credible. Additionally, a recent review has identified the internet as an effective source of recruitment in health research studies (Lane, Armin, & Gordon, 2015). Second, there was a lack of ethnic and informant diversity (i.e., most parents

were white and the birth mothers of the child being reported on). Research has suggested that ethnically-diverse parents differ in their sleep attitudes (Sadeh, Mindell, & Rivera, 2011) and in their willingness to seek parenting-related advice from primary care providers (Dumont-Mathieu, Bernstein, Dworkin, & Pachter, 2006), suggesting non-white respondents may have reported different first professional contacts and motivators than white respondents. Further, mothers and fathers have been found to different significantly in their sleep cognitions (Sadeh, Flint-Ofir, Tirosh, & Tikotzky, 2007). For example, Sadeh and colleagues reported that mothers were more likely than fathers to interpret hypothetical infant sleep situations as distressing, suggesting that mothers and fathers may differ in the main negative impact of pediatric insomnia that motivated or would motivate professional help-seeking (Sadeh et al., 2007). Finally, this study employed a retrospective design. "Help-seeking" parents may have been inaccurate in their recollection of help-seeking behaviours. However, retrospective designs are most commonly employed in children's mental health help-seeking studies (e.g., Reid et al., 2006; Zwaanswijk et al., 2005) and have been used in studies investigating sleep in primary care (e.g., Blunden et al., 2004).

2.5.2 Future Directions

This study began to identify the help-seeking networks for pediatric insomnia. There are still many unanswered questions within this line of research. From this study, we have a growing understanding of where parents seek help for pediatric insomnia concerns. However, the timelines and sequences for parental help-seeking remain unclear. How long do parents wait before seeking help? For children's mental health problems, there is often a prolonged delay between the parent's identification of a problem and help-seeking (e.g., Reid et al., 2006; Shanley et al., 2008). It is unclear whether a similar delay would be present for pediatric insomnia. It is possible some parents may be more likely to adopt a "wait and see" approach, believing the pediatric insomnia to be a

transient developmental stage. Other parents may identify a sleep problem, but not consider the problem severe enough to seek professional help. These specific reasons why parents may not seek help warrant further investigation. Further, parents' specific navigation from informal to formal help-seeking remains unclear. Parents may access a variety of informational or informal sources, prior to formal help-seeking, as the parent conceptualizes the problem and determines whether the potential problem warrants professional attention. For example, a parent may speak to a child's teacher who may comment on the child's sleep and perhaps encourage professional help; however, it is likely that this process is non-linear and complex.

It is also unclear which factors predict help-seeking for pediatric insomnia. Though many parents indicated that negative impacts on the child's behaviour or on the parent's functioning may motivate help-seeking, these factors have yet to be investigated in an empirically-driven model. Chapter 3 will investigate the effect of the presence and severity of concurrent child or parent mental health problems on help-seeking for pediatric insomnia.

2.5.3 Implications

This study provides some implications for pediatric sleep care, help-seeking theory, and parents. First, primary care providers are most often a front door to pediatric insomnia treatments. However, as mentioned in the Honaker and Meltzer (2016) review, primary care providers may not have the knowledge or resources to effectively treat these children. Models of care for pediatric insomnia may benefit from involving stepped-care approaches (e.g., use of distance-based interventions as frontline treatment, then progressing to more specialized care for complex cases). Second, the findings from this study align well with the Revised NEM (Costello et al., 1998). Specifically, factors related to caregiver burden and to concurrent child problems were frequently cited as factors that would motivate parents to seek professional help for pediatric insomnia

concerns. Based on the results of this study, the key factors within the Revised NEM related to help-seeking are co-occurring child problems and parental burden. Third, though there is a variety of information and informal support available to parents, the quality of this information fluctuates greatly. It is important that parents are aware of reliable sources of information for children's sleep problems so that any judgments concerning children's functioning can be safely made. For example, trusted health professionals (e.g., family doctors, psychologists, public health nurses) may recommend research-based websites. Finally, there is growing evidence to support several internet-based interventions for infant insomnia (e.g., Mindell et al., 2011), with research for internet-based interventions for preschool and school aged children currently underway (e.g., Corkum et al., 2016). Internet-based interventions may afford primary care providers intervention options and allow providers to recommend programs, rather than directly intervening.

2.5.4 Acknowledgements

This work was funded by a grant from the Dalhousie Psychiatry Research Fund. Adam Newton received support from the Social Science and Humanities Research Council (SSHRC), the Ontario Graduate Scholarship, and the Better Nights, Better Days Training Program (funded through the Canadian Institute for Health Research).

2.6 References

Angermeyer, M.C., Matschinger, H., Riedel-Heller, S.G. (1999). Whom to ask for help in case of a mental disorder? Preferences of the lay public. *Social Psychiatry Epidemiology, 34*, 202-210.

Becker, S. P., Froehlich, T. E., & Epstein, J. N. (2016). Effects of methylphenidate on sleep functioning in children with attention-deficit/hyperactivity disorder. *Journal of Developmental and Behavioral Pediatrics, 37*(5), 395-404. doi:http://dx.doi.org/10.1097/DBP.0000000000000285

Blackburn, R. A. (2016). An SBSM board of directors statement on sleep coaching. *Behavioral Sleep Medicine, 14*(3), 233-234. doi:http://dx.doi.org/10.1080/15402002.2016.1158031

Blunden, S., Lushington, K., Lorenzen, B., Ooi, T., Fung, F., & Kenny, D. (2004). Are sleep problems under-recognised in general practice? *Archives of Disease in Childhood, 89,* 708-712.

Corkum, P., Reid, G. J., Coulombe, J. A., & Blunden, S. (2015). *Thinking about sleep: Parental cognitions and behavioural sleep problems in children.* Unpublished research protocol.

Corkum, P., Chambers, C., Godbout, R., Gruber, R., Hall, W., Reid, J., Stremler, R., Weiss, S. & Witmans, M. (2016). *Better nights, better days: Improving psychosocial outcomes in children with insomnia, a randomized controlled trial*. Unpublished research protocol.

Costello, E. J., Pescosolido, B. A., Angold, A., & Burns, B. J. (1998). A family network-based model of access to child mental health services. *Research in Community and Mental Health, 9,* 165-190.

Curcio, G., Ferrara, M., & De Gennaro, L. (2006). Sleep loss, learning capacity and academic performance. *Sleep Medicine Reviews, 10*(5), 323-337.

Erath, S. A. & Tu, K. M. (2011). The parenting context of children's sleep. In El-Sheikh, M. (Ed.), *Sleep and development: familial and socio-cultural considerations* (29-47). Toronto: Oxford University Press.

Ford, T., Hamilton, H., Meltzer, H., & Goodman, R. (2008). Predictors of service use for mental health problems among British schoolchildren. *Child and Adolescent Mental Health, 13*(1), 32-40.

Godoy, L., & Carter, A. S. (2013). Identifying and addressing mental health risks and problems in primary care pediatric settings: A model to promote developmental and cultural competence. *American Journal of Orthopsychiatry, 83*(1), 73-88.

Goodlin-Jones, B. L, Tang, K., Liu, J., & Anders, T. F. (2008). Sleep patterns in preschool-age children with autism, developmental delay, and typical development. *Journal of the American Academy of Child & Adolescent Psychiatry, 47*(8), 930-938. doi:http://dx.doi.org/10.1097/CHI.0b013e3181799f7c

Gregory, A. M., & O'Connor, T.,G. (2002). Sleep problems in childhood: A longitudinal study of developmental change and association with behavioral problems. *Journal of the American Academy of Child and Adolescent Psychiatry, 41*(8), 964-971.

Honaker, S. M. & Meltzer, L. J. (2016) Sleep in pediatric primary care: A review of the literature. *Sleep Medicine Reviews, 25*, 31-39.

Issakidis, C., & Andrews, G. (2006). Who treats whom? an application of the pathways to care model in Australia. *Australian and New Zealand Journal of Psychiatry, 40*(1), 74-86. doi:10.1111/j.1440-1614.2006.01746.x

Lane, T. S., Armin, J., & Gordon, J. S. (2015). Online recruitment methods for web-based and mobile health studies: A review of the literature. *Journal of Medical Internet Research, 17*(7), e183.

Linder, L. A., & Christian, B. J. (2013). Nighttime sleep characteristics of hospitalized school-age children with cancer. *Journal for Specialists in Pediatric Nursing, 18*(1), 13-24. doi:http://dx.doi.org/10.1111/jspn.12005

Logan, D. E., & King, C. A. (2001). Parental facilitation of adolescent mental health service utilization: a conceptual and empirical review. Clinical Psychology Science Practice *8,* 319–333.

MacDonald, P.I., Gardner, R.C. (2000). Type 1 error rate comparisons of post hoc procedures for I J chi-square tables. *Educational and Psychological Measurement 60,* 735-754.

Meltzer, L. J., Johnson, C., Crosette, J., Ramos, M., & Mindell, J. A. (2010). Prevalence of diagnosed sleep disorders in pediatric primary care practices. *Pediatrics, 125*(6), e1410-e1418.

Mindell, J.A., Du Mond, C.E., Sadeh. A., Telofski, L.S., Kulkarni, N., & Gunn, E. (2011). Efficacy of an internet-based intervention for infant and toddler sleep disturbances. *Sleep, 34*(4), 451e8.

Oh, E., & Bayer, J. K. (2017). Predicting parents' intentions to seek help for young children's mental health. *International Journal of Mental Health Promotion, 19*(1), 38-49. doi:10.1080/14623730.2016.1276024

Oh, E., Jorm, A. F., & Wright, A. (2009). Perceived helpfulness of websites for mental health information: A national survey of young australians. *Social Psychiatry and Psychiatric Epidemiology, 44*(4), 293-299. doi:http://dx.doi.org/10.1007/s00127-008-0443-9

Oh, E., Mathers, M., Hiscock, H., Wake, M., & Bayer, J. (2015). Professional help seeking for young children with mental health problems. *Australian Journal of Psychology*, *67*(3), 187-195. doi:http://dx.doi.org/10.1111/ajpy.12072

Pavuluri, M. N., Luk, S.L., & McGee, R. (1996). Help-seeking for behavior problems by parents of preschool children: A community study. *Journal of American Academic Child and Adolescent Psychiatry, 35,* 215-222.

Reid, G. J., Evans, B., Brown, J. B., Cunningham, C. E., Lent, B., Neufeld, R., Vingilis, E., Zaric, G., & Shanley, D. (2006). Help – I need somebody: The experiences of families seeking treatment for children with psychosocial problems and the impact of delayed or deferred treatment. *Canadian Health Services Research Foundation.*

Reid, G.J., Stewart, M., Vingilis, E., Dozois, D., Wetmore, S., Jordan, J., Dickie, G., Osmun, T., Wade, T., Brown, J.B. & Zaric, G. (2009). Parenting Matters: Randomized clinical trial of a brief, minimal-contact treatment for preschool-age children with sleep problems. Sleep, 32 (Abstract Suppl) 0267.

Reid, G. J., Tobon, J. I., & Shanley, D. C. (2008). What is a mental health clinic? How to ask parents about help-seeking contacts within the mental health system. *Administration and Policy in Mental Health and Mental Health Services Research, 35*, 241-249.

Sadeh, A., Flint-Ofir, E., Tirosh, T., & Tikotzky, L. (2007) Infant sleep and parental sleep related cognitions. *Journal of Family Psychology*, *21*, 74–87.

Sadeh, A., Mindell, J., & Rivera, L. (2011). “My child has a sleep problem”: A cross-cultural comparison of parental definitions. *Sleep Medicine, 12*(5), 478-482.

Shanley, D. C., Reid, G. J., & Evans, B. (2008). How parents seek help for children with mental health problems. *Administration in Policy and Mental Health and Mental Health Services Research, 35*(3), 135-146.

Sharpe, D. (2015). Your Chi-Square Test is Statistically Significant: Now What? *Practical Assessment, Research & Evaluation 20*(8), 1-10.

Statistics Canada. (2011). *Canadian Population Census, 2011*. Ottawa, ON: Government of Canada.

Stiffman, A. R., Pescosolido, B., & Cabassa, L. J. (2004). Building a model to understand youth service access: The gateway provider model. *Mental Health Services Research, 6,* 189–198.

Sung V., Hiscock H., Sciberras E., & Efron D. (2008) Sleep problems in children with attention-deficit/hyperactivity disorder: Prevalence and the effect on the child and family. *Archives of Pediatric Adolescent Medicine 162,* 336–342.

Tabachnick, B. G., & Fidell, L. S. (2001). *Using multivariate statistics*. Boston: Allyn and Bacon.

Thyde, M., Dumont-Mathieu, B. A., Bernstein, P. H., & Dworkin, L. M. (2006). Role of pediatric health care professionals in the provision of parenting advice: a qualitative study with mothers from 4 minority ethnocultural groups. *Pediatrics, 118* (3) e839-e848.

Tikotzky L., & Sadeh A. (2009). Maternal sleep-related cognitions and infant sleep: A longitudinal study from pregnancy through the first year. *Child Development, 80,* 860-874.

Touchette, É., Petit, D., Séguin, J. R., Boivin, M., Tremblay, R. E., & Montplaisir, J. Y. (2007). Associations between sleep duration patterns and behavioral/cognitive functioning at school entry. *Sleep: Journal of Sleep and Sleep Disorders Research, 30*(9), 1213-1219.

Tudor, M. E., Hoffman, C. D., & Sweeney, D. P. (2012). Children with autism: Sleep problems and symptom severity. *Focus on Autism and Other Developmental Disabilities, 27*(4), 254-262.

Verhulst, F. C., & van der Ende, J. (1997). Factors associated with child mental health service use in the community. *Journal of the American Academy of Child & Adolescent Psychiatry, 36*(7), 901-909. doi:http://dx.doi.org/10.1097/00004583-199707000-00011

Wichstrom, L., Belsky, J., Jozefiak, T., Sourander, A., & Berg-Nielsen, T. S. (2014). Predicting service use for mental health problems among young children. *Pediatrics, 133*, 1054–1060.

Zuckerman, B., Stevenson, J., & Bailey, V. (1987). Sleep problems in early childhood: Continuities, predictive factors, and behavioral correlates. *Pediatrics, 80*(5), 664-671.

Zwaanswijk, M., Van Der Ende, J., Verhaak, P. F. M., Bensing, J. M., & Verhulst, F. C. (2005). Help-seeking for child psychopathology: Pathways to informal and professional services in the netherlands. *Journal of the American Academy of Child & Adolescent Psychiatry,44*(12), 1292-1300.

Chapter 3

Influences on help-seeking decisions for pediatric insomnia:

Why do and why don’t parents seek help?

Adam T. Newton

3.1 Introduction

Pediatric insomnia is the most commonly occurring sleep problem for preschool and school age children, affecting approximately 25% of children 2-10 years old (Simola et al., 2012; Blader, Koplewicz, Abikoff, & Foley, 1997; Zuckerman, Stevenson, & Bailey, 1987). Children with pediatric insomnia often present with problems going to sleep (bedtime resistance and delayed sleep onset), staying asleep (night-waking), or with early morning wakings (e.g., Meltzer, Johnson, Crosette, Ramos, & Mindell, 2010). Pediatric insomnia can have numerous effects on the child including reduced sleep quality, concurrent or future behavioural problems, and academic difficulties (Curcio, Ferrara, & De Gennaro, 2006; Gregory & O'Connor, 2002; Touchette et al., 2007; Zuckerman et al., 1987). Pediatric insomnia can also impair parent sleep and daytime functioning (Meltzer & Mindell, 2007; Mindell, Sadeh, Kwon, & Goh, 2015) and can strain the child-parent relationship (Erath & Tu, 2011). Despite the high prevalence and documented impacts of pediatric insomnia, little is known about the predictors for help-seeking and the reasons parents may choose not to seek help. This study examines: (a) the factors that predict parent perception and help-seeking for pediatric insomnia, (b) the reasons some parents do not seek help, and (c) explores differences between parents who sought and did not seek help for pediatric insomnia in terms of child factors (i.e., sleep problem severity and child mental health problems), parent factors (i.e., parent mental health problems and parenting style), and sleep cognitions (i.e., parental sleep knowledge, parental sleep attitudes and beliefs).

Notwithstanding the lack of research on help-seeking for pediatric insomnia, it is likely that help-seeking factors for pediatric insomnia mirror mechanisms from the children's mental health help-seeking literature. The Revised Network Episode Model (Revised NEM; Costello, Pescosolido, Angold, & Burns, 1998) is a comprehensive model of help-seeking that includes child

and parent sociodemographic characteristics, child problem severity and comorbidities, concurrent parental psychological problems, and parent knowledge, attitudes, and beliefs about the presenting problem and its treatment. Each of these factors are expected to influence parents' recognition of the problem. The model then predicts that parents who perceive a problem, may or may not seek help. The Pathways to Care Model [proposed by Goldberg & Huxley (1980), first applied to children's mental health by Pavuluri et al. (1996)] is also relevant. This model describes parents' pathways from problem recognition to help-seeking, and states that parents must pass through "filters" to seek help: parents must first recognize a problem, then consider seeking help, and then overcome any perceived barriers to help-seeking.

The empirical studies within the children's mental health help-seeking literature have supported these predictors for problem recognition and help-seeking. For example, Verhuslt and colleagues identified child academic problems, parental psychopathology, and stressful life events as significant predictors of parents perceiving a child mental health problem, and child problem severity as a predictor of help-seeking (Verhuslt et al., 1997). Other research has identified specific cognitions (thoughts or beliefs; e.g., it will get better on its own) or logistic barriers (e.g., help is too expensive) parents (who perceive a problem) may identify that prevent them from seeking help (Owens et al., 2002; Pavuluri et al., 1996).

A recent systematic review of parent and family factors predicting the use of children's mental health care identified parental burden, parent problem perception, and parental psychopathology as consistent significant predictors of help-seeking; parent-child relationship quality, previous service use, parental education, low family income, and other sociodemographic characteristics have been inconsistently linked with help-seeking (Ryan, Jorm, Toumbourou, & Lubman, 2015). Further, individual studies have consistently linked child problem severity and

child co-occurring problems to help-seeking (e.g., Ford et al., 2008; Pavuluri et al., 1996; Rickwood et al., 1994). Beyond these factors related to child, parent, and family functioning, beliefs about prospective treatments and service use have also been related to help-seeking. For example, positive help-seeking intentions (e.g., parents who believed they would seek help from a professional, if their child did have a problem) has been linked to seeking professional help (Oh & Bayer, 2015).

A recent theoretical model has proposed linkages between parental cognitions about sleep (e.g., knowledge, beliefs, and attitudes), child sleep behaviour, and parents' appraisal of children's sleep (Coulombe et al., 2012). This model suggests parental cognitions influence parents' appraisals of child sleep and child sleep behaviour. Pediatric sleep research has associated more negative sleep-related cognitions with greater perception of child sleep problems and more maladaptive child sleep behaviours (Coulombe & Reid, 2011; Johnson & McMahon, 2008; Morrell, 1993); whereas greater parental sleep knowledge and more positive sleep cognitions have been linked to more positive sleep practices (Coulombe & Reid, 2011; Owens & Jones, 2011). These factors have yet to be investigated in relation to help-seeking for pediatric sleep problems.

3.1.1 Study Questions and Hypotheses

This study investigated predictors for pediatric insomnia help-seeking. There were three primary questions in this study:

1. Which child, parent, and sleep related factors predict help-seeking for pediatric insomnia?

Help-seeking for pediatric insomnia was expected to follow the parent's perception of a sleep problem. In other words, the parent must perceive a sleep problem in order to seek help. Therefore, the prediction of help-seeking for pediatric insomnia was evaluated in a two-stage model: (1)

predicting sleep problem perception and (2) predicting help-seeking among parents who perceived a sleep problem. Predictions at both stages of the model were expected to be driven by sleep problem severity and child and parent mental health problems.

2. Why do some parents choose not to seek help?

Beyond child, parenting, and sleep related factors hypothesized to relate to a family not seeking help, specific cognitive reasons (e.g., belief the problem would get better on its own or that professional help was not needed) and logistical barriers for not seeking help were expected, depending on the perceived sleep problem severity.

3. Which child, parent, and sleep related factors are distinguishable between "help-seeking", "help wanted, not sought", and "help not wanted" parents?

Three distinct subgroups of parents were observed: (1) "help-seeking" parents, who had sought professional help for pediatric insomnia at some point during the past six months; (2) "help wanted, not sought" parents, who had not sought professional help for a child's sleep problem, but indicated that they did intend to seek help at some point during the past six months, but did not execute these plans; and (3) "help not wanted" parents, who did not seek professional help for a child's sleep problem, nor did they consider seeking professional help at any point during the past six months (i.e., Chapter 2). Sleep knowledge and attitudes, child and parent mental health problems, parenting style, and the severity of sleep problems were expected to differentiate these groups. It was hypothesized that help-seeking parents would have (a) greater sleep knowledge and (b) be more likely to think sleep habits are changeable and adaptable to treatment, compared to non-help-seeking families with pediatric insomnia. Additionally, "help-seeking" and "help wanted, not

sought" parents were expected to have greater child and parent mental health problems, and to have children with more severe sleep problems than "help not wanted" parents.

3.2 Method

3.2.1 Participants

Participants in the study were the primary caregivers (i.e., parents) of children age 2-10 years old, responsible for the night time care of the child reported on (N = 407). Exclusion criteria were: (1) children with a parent-reported diagnosis of a mental or physical health condition that might account for a sleep disturbance; specifically, (a) Attention Deficit Hyperactivity Disorder (e.g., Sung, Hiscock, Sciberras, & Efron 2008), (b) Autism Spectrum Disorders (e.g., Tudor, Hoffman, & Sweeney, 2012), (c) developmental delay (Goodlin-Jones, Tang, Lui, & Anders, 2008), or (d) childhood cancers (e.g., Linder & Christian, 2013); (2) parents unable to read health-related information in English with little to no assistance; or (3) child taking any medication that could negatively influence sleep (e.g., stimulant medication; Becker, Froehlich, & Epstein, 2016).

3.2.2 Recruitment

Online social media sites (e.g., Facebook, Twitter), parenting blogs, and online classified advertisers (e.g., Kijiji, RedFlagDeals) were used to recruit parents. These online classified recruitment sources were targeted toward Canadian, Australian, and American parents. Paid Facebook advertisements were also used and targeted parents of children 2-10 years old, who lived in Canada, the United States, or Australia, using Facebook's Ad Manager Tool (see Appendix L for recruitment advertisement text).

3.2.3 Procedure

This study was part of a large project (Corkum, Reid, Coulombe, & Blunden, 2015). Ethics approval was obtained from the IWK Health Centre and the Western University Health Sciences Research Ethics Boards (see Appendix A for ethics approval letters). The eligibility of interested parents was determined using an online screening questionnaire. This screener established whether the parent/child met the study criteria. A. Newton and G. J. Reid reviewed situations where eligibility was uncertain. "Ballot stuffing" situations (i.e., where one person was believed to complete the screener multiple times) were screened through identifying duplicate IP Addresses and longitude/latitude location data. The Letter of Information/ Consent Form is presented in Appendix B.

The larger project involved three steps or phases; administration of all study materials was done via the Qualtrics Survey Management Platform (Qualtrics, 2017). Step 1 involved questionnaires on child sleep habits, parents' thoughts and knowledge of children's sleep, general child and parent functioning, and parents' help-seeking behaviours for pediatric insomnia. As this study was Internet-based, steps were taken to ensure participants were human respondents. These steps included validating the email addresses used by participants and cross-referencing respondent-stated postal/ zip codes with Qualtrics-generated location data. Parents received a $10 CAD gift card for completing Step 1. Parents completed Step 2 two weeks later and filled out a 7-day sleep diary. Step 3 began immediately following Step 2. Parents completed a subset of the child sleep habits and parents' thoughts and knowledge of children's sleep questionnaires again, to investigate test-retest reliability for the larger study. This study only used measures from Step 1. The flowchart of parents' progress is presented in Figure 3.1.

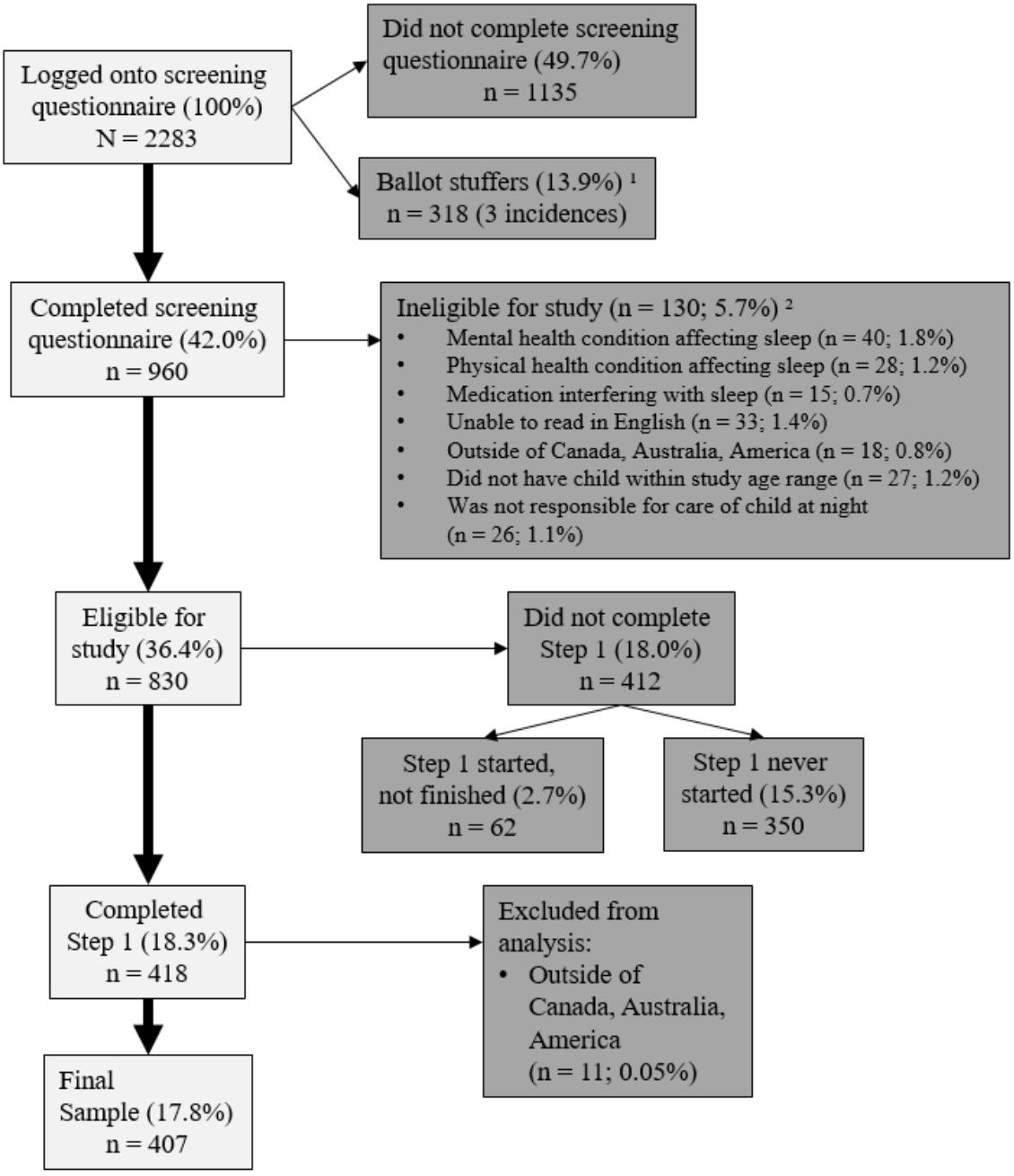

Figure 3.1. Thinking About Sleep study participant flowchart. Note: [1] the n =318 ballot stuffing situations were believed to be the result of three individuals completing the screening survey multiple times with fake credentials; [2] 57 respondents (2.5%) met more than one exclusion criteria.

3.2.4 Measures

Only the measures used in the present study are described.

Demographics. Parents reported their age, educational level, ethnicity, country of residence, employment status, relationship with the child, and family income. The response categories were based on the 2011 Canadian Census with adjustments made to capture variation across the three countries (Statistics Canada, 2011). Additionally, parents reported their child's age, sex, and birth order.

Sleep Related Measures

Pediatric insomnia severity. The Child Sleep Habits Questionnaire (CSHQ; Owens, Spirito, & McGuinn, 2000) measured children's pediatric insomnia severity. This 45-item measure contained 8 subscales (daytime sleepiness, bedtime resistance, sleep duration, sleep anxiety, night-wakings, sleep onset delay, parasomnias, and sleep disordered breathing) that were used to identify pediatric insomnia problems among children. Parents responded on a 3-point Likert scale [0 = *rarely* (*0-1 times/ week*), 1 = *sometimes* (*2-4 times/ week*), 2 = *usually* (*5-7 times/ week*)]. The CSHQ demonstrated adequate internal consistency ($\alpha_{c's}$ = .68-.82) and test-retest reliability (r's above .62 for all subscales) in community samples (Owens et al., 2000; Sneddon, Peacock, & Crowley, 2013) and adequate internal consistency for the total score in this sample (α_c = .83). The CSHQ has demonstrated construct validity; discriminates between community and clinical samples for sleep difficulties in a school-age sample (Owens et al., 2000); and has adequate concurrent validity in preschool samples (Goodlin-Jones, Sitnick, Tang, Liu, & Anders, 2008; Sneddon, Peacock, & Crowley, 2013). The CSHQ total scores was used as a continuous measure of pediatric insomnia severity; higher scores indicate more severe problems.

Parent perception of child sleep problem. Parents were asked if they perceived their child as having a sleep problem. Parents indicated whether their child (1) did not have a sleep problem, (2) had a mild sleep problem, (3) had a moderate sleep problem, or (4) had a severe sleep problem. This item was based on the final item of the Brief Infant Sleep Questionnaire (e.g., Sadeh, 2004; Sadeh, Mindell, & Rivera, 2011; Teng, Bartle, Sadeh, & Mindell, 2009). This single item, rather than the full scale, has been used as the outcome measure in clinical trials (e.g., Mindell, Telofski, Wiegand, & Kurtz, 2009). This item was coded in two ways. For some analyses (see below), responses were dichotomized: 0 = "no sleep problem"; 1 = perceived a pediatric insomnia problem; parents who endorsed "mild sleep problem," "moderate sleep problem," or "severe sleep problem". Second, for other analyses, parents' perceived pediatric insomnia severity was coded as: 0 = no perceived problem, 1 = mild problem, 2 = moderate or severe problem.

Parent attitudes and beliefs about sleep. The Sleep Attitudes and Beliefs Scale (SABS; Bessey, Coulombe, Smith, & Corkum, 2013) is a 19-item questionnaire measuring parents' attitudes and beliefs about sleep. The SABS contained four factors: (1) sleep modifiability (beliefs about the malleability of children's sleep problems; e.g., "Parents are able to change children's sleep habits"; 5 items), (2) responsiveness to treatment (beliefs about how well the problem would respond to treatment; e.g., "Treatments for sleep problems are not effective in children" (negatively worded); 5 items), (3) sleep impact (beliefs about how the sleep problem impacts functioning; e.g., "A child's sleep problem can have a big impact on the whole family"; 4 items), and (4) nature of sleep problem (whether the problem is believed to be biologically or behaviourally caused; e.g., "Sleep problems are a result of neurological causes"; 5 items). Parents rated each item on a 5-point Likert scale from 0 (*Do not agree at all*) to 4 (*Agree very much*).

The SABS is a relatively new measure, as such, its factor structure was evaluated using Confirmatory Factor Analysis (CFA; see Appendix G for factor structure and loadings). Analyses were conducted in AMOS (Version 24). Maximum likelihood estimation was used, as the data were normally distributed. Based on modification indices generated from testing a 4-factor model, the original "Nature of Sleep Problem" subscale was divided into two new subscales: "Organic Nature of Sleep Problem" (e.g., "Childhood sleep problems are biological in nature"; 3 items) and "Behavioural Nature of Sleep Problem" (e.g., "Childhood sleep problems are behavioural in nature"; 2 items). The revised 5-factor was a good fit to the data: goodness of fit index (GFI) = .910, standardized root mean square residual (SRMR) = .056, comparative fit index (CFI) = .934, and root mean square error of approximation (RMSEA)= .063 (Baumgartner & Hombur, 1996; Hu & Bentler, 1999). Thus, five scales were used in present study. The 5 subscales demonstrated adequate internal consistency (α_c .70 - .86). Subscale scores were formed by averaging items, with higher scores indicating stronger beliefs. Table 3.1 presents the inter-correlations among the subscales.

Table 3.1

Correlation Matrix and Internal Consistencies for Sleep Attitudes and Beliefs Scale

Factor	α_c	*Sleep Modification (SM)*	*Responsiveness to Treatment (RT)*	*Sleep Impact (SI)*	*Organic Nature of Sleep Problem (ON)*
Sleep Modification (SM)	.86				
Responsiveness to Treatment (RT)	.86	.56			
Sleep Impact (SI)	.86	.39	.39		
Organic Nature of Sleep Problem (ON)	.70	.02	.24	-.10	
Behavioural Nature of Sleep Problem (BN)	.71	.29	-.08	.18	-.43

α_c = Cronbach's Alpha

Parent sleep knowledge. The Parent Sleep Knowledge Questionnaire (PSKQ; Corkum et al., 2015) is a 35-item questionnaire of parent's pediatric sleep and behavioural sleep problem knowledge. Parents indicated whether they thought each item was true or false, and additionally if they were unsure of their answer. This measure was developed from literature reviews of the empirical and clinical pediatric sleep literature (e.g., Mindell, Kuhn, Lewin, Meltzer, & Sadeh, 2006; Owens, 2006; Reid, Huntley, & Lewin, 2009) and includes 10 items from the sleep knowledge survey developed by Owens and Jones (2011). The PSKQ demonstrated adequate split-half reliability in this sample ($r_{Guttman}$ = .65). Parents' total scores were divided by 35, to generate the percentage of items correct to index parents' sleep knowledge; higher percentages indicating greater sleep knowledge.

General Parenting and Child Daytime Functioning

Parenting style. The Parenting Scale (Arnold, O'Leary, Wolff, Acker, 1993) was used to assess how parents respond to commonly occurring challenging behaviors by their children. Note, the sleep-specific measure parenting does not exist. The Parenting Scale measure has been used in other studies of pediatric sleep (e.g., Reid et al., in preparation; Rhoades et al., 2012). The original Parenting Scale has 3 subscales (laxness, 11 items; over-reactivity, 10 items; verbosity, 7 items; not specific to a factor, 3 items). In the present study, the verbosity subscale was not used, as research has not associated verbosity with child sleep (Rhoades et al., 2012). Parents responded to discipline situations (e.g., "When I give a fair threat or warning") on a 7-point scale anchored at one end with an effective parenting technique (e.g., "I always do what I said") and an ineffective parenting technique at the other (e.g., "I often don't carry it out"). Scores on this measure are consistent over time (2-week test-retest reliability = .84; Arnold et al., 1993). Internal consistency was good in the original psychometric evaluation (Arnold et al., 1993) and in the present study

(Laxness α_c = .90; Overreactivity α_c = .82). The measure showed construct and convergent validity (Arnold et al., 1993). Subscale scores (i.e., laxness and over-reactivity) were averaged; higher scores indicating more problematic parenting.

Parental mental health problems. The Depression, Anxiety, and Stress Scale – 21 (DASS-21; Henry & Crawford, 2005) is the 21-item short form, three subscale (anxiety, depression, and stress) version of the DASS. Parents reported on the degree to which statements (e.g., "I found it hard to wind down") applied to them during the past month on a 4-point Likert scale from 0 (*Did not apply to me at all*) to 3 (*Applied to me very much, or most of the time*). Each of the DASS-21 subscales show convergent and discriminant validity with other measures of depression, anxiety, and stress (Henry & Crawford, 2005). The DASS-21 total scale demonstrated adequate internal consistency in this sample (α_c = .88 for the total score). The total score was used as a measure of overall parental mental health problems; higher scores indicate greater problem severity.

Child mental health problems. The Strengths and Difficulties Questionnaire (SDQ; Goodman, 1997) is a 25-item questionnaire used to measure children's mental health functioning. The SDQ contains five subscales: emotions (e.g., "often seems worried"), conduct problems (e.g., "often lies or cheats"), peer problems (e.g., "picked on or bullied by other children"), hyperactivity/ inattention (e.g., "constantly fidgeting or squirming"), and prosocial behaviours (e.g., "considerate of other people's feelings"). Parents responded on a three-point Likert scale from 0 (*not true*) to 2 (*certainly true*). Each subscale score can range from 0 to 10. The total SDQ score is the sum of each of the subscales, excluding prosocial behaviour. Higher scores indicated greater child mental health problems. The SDQ has demonstrated construct, concurrent, and convergent validity in psychometric evaluations (Bourdon, Goodman, Rae, Simpson, & Koratz, 2005; Goodman, 1997)

and adequate internal consistency in the present study (α_c = .79 for total score). The total SDQ score was used to index child mental health problems; higher scores indicate greater problem severity.

Help-seeking

Help-seeking status. Parents who reported seeking help from a professional for pediatric insomnia in the past 6 months were classified as "help-seeking." These parents reported on their actual help-seeking behaviours for subsequent questions. Parents who had not sought help for pediatric insomnia in the past 6 months were asked, "In the past 6 months, was there ever a time where you felt professional help might be needed, but you did not seek help?" Parents who responded "yes" were classified as "help wanted, not sought" parents. In other words, these parents considered seeking help for their child's pediatric insomnia but did not follow through and attain professional help. Parents who responded "no" to this question were classified as "help not wanted" parents. In other words, these parents believed professional help was not warranted. Similar methods have been used in the children's mental health help-seeking literature (e.g., Oh & Bayer, 2017; Oh et al., 2015; Verhulst & van der Ende, 1997).

Main reason professional help was not sought. Non-help-seeking parents (i.e., "help wanted, not sought" and "help not wanted" parents) reported on the main reason they did not seek professional help from a list of options. These options were recoded into six categories: 1 = "thought the problem was not that bad," 2 = "thought the problem would get better by itself," 3 = thought we could manage it ourselves," 4 = "my child does not need professional help," 5 = believed professional could not help (i.e., "I didn't think professional help would do any good"), 5 = logistic barriers [i.e., "I didn't know where to get help," "I never got around to it (e.g., too busy)," "It would have been too hard to schedule," "I tried, but the wait was too long," "It was

going to cost too much," "getting there was a problem," "child refused to go"]. This question was based on previous children's mental health help-seeking research (Owens, Hoagwood, Horwitz, 2002; Pavuluri et al., 1996). The main reasons parents did not seek help were scored using the frequency of each option's endorsement.

3.3 Data Analyses

Preliminary Analyses

Help-seeking status. Frequencies for the three help-seeking statuses were generated and potential sociodemographic differences between these groups were evaluated.

Categorizing predictor variable for nested logit model. Predictor and outcome variables for the 2-stage logit model were recoded, as described below.

Which child, parent, and sleep related factors predict help-seeking for pediatric insomnia?

Univariate predictor variables significantly related to perceiving a pediatric insomnia problem or related to help-seeking among parents who perceived pediatric insomnia were identified. Univariate prediction was used first due to sample size constraints. Significant univariate predictors were entered into a 2-Step nested logit model (STATA 14, StataCorp). Nested logit regression is typically used to model hierarchically-ordered behaviours. The first modelled behaviour was whether or not the parent perceived a pediatric insomnia problem. The second modelled behaviour was whether or not parents who perceived pediatric insomnia sought professional help.

Why do some parents choose not to seek help?

Parents who did not seek help reported on the main reason they did not seek professional help. First, descriptive statistics (e.g., frequencies) and chi-square analysis were used to examine differences in the main reason parents did not seek professional help by perceived pediatric insomnia problem severity. Second, post-hoc comparisons were made between perceived problem severity groups using standardized residuals. Standardized residuals are interpreted like z-scores (e.g., MacDonald & Gardner, 2000; Sharpe, 2015). Bonferroni correction (e.g., Dunn, 1961) was used to adjust for multiple comparisons.

Which child, parent, and sleep related factors are distinguishable between "help-seeking", "help wanted, not sought", and "help not wanted" parents?

First, a Multivariate Analysis of Variance (MANOVA) was used to examine which child, parenting and, sleep related factors were distinguishable between help-seeking statuses (i.e., "help-seeking," "help wanted, not sought," and "help not wanted"). Second, Bonferroni post-hoc tests were used to determine mean differences between help-seeking statuses for the child, parenting, and sleep related factors which were statistically significant different.

3.4 Results

3.4.1 Sample Characteristics

Parent demographic characteristics. Parents resided in Canada (82.1%), the United States (13.7%), and Australia (4.2%). Most parents were white (90.4%), either or 30-34 years old (35.9%) or 35-39 years old (36.6%), and the birth mothers of the child reported on (93.9%). Nearly half of parents were employed full-time (42%). See Table 3.2 for descriptive statistics for parents' demographics.

Child demographic characteristics. The children were 4.17 years old (*SD* = 1.92 years old) on average. Most (84%) were preschool aged (2 - 5.5 years old); 44.5% were girls. See Table 3.2 for descriptive statistics for children's demographics.

Table 3.2

Parent, Child, and Family Demographic Characteristics

Characteristic	Category	% (*n*) or *M* (*SD*)
Parent		
Age		
	21-24 years	2.2% (9)
	25-29 years	11.5% (47)
	30-34 years	35.9% (146)
	35-39 years	36.6% (149)
	40-44 years	11.5% (47)
	45 years or older	2.2% (9)
Employment Status		
	Employed full-time	42.0% (171)
	Employed part-time	16.2% (66)
	On maternity leave	11.8% (48)
	Homemaker/at-home parent	23.8% (97)
	Other (e.g., student, unemployed)	6.2% (25)
Relationship with Child		
	Birth Mother	93.9% (382)
	Birth Father	4.4% (18)
	Other (e.g., grandparent, adoptive parent)	1.5% (7)
Ethnicity		
	White/Caucasian	90.4% (368)
	Asian (e.g., Chinese, Japanese, South Asian, West Asian)	3.5% (14)
	Black	0.5% (2)
	Native/ Aboriginal/ Indigenous	1.4% (6)
	Other	4.2% (17)
Education Level		
	Some high school	1.0% (4)
	High school graduate/ GED	4.7% (19)
	Some post-secondary	10.3% (42)
	Diploma/ certificate from college or nursing school	12.7% (52)
	Undergraduate degree	41.5% (169)
	Master's degree	18.6% (76)
	Professional degree (e.g., MD, Law degree)	0.9% (4)

	Earned doctorate (e.g., PhD., D.Ed., D.Sc.)	5.3% (22)
	Other (e.g., Graduate degree after undergraduate)	5.0% (19)
Country of Residence		
	Canada	82.1% (334)
	United States	13.7% (56)
	Australia	4.2% (17)
Family		
*Income**		
	Under $40,000	12.5% (51)
	$40,000 - $60,000	11.2% (46)
	$61,000 - $80,000	13.9% (57)
	$81,000 - $100,000	18.4% (75)
	Over $100,000	39.5% (160)
	Prefer not to answer	4.4% (18)
Child		
Age		4.17 (1.92)
Age, dichotomized	Preschool Age	84.0% (342)
	School Age	16.0% (65)
Sex	Male	55.5% (226)
Birth Order		
	Oldest	43.9% (179)
	Middle	8.1% (33)
	Youngest	20.8% (85)
	Only	25.9% (105)
	Multiple (e.g., twin, triplet)	1.2% (5)

Note. N = 407; *Income was not converted to a common currency, rather it was left in the currency of the participant's country (i.e., Canadian Dollars, Australian Dollars, or US Dollars).

3.4.2 Preliminary Analyses

Help-seeking status. Parents were classified as "help-seeking", "help wanted, not sought", or "help not wanted" (see Methods). Twenty-two parents were "help-seeking" parents (5.4%) – that is, they reported seeking professional help for pediatric insomnia during the past six months. In addition, 46 "help wanted, not sought" parents (11.3%) had not sought professional help for pediatric insomnia, but indicated that they had contemplated seeking help during the past six months. Finally, 339 were "help not wanted" parents (83.3%) who did not seek professional help for pediatric insomnia, nor did they consider seeking professional help at any point during the past six months. There were no significant demographic differences between the three help-seeking statuses. (See Table C.1 in Appendix C).

Categorizing predictor variable for nested logit model. Predictor variables needed to be recoded for the nested logit model. Parent education was the only significant demographic variable from univariate analyses to be included in the nested logit model. Parent education was combined into 4 categories: 0 = high school graduate or below, 1 = some post-secondary or college/ vocational school graduate, 2 = undergraduate degree, 3 = undergraduate degree with additional education (e.g., graduate degree/ diploma). To aid in the meaningful interpretation of model, odds ratios (OR) for predictor variables scored on 5- or 7-point Likert scales (i.e., sleep modifiability beliefs, responsiveness to treatment beliefs, sleep impact beliefs, parental laxness, and parental over-reactivity) are reported per 1 unit change. For child sleep problem severity (CSHQ) and mental health problems (SDQ), and parental mental health problems (DASS-21), variables were recoded into half standard deviation units.

Perceived pediatric insomnia was recoded into two categories: 0 = no perceived sleep problem, 1 = mild, moderate, or severe perceived sleep problem. All levels of perceived problem

severity were combined to establish a clearer pathway between perceived sleep problem and help-seeking and to ensure adequate cell sizes for analyses. Lastly, only parents who perceived a sleep problem were included in the Step 2 of the nested logit model. This decision excluded 3 parents who sought help, but did not perceive pediatric insomnia. It is possible that these parents sought help at some point during the previous 6 months and their child's insomnia had resolved at the time they completed the study.

3.4.3 Which child, parent, and sleep related factors predict help-seeking for pediatric insomnia?

Overall, 42.0% of parents perceived their child to have a sleep problem. Of these parents, 11.1% sought help. In the nested logit model, both Stage 1 (predicting perceived pediatric insomnia; Likelihood Ratio χ^2 (12) = 186.64, $p < .001$, Pseudo $R^2 = .34$) and Stage 2 (predicting help-seeking among those who perceived pediatric insomnia; Likelihood Ratio χ^2 (11) = 20.70, $p = .037$, Pseudo $R^2 = .18$) were statistically significant. Table 3.3 presents the results for the Nested Logit Model. In Step 1, sleep problem severity and child mental health problems were significant predictors of perceiving a pediatric insomnia problem. For each half-standard deviation unit increase in sleep problem severity on the CHSQ, the odds of perceiving pediatric insomnia increased 2.69 times 95% CI = 2.15-3.38); for each half-standard deviation unit increase in child mental health problem scores on the SDQ, the odds of perceiving pediatric insomnia increased 1.27 times (95% CI = 1.06-1.52).

In Step 2, help-seeking was predicted only by parents' own mental health problems. For each half-standard deviation increase in parental mental health problem scores on the DASS-21, the odds of seeking professional help for perceived pediatric insomnia increased 1.40 times (95% CI = 1.00-1.97).

Table 3.3

Nested Logit Model predicting Perceived Sleep Problem and Help-Seeking

Predictor Variables	No perceived sleep problem vs. perceived sleep problem		Non-help-seeking vs. Help-seeking	
	OR	CI	OR	CI
Sleep problem severity (CSHQ) [a]	2.69 **	2.15 – 3.38	1.11	0.80 – 1.54
Sleep modifiability beliefs [b]	1.09	0.72 – 1.63	0.69	0.33 – 1.46
Responsiveness to treatment beliefs [b]	0.99	0.67 – 1.47	1.12	0.55 – 2.29
Sleep impact beliefs [b]	1.48	0.91 – 2.42	2.00	0.81 – 4.94
Parental laxness [b]	0.76	0.53 – 1.08	0.73	0.38 – 1.43
Parental over-reactivity [b]	1.05	0.70 – 1.56	1.31	0.63 – 2.76
Child mental health problems (SDQ) [a]	1.27 *	1.06 – 1.52	1.27	0.98 – 1.63
Parental mental health problems (DASS-21) [a]	1.13	.95 – 1.36	1.40 *	1.00 – 1.97
Parent Education [c]				
High school graduate or below	0.57	.16 – 2.01	0.65	.12 – 3.59
Some post-secondary or college/ vocational graduate	0.73	.21 – 2.53	0.81	.12 – 5.66
Above undergraduate	0.68	.19 – 2.46	0.27	.04 – 1.88
Incursive value	0.13	.01 – 5.93	—	—

Note: [a] Odds Ratio represents increased odds per ½ *SD* units on the CHSQ (Children's Sleep Habits Questionnaire), SDQ (Strengths and Difficulties Questionnaire) or DASS-21 (Depression, Anxiety Stress Scale – 21 Item Version); [b] Odds Ratio represents increased odds per 1 unit; [c] reference group is "Undergraduate degree"; see Appendix H for Betas and Z Statistics; * $p < .05$, ** $p < .01$.

3.4.4 Why do some parents choose not to seek help?

Non-help seeking parents reported on the main reason they did not seek help. Endorsement of these reasons were compared across levels of perceived sleep problem severity coded: 0 = no perceived sleep problem, 1 = mild problem, and 2 = moderate-to-severe sleep problem. Moderate and severe perceived sleep problems were combined to address small cell sizes. As would be expected, parents who did not perceive a sleep problem most frequently endorsed the belief that the child did not need professional help (83.7%) as the main reason professional help was not sought. The rest of these parents endorsed other cognitive reasons (e.g., Thought the problem would get better by itself) for not seeking help (15.1%) or logistic barriers (0.9%). These results are summarized in Table 3.4.

Figure 3.2 displays the differences in the main reason help was not sought between parents who perceived a mild sleep problem and parents who perceived a moderate-to-severe sleep problem. Small proportions of parents who perceived a mild sleep problem reported specific problem conceptualization reasons for not seeking help, including: thinking the problem was not that bad (16.2%), the problem would get better by itself (12.6%), or that they could manage it on their own (20.7%). The most frequently endorsed reason (41.4%) help was not sought was the belief that the child did not need professional help. Very few parents who perceived a mild problem reported believing a professional could not help (4.5%) or logistic barriers (4.5%).

Parents who perceived a moderate-to-severe sleep problem endorsed specific problem conceptualization cognitions at similar rates to parents who perceived a mild problem. However, fewer of these parents believed the child did not need professional help (15.4%, Standardized Residual = -6.99, $p < .001$) than parents who perceived a mild sleep problem. The most common reason (35.9%) parents who perceived a moderate-to-severe sleep problem gave for not seeking

help was logistic barriers (e.g., too costly, too difficult to access) A greater proportion of parents who perceived a moderate-to-severe sleep problem reported logistic barriers than parents who perceived a mild sleep problem (4.5%; Standardized Residual = 5.52, $p < .001$). Table 3.4 summarizes the differences in the main reasons help was not sought among perceived sleep problem severity. Additionally, the breakdown of the specific logistic barriers parents reported are shown in Appendix I.

Table 3.4

Main Reasons Parents Did Not Seek Help by Perceived Problem Severity and Standardized Residuals

Main Reason Parent Did Not Seek Help	**Perceived Sleep Problem Severity**			**Differences between Severities**		
	No Problem	***Mild Problem***	***Moderate-to-Severe Problem***	***No vs. Mild Problem***	***No vs. Moderate Problem***	***Mild vs. Moderate Problem***
	% (n)	*% (n)*	*% (n)*	*Standardize Residual (Absolute Value)*		
Thought the problem was not that bad	3.9 (9) $_{b}$	16.2 (18) $_{a}$	10.3 (4)	6.57	2.01	1.94
Thought the problem would get better by itself	1.7 (4) $_{bc}$	10.3 (14) $_{a}$	12.6 (4) $_{a}$	8.82	4.10	.76
Thought we could manage it ourselves	8.6 (20) $_{bc}$	20.7 (23) $_{a}$	25.6 (10) $_{a}$	4.35	3.63	1.02
Believed child did not need professional help	83.7 (195) $_{bc}$	41.4 (46) $_{ac}$	15.4 (6) $_{ab}$	4.87	4.66	6.99
Believed professional could not help	.9 (1) $_{b}$	4.5 (5) $_{a}$	2.6 (1)	4.00	1.10	1.24
Logistic barriers	1.3 (3) $_{c}$	4.5 (5) $_{c}$	35.9 (14) $_{ab}$	2.96	18.95	5.52
Totals	100 (223)	100 (111)	100 (39)	—	—	—

Note. $_{a}$ differs significantly ($p < .001$) from "no problem" proportion; $_{b}$ differs significantly ($p < .001$) from "mild problem" proportion; $_{c}$ differs significantly ($p < .001$) from "moderate-to-severe" proportion.

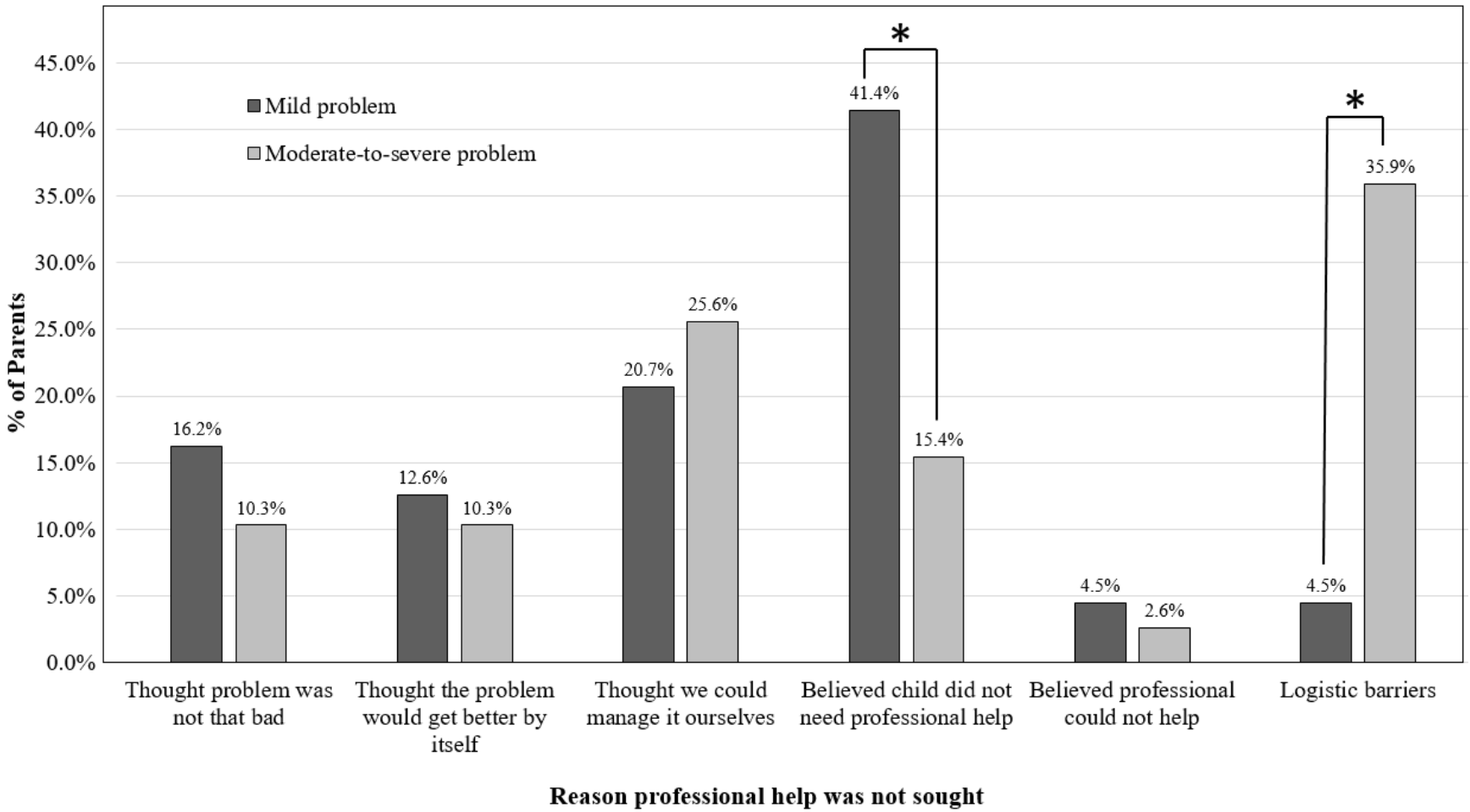

Figure 3.2. Comparing the main reason help for pediatric insomnia was not sought among parents who perceived a mild sleep problem or a moderate-to-severe sleep problem. Lines with asterisks indicate groups differ at $p < .001$.

3.4.5 Which child, parent, and sleep related factors are distinguishable between "help-seeking", "help wanted, not sought", and "help not wanted" parents?

A MANOVA was used to investigate differences between help-seeking statuses (i.e., "help-seeking," "help wanted, not sought," and "help not wanted"). Child factors [i.e., child mental health problems (SDQ) and sleep problem severity], parent factors [i.e., parental mental health problems (DASS-21), parental over-reactivity, and parental laxness], and sleep related factors (i.e., parental sleep knowledge and sleep beliefs) were entered into the MANOVA. A pooled within groups correlation matrix was calculated to assess whether there was multicollinearity among the predictor variables. No correlation was above an absolute value of .70, indicating no multicollinearity concerns. Further, Box's M (using $\alpha = .10$) was non-significant, indicating the assumption of homogeneity of within-group variance/ covariance matrices was not violated.

In the multivariate model, the effect of help-seeking status was statistically significant [Pillai's Trace F (18, 780) = 4.93, $p < .001$] and corresponded to a moderate effect size (Partial η^2 = .10). The test of between-subjects effects (Type III Sum of Squares) revealed that child mental health problems, parental mental health problems, parental laxness, parental over-reactivity problems, sleep problem severity, sleep modifiability beliefs, and responsiveness to treatment beliefs were found to differ significantly between help-seeking statuses. Univariate differences between groups are reported in Table 3.5.

Four major results were noted. First, there was a consistent linear relationship between increasing levels of both child mental health problems and help seeking. "Help-seeking" parents (M = 16.75) reported significantly higher child mental health problems than "help wanted, not sought" parents (M = 12.94), who also reported higher levels of problems than "help not wanted" parents (M = 11.42). Second, "help-seeking" (M = 21.90) and "help wanted, not sought" (M =

20.15) parents had had children with significantly higher sleep problem severity than “help not wanted” parents (M = 12.10); further “help-seeking” and “help wanted, not sought” parents did not differ significantly in sleep problem severity. Third, “help-seeking” parents (M = 17.44) reported significantly higher parental mental health problems than “help not wanted” parents (M = 11.42). Finally, “help wanted, not sought” parents (M = 2.96) reported significantly weaker beliefs that sleep problems could be modified than “help not wanted” parents (M = 3.31).

Table 3.5

Differences in child and parent factors across parents' Help-Seeking Status

	Parents help-seeking status				
	Help-seeking	Help wanted, not sought	Help not wanted	*F*	Partial η^2
	M (SD)	*M (SD)*	*M (SD)*		
Child mental health problems (SDQ)	16.73 $_{bc}$ (6.41)	12.93 $_{ac}$ (5.86)	10.49 $_{ab}$ (5.01)	17.31	.08
Parental mental health problems (DASS-21)	16.71 $_{c}$ (7.62)	13.93 (7.81)	11.52 $_{a}$ (7.94)	7.26	.04
Parental laxness	2.76 (1.05)	2.81 (1.07)	2.48 (.92)	3.42	.02
Parental over-reactivity	2.81 (.88)	2.73 (.97)	2.46 (.81)	4.61	.02
Sleep knowledge (% correct)	73.9 (12.6)	72.9 (11.6)	72.5 (13.3)	.03	<.01
Sleep problem severity (CSHQ)	21.19 $_{c}$ (11.26)	20.15 $_{c}$ (8.87)	12.14 $_{ab}$ (7.61)	32.54	.14
Sleep modifiability beliefs	2.81 (.99)	2.96 $_{c}$ (.66)	3.32 $_{b}$ (.85)	5.64	.03
Responsiveness to treatment beliefs	3.72 (1.05)	3.83 (.90)	4.11 (.77)	3.41	.02
Sleep impact beliefs	4.53 (.75)	4.46 (.78)	4.56 (.65)	.52	<.01

Note. $_{a}$ differs significantly ($p < .05$) from "help-seeking" mean; $_{b}$ differs significantly ($p < .05$) from "help wanted, not sought" mean; $_{c}$ differs significantly ($p < .05$) from "help not wanted" mean. All *F* degrees of freedom are (2, 397).

3.5 Discussion

This study was the first, to our knowledge, to investigate predictors and barriers for help-seeking for pediatric insomnia. The results of this study identified key predictors of perceived pediatric insomnia problems, help-seeking, reasons why parents may not seek help, and differences between parents who sought help ("help-seeking"), considered seeking help, but did not follow through ("help wanted, not sought"), and parents who did not consider seeking help ("help not wanted").

Predictors of perceived problem and help-seeking. Nearly half the sample (42.0%) perceived their child to have at least a mild sleep problem. However, of these parents, only 11.1% sought professional help. Parents were more likely to perceive a sleep problem with increasing sleep problem severity on a validated measure (CSHQ) and with increases on a validated measure of children's mental health problems (SDQ). In the multivariate model, beliefs about the modifiability, response to treatment, and impact of sleep problems did not predict sleep problem perception, nor did parenting style, parental mental health problems, or parental education. Among parents who had perceived a sleep problem, parental mental health problem score (DASS-21) was the only significant predictor of help-seeking in the multivariate model. As parental mental health problems increased, professional help-seeking became more likely.

These results are consistent with the children's mental health help-seeking literature. Parental psychopathology was found to be one of the most frequent significant predictors of help-seeking for child mental health problems in a recent review (Ryan et al., 2015). Several studies have also demonstrated increased problem severity and the severity of concurrent problems as significant predictors of problem perception (Verhulst et al., 1997) and help-seeking (Pavuluri et al., 1996; Rickwood et al., 1994; Verhulst et al., 1997; Wichstrom et al., 2014). Additionally,

though many help-seeking studies identify parents' perception of a problem as a key predictor of help-seeking (e.g., Pavuluri et al., 1996; Ryan et al., 2015; Zwaanswijk et al., 2005), most do not disentangle predictors of problem perception and help-seeking. In contrast, this study provided a two-stage model of help-seeking behaviour to identify differential predictors of problem perception and help-seeking.

However, one potential drawback of this approach is that it rests on the assumption that perception of a sleep problem must precede help-seeking. In this study, 3 parents (13.6%) who did not perceive a sleep problem, but did seek help were excluded from the model. It is possible that a parent could seek help without perceiving a problem themselves. For example, a spouse may perceive a problem and insistent on seeking help; whereas, the other parent remains uncertain. There is some evidence from the child mental health literature that this may also occur (see Pavuluri et al., 1996). Unlike children's mental health problems, however, it would seem unlikely that individuals other than the parents themselves (e.g., teachers, relatives) would see a child is having a sleep problem and suggest professional help. Another possibility has to do with the study methodology. Parents reported on help-seeking behaviours over the past six months and perceived sleep problems at the time of the study. This is the standard approach used in all cross-sectional studies for children's mental health problems (e.g., Reid et al., 2006; Zwaanswijk et al., 2005). It is possible that parents perceived a sleep problem when they initially sought help, received help and then the problem resolved; thus, they no longer perceived a sleep problem while completing the study.

Reasons for not seeking help. Beyond these identified quantitative reasons influencing parents' decisions to seek help, specific cognitions and logistic barriers that inhibit help-seeking were observed. These reasons for not seeking help differed by the severity of sleep problem the

parent perceived. Pavuluri et al. (1996) used similar techniques to investigate barriers for help-seeking among parents who perceived significant mental health problems among their children. Pavuluri's interpretation employed a filter and levels model. The application of a similar model helps to explain results from this study.

Theoretically, a parent would need to transverse all filters to receive help. After recognizing at least a mild sleep problem, there may be a number cognitive and logistic filters to traverse. A depiction of these filters is presented in Figure 3.3. Depending on parents' thoughts or beliefs at each filter, help may not be sought. Applying the results from this study, the first filter may be Problem Perception. If the parent does not perceive the child to have a sleep problem, help is far less likely to be sought. The second filter may be Problem Conceptualization, which may include a set of specific cognitions including believing the problem is not that bad, thinking it will resolve on its own, or thinking the problem can be managed by the parent. Pavuluri et al. (1996) had identified the latter two factors as the most frequently endorsed reasons why parents did not seek help for a children's mental health problem. The third filter would involve the Perceived Need for Professional Help. In the present study, parents who perceived a sleep problem were acknowledging that there was a problem; however, the problem was not believed to be severe enough to warrant professional attention. This cognition was endorsed more frequently by parents who perceived a mild sleep problem (41.4%) than parents who perceived a moderate-to-severe sleep problem 15.4%. This was also the most frequently endorsed reason for not seeking help among parents who perceived a mild sleep problem. Parents were not given this option as a reason for not seeking help in the Pavuluri et al. (1996) study. However, in the context of children's sleep, this potential reason for not seeking help aided in the conceptualization of parents who perceived a sleep problem, but did not think professional help was appropriate.

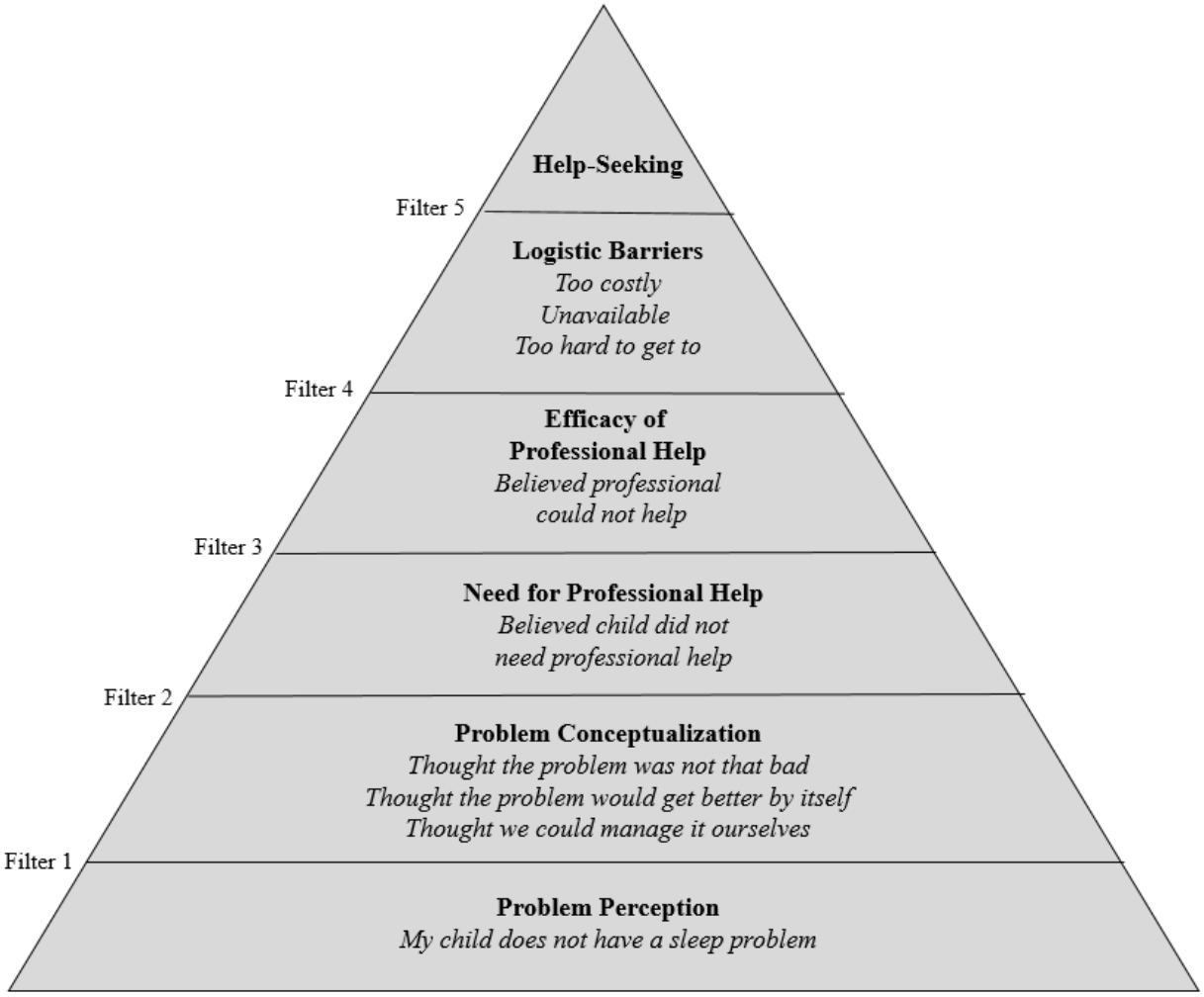

Figure 3.3. Depiction of proposed filters and levels for help-seeking for pediatric insomnia.

The fourth filter would concern the Perceived Efficacy of Professional Help, or the belief that a professional could not help the problem. In this study, this cognition was rarely endorsed whereas in the Pavuluri et al. (1996) study, this cognition was endorsed by about one third of parents. Parents in the present study had generally strong beliefs that sleep problems could be modified and would respond to treatment, possibly accounting for this difference. Other studies that have investigated this cognition have argued that parents who do not believe a professional can help feel that the problem is too interwoven with other co-occurring problems to be addressed exclusively by mental health interventions (Anderson et al., 2006). This thought may not be relevant to pediatric sleep problems. The final filter would be Logistic Barriers. Once a parent has conceptualized the sleep problem as warranting professional help and believes that a professional would be able to help, the parent may fully intend to seek help. However, logistic barriers (such as treatment cost or availability) may then impede parents' help-seeking efforts. Parents who perceived a moderate-to-severe sleep problem endorsed logistic barriers (35.9%) more frequently than parents who perceived a mild sleep problem (4.5%); and this was the most frequently endorsed reason for not seeking help among parents who perceived a moderate-to-severe sleep problem. Between 2.9% (inconvenient hours) and 38.2% (did not know where to go) of parents in the Pavuluri et al. (1996) study endorsed logistic barriers. In this study, the most commonly endorsed specific logistic barriers were the cost of treatment (12.8% of parents who perceived a moderate-to-severe sleep problem) and that the parent was too busy (7.7% of parents who perceived a moderate-to-severe sleep problem). Other studies have shown logistic barriers to be particularly impactful on lower income families (Anderson et al., 2006; Harrison, McKay, Bannon, 2004).

Differences between help-seekers and non-help-seekers. First, "help-seeking" and "help wanted, not sought" parents did not differ significantly on the measure of sleep problem severity (CSHQ) and both had higher scores than "help not wanted" parents. As in the children's mental health help-seeking literature, parents with children with higher problem severity are more likely to seek help (Pavuluri et al., 1996; Rickwood et al., 1994; Wichstrom et al., 2014) and is supported in the Revised NEM (Costello et al., 1998). Interestingly, parents who actually sought help and parents who considered seeking help, but did not were not differentiated by sleep problem severity, suggesting the importance of other factors in differentiating these two groups. Second, "help-seeking" parents had higher child mental health problem scores (SDQ) than "help wanted, not sought" and "help not wanted" parents. Similarly, "help wanted, not sought" parents had higher scores than "help not wanted" parents. These differences address the influence of co-occurring problems, which are also commonly related to help-seeking in the children's mental health help-seeking literature (Costello et al., 1998; Ford et al., 2008; Verhulst et al., 1997; Wichstrom et al., 2014). In the children's mental health help-seeking literature, co-occurring problems are often subdivided into behavioural and emotional concerns, with behavioural concerns being more strongly tied to help-seeking (Ford et al., 2008; Wichstrom et al., 2014). Third, "help-seeking" parents also had higher parental mental health problem scores (DASS-21) than "help not wanted" parents. This difference begins to address parental co-occurring problems and parental burden. Although "help wanted, not sought" parents' parental mental health problem scores were not significantly different from "help-seeking" or "help not wanted" parents, there was a consistent linear trend in the data (i.e., "help-seeking" parents scores were highest, followed by "help wanted, not sought" parents, followed by "help not wanted" parents). Parental mental health functioning has also been an important consideration for children's mental health help-seeking. As parental

symptoms of depression, anxiety, and stress increase (either because of the child's problem or other factors in the parent's life), help-seeking becomes more likely (Verhulst et al., 1997; Zwaanswijk et al., 2005). Fourth, "Help wanted, not sought" parents had slightly lower sleep modifiability beliefs than "help not wanted" parents; however, this difference was less than one unit on the measure's 5-point Likert scale, so the meaning of this difference may be minimal. Finally, parents did not differ in sleep knowledge, beliefs about the impact or responsiveness of sleep problems to treatment, or in parenting style. As such, hypothesized differences between help-seeking statuses were not observed for parental sleep knowledge, or beliefs about the impact or responsiveness to treatment of sleep problems. Rather, most parents answered 70-75% of sleep questions correctly, believed strongly that child sleep problems were impactful, and that child sleep problems were generally responsive to treatment. These results may suggest parental beliefs, knowledge, and parenting style are relatively unimportant in differentiating between help-seeking statuses. A recent systematic review identified these factors as somewhat inconsistently related to help-seeking (Ryan et al., 2015). However, more recent research has suggested beliefs about treatment outcomes can be significantly related to help-seeking behaviours for child mental health problems (Oh et al., 2017). As such, more research may be needed to determine the impact of knowledge and beliefs on pediatric sleep help-seeking decisions.

3.5.1 Limitations

This study was limited in some key aspects. First, despite steps to minimize illegitimate respondents, it is possible that some respondents were not who they reported to be. It is our belief that the respondents in the final sample were credible. Second, this study employed a retrospective design. Help-seeking behaviour was reported for the previous 6 months; whereas other variables were reported at the time of study completion or over the past month. As such, current measures

were used to predict previous help-seeking, rather than future help-seeking. However, retrospective designs are commonly employed in children's mental health help-seeking studies (e.g., Reid et al., 2006; Zwaanswijk et al., 2005). Third, this study did not utilize any objective measures of child sleep. Although the CSHQ has shown good discriminant validity in differentiating between clinical and non-clinical samples, actigraphy (small watch-like devices that track movements to determine wakefulness) and sleep diaries (nightly logs completed by parents providing detailed documentation on children's sleep) are considered more objective measures of children's sleep (Werner, Molinari, Guyer, & Jenni, 2008). However, actigraphy can be expensive and both methods can be difficult to implement. Further, the use of objective and subjective ratings of children's sleep problem is more relevant to other issues, such as why parent ratings differ from actigraphy, than issues related to help-seeking which would virtually always be based on parental perceptions.

3.5.2 Future Directions

This study began to identify predictors for help-seeking for pediatric insomnia. However, there are still several unanswered questions that warrant future considerations. First, although this study revealed some predictors for problem perception and help-seeking, specific pathways to problem perception are not yet known (e.g., partner notices problem, teacher informs parent of problem, etc.). Second, there may be differential predictors of seeking help from an informal/ informational source (e.g., friend or internet website), a primary provider (e.g., family doctor), or receiving a referral to a sleep specialist (e.g., trained psychologist) than were observed in this study. Third, there may be time delays in help-seeking, based on main reason parents do not seek help (e.g., if a parent perceives a logistic barrier, they may wait or seek alternative help; a parent who believes the problem will get better on its own may wait until the problem becomes

significantly more severe or has functional consequences). Differential time delays for parents with different reasons for not seeking help would have distinct implications for intervention. For example, parents who perceive logistic barriers and wait significant periods for help may benefit from available financial aid or distance-based interventions; whereas parents who have adopted a "wait and see" approach may benefit from informational interventions on the typical development of children's sleep patterns.

3.5.3 Implications

The results from this study provide key implications for help-seeking theory, parents, and providers. First, the results of this study support the Pathways to Care Model (Pavuluri et al., 1996) and the Revised NEM (Costello et al., 1998), both of which identify the importance of perceiving problems, prior to help-seeking. Additionally, there appears to be a somewhat linear sequence of cognitions and logistic barriers that parents endorse as reasons for not seeking help (as seen in the Pathways to Care Model; Pavuluri et al., 1996); and similar predictors were observed as would be expected, given the Revised NEM (Costello et al., 1998). However, future research would be needed to determine accuracy of the order of the perceived reasons for not seeking help. Second, parents may benefit from education on normative sleep and when to seek help. Parents may be encouraged to seek support before sleep problems become overwhelming or before parental burden increases. Third, primary care providers may benefit from education or direction on how and when to inquire about children's sleep. Our prediction results may be applied to individual parents and children to forecast, with some degree of certainty, which parents may seek help. However, this approach may be time and resource intensive. Instead, it would be easier for primary providers to simply inquire about children's sleep with parents during regular visits and have some resources ready for potentially concerned parents.

3.5.4 Acknowledgements

This study was supported through a grant from the Dalhousie Psychiatry Research Fund. Adam Newton received support from the Social Science and Humanities Research Council (SSHRC), the Ontario Graduate Scholarship, and the Better Nights, Better Days Training Program (funded through the Canadian Institute for Health Research).

3.6 References

Anderson, C.M, Robins, C.S., Greeno, C.G., Cahalane, H., Copeland, V.C., & Andrews, R. M. (2006). Why lower income mothers do not engage with the formal mental health care system: Perceived barriers to care. *Qualitative Health Research, 16*(7), 926-943.

Arnold, D. S., O'Leary, S. G., Wolff, L. S., & Acker, M. M. (1993). The Parenting Scale: A measure of dysfunctional parenting in discipline situations. *Psychological Assessment, 5*(2), 137.

Baumgartner, H., & Hombur, C. (1996). Applications of structural equation modeling in marketing and consumer research: A review. *International Journal of Research in Marketing, 13,* 139-161.

Becker, S. P., Froehlich, T. E., & Epstein, J. N. (2016). Effects of methylphenidate on sleep functioning in children with attention-deficit/hyperactivity disorder. *Journal of Developmental and Behavioral Pediatrics, 37*(5), 395-404. doi:http://dx.doi.org/10.1097/DBP.0000000000000285

Bessey, M., Coulombe, J. A., Smith, I. M., & Corkum, P. (2013). Assessing parental sleep attitudes and beliefs in typically developing children and children with ADHD and ASD. *Children's Health Care, 42*(2), 116-133.

Blader, J. C., Koplewicz, H. S., Abikoff, H. & Foley, C. (1997). Sleep problems of elementary school children: A community survey. *Archives of Pediatric Adolescent Medicine, 151,* 473-480.

Bourdon, K. H., Goodman, R., Rae, D. S., Simpson, G., & Koretz, D. S. (2005). The strengths and difficulties questionnaire: U.S. normative data and psychometric properties. *Journal of the*

American Academy of Child & Adolescent Psychiatry, *44*(6), 557-564. doi:10.1097/01.chi.0000159157.57075.c8

Costello, E. J., Pescosolido, B. A., Angold, A., & Burns, B. J. (1998). A family network-based model of access to child mental health services. *Research in Community and Mental Health, 9*, 165-190.

Corkum, P., Reid, G. J., Coulombe, J. A., & Blunden, S. (2015). *Thinking about sleep: Parental cognitions and behavioural sleep problems in children.* Unpublished research protocol.

Coulombe, J.A. & Reid, G.J. (2011, September). Parenting at Midnight: Preliminary validation of the Parental Thoughts and Affect about Night-waking Questionnaire. *Poster session presented at the World Association of Sleep Medicine/ Canadian Sleep Society Congress*, Quebec, Canada.

Coulombe, J.A., Corkum, P., Reid, G.J., & Bessey, M. (2012, October). *Thinking about sleep: A theoretical model of parental cognitions and children's sleep.* Poster session presented at the 21st Annual Department of Psychiatry Research Day (Dalhousie University), Halifax, Nova Scotia.

Curcio, G., Ferrara, M., & De Gennaro, L. (2006). Sleep loss, learning capacity and academic performance. *Sleep Medicine Reviews, 10*(5), 323-337.

Dunn, O. J. (1961). Multiple comparisons among means. *Journal of the American Statistical Association 56* (293): 52–64.

Erath, S. A. & Tu, K. M. (2011). The parenting context of children's sleep. In El-Sheikh, M. (Ed.), *Sleep and development: familial and socio-cultural considerations* (29-47). Toronto: Oxford University Press.

Ford, T., Hamilton, H., Meltzer, H., & Goodman, R. (2008). Predictors of service use for mental health problems among British schoolchildren. *Child and Adolescent Mental Health, 13*(1), 32-40.

Gregory, A. M., & O'Connor, T.,G. (2002). Sleep problems in childhood: A longitudinal study of developmental change and association with behavioral problems. *Journal of the American Academy of Child and Adolescent Psychiatry, 41*(8), 964-971.

Goldberg, D., & Huxley, P. (1980). *Mental Illness in the Community: The Pathway to Psychiatric Care*. London, United Kingdom. Travistock Publications.

Goodlin-Jones, B. L., Sitnick, S. L., Tang, K., Liu, J., & Anders, T. F. (2008). The Children's Sleep Habits Questionnaire in toddlers and preschool children. *Journal of Developmental & Behavioral Pediatrics, 29,* 82-88.

Goodlin-Jones, B. L, Tang, K., Liu, J., & Anders, T. F. (2008). Sleep patterns in preschool-age children with autism, developmental delay, and typical development. *Journal of the American Academy of Child & Adolescent Psychiatry, 47*(8), 930-938. doi:http://dx.doi.org/10.1097/CHI.0b013e3181799f7c

Goodman, R. (1997). The Strengths and Difficulties Questionnaire: a research note. *Journal of child psychology and psychiatry, 38*(5), 581-58.

Harrison, M.E., McKay, M.M., Bannon, W.M. (2004). Inner-city child mental health service use: The real question is why youth and families do not use services. *Community Mental Health Journal*, *40*(2), 119-131.

Henry, J. D., & Crawford, J. R. (2005). The short-form version of the Depression Anxiety Stress Scales (DASS-21): Construct validity and normative data in a large non-clinical sample. *British Journal of Clinical Psychology*, *44*(2), 227-239.

Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling*, *6*(1), 1-55.

Johnson, N. & McMahon, C. (2008). Preschooler's sleep behaviour: associations with parental hardiness, sleep-related cognitions and bedtime interactions. *The Journal of Child Psychology and Psychiatry, 49*, 765-773.

Linder, L. A., & Christian, B. J. (2013). Nighttime sleep characteristics of hospitalized school-age children with cancer. *Journal for Specialists in Pediatric Nursing, 18*(1), 13-24. doi:http://dx.doi.org/10.1111/jspn.12005

MacDonald, P.I., Gardner, R.C. (2000). Type 1 error rate comparisons of post hoc procedures for I J chi-square tables. *Educational and Psychological Measurement 60,* 735-754.

Meltzer, L. J., Johnson, C., Crosette, J., Ramos, M., & Mindell, J. A. (2010). Prevalence of diagnosed sleep disorders in pediatric primary care practices. *Pediatrics, 125*(6), e1410-e1418.

Meltzer, L. J., & Mindell, J. A. (2007). Relationship between child sleep disturbances and maternal sleep, mood, and parenting stress: A pilot study. *Journal of Family Psychology, 21*(1), 67-73. doi:http://dx.doi.org/10.1037/0893-3200.21.1.67

Mindell, J.A., Kuhn, B., Lewin, D.S., Meltzer, L.J., & Sadeh, A. (2006b). Behavioral treatment of bedtime problems and night wakings in infants and young children. *Sleep, 29,* 1263-1276.

Mindell, J. A., Sadeh, A., Kwon, R., & Goh, D. Y. T. (2015). Relationship between child and maternal sleep: A developmental and cross-cultural comparison. *Journal of Pediatric Psychology, 40*(7), 689-696. doi:http://dx.doi.org/10.1093/jpepsy/jsv008

Mindell, J. A., Telofski, L. S., Wiegand, B., & Kurtz, E. S. (2009). A nightly bedtime routine: impact on sleep in young children and maternal mood. *Sleep*, *32*(5), 599-606.

Morrell, J.M.B. (1999). The role of maternal cognitions in infant sleep problems as assessed by a new instrument, the maternal cognitions about infant sleep questionnaire. *Journal of Child Psychology and Psychiatry, 40*, 247-258.

Oh, E., & Bayer, J. K. (2017). Predicting parents' intentions to seek help for young children's mental health. *International Journal of Mental Health Promotion, 19*(1), 38-49. doi:10.1080/14623730.2016.1276024

Oh, E., Mathers, M., Hiscock, H., Wake, M., & Bayer, J. (2015). Professional help seeking for young children with mental health problems. *Australian Journal of Psychology, 67*(3), 187-195. doi:http://dx.doi.org/10.1111/ajpy.12072

Owens, J. (2006). Bedtime stories: Common myths about kids and sleep. *Pediatrics for Parents, 22*(8), 10-11.

Owens, P.L., Hoagwood, K., Horwitz, S.M., et al. (2002). Barriers to children's mental health services. *Journal of American Academic Child and Adolescent Psychiatry, 41,* 731-738.

Owens, J. A. & Jones, C. (2011). Parental knowledge of healthy sleep in young children: Results of a primary care clinic survey. *Journal of Developmental and Behavioral Pediatrics, 32*(6), 447.

Owens, J. A., Spirito, A., & McGuinn, M. (2000). The Children's Sleep Habits Questionnaire (CSHQ): Psychometric properties of a survey instrument for school-aged children. *Sleep, 23*,1-9.

Pavuluri, M. N., Luk, S.L., & McGee, R. (1996). Help-seeking for behavior problems by parents of preschool children: A community study. *Journal of American Academic Child and Adolescent Psychiatry, 35,* 215-222.

Reid, G. J., Evans, B., Brown, J. B., Cunningham, C. E., Lent, B., Neufeld, R., Vingilis, E., Zaric, G., & Shanley, D. (2006). Help – I need somebody: The experiences of families seeking treatment for children with psychosocial problems and the impact of delayed or deferred treatment. *Canadian Health Services Research Foundation.*

Reid, G. J., Huntley, E. D., & Lewin, D. S. (2009). Insomnias of childhood and adolescence. *Child and Adolescent Psychiatric Clinics of North America, 18*(4), 979-1000.

Reid, G.J., Stewart, M., Vingilis, E., Dozois, D.J., Wetmore, S., Jordan, J., Dickie, G., Osmun, T., Wade, T.J., & Brown, J.B. (2017) Randomized trial of distance-based treatment for young children with sleep problems seen in primary care. *Manuscript in preparation*

Rickwood, D. J., & Braithwaite, V. A. (1994). Social-psychological factors affecting help-seeking for emotional problems. *Social science & medicine, 39*(4), 563-572.

Rhoades, K. A., Leve, L. D., Harold, G. T., Mannering, A. M., Neiderhiser, J. M., Shaw, D. S., . . . Reiss, D. (2012). Marital hostility and child sleep problems: Direct and indirect associations via hostile parenting. *Journal of Family Psychology, 26*(4), 488-498. doi:http://dx.doi.org/10.1037/a0029164

Ryan, S. M., Jorm, A. F., Toumbourou, J. W., Lubman, D. I. (2015) Parent and family factors associated with service use by young people with mental health problems: A systematic review. *Early Intervention in Psychiarty, 9*, 433-446.

Sadeh, A. (2004). A brief screening questionnaire for infant sleep problems: Validation and findings for an internet sample. *Pediatrics, 113*(6), e570-e577.

Sadeh, A., Mindell, J., & Rivera, L. (2011). “My child has a sleep problem”: A cross-cultural comparison of parental definitions. *Sleep Medicine, 12*(5), 478-482.

Sharpe, D. (2015). Your Chi-Square Test is Statistically Significant: Now What? *Practical Assessment, Research & Evaluation 20*(8), 1-10.

Simola, P., Laitalainen, E., Liukkonen, K., Virkkula, P., Kirjavaninen, T., Pitkaranta, A., Aronen, E. T. (2012). Sleep disturbances in a community sample from preschool to school age. *Child: Care, Health, and Development, 38*(4), 572-580.

Sneddon, P., Peacock, G. G., & Crowley, S. L. (2013). Assessment of sleep problems in preschool aged children: An adaptation of the children's sleep habits questionnaire. *Behavioral Sleep Medicine, 11*(4), 283-296.

Statistics Canada. (2011). *Canadian Population Census, 2011*. Ottawa, ON: Government of Canada.

Sung V., Hiscock H., Sciberras E., & Efron D. (2008) Sleep problems in children with attention-deficit/hyperactivity disorder: Prevalence and the effect on the child and family. *Archives of Pediatric Adolescent Medicine 162*, 336–342.

Teng, A., Bartle, A., Sadeh, A., & Mindell, J. (2012). Infant and toddler sleep in Australia and New Zealand: Infant and toddler sleep. *Journal of Paediatrics and Child Health, 48*(3), 268-273.

Touchette, É., Petit, D., Séguin, J. R., Boivin, M., Tremblay, R. E., & Montplaisir, J. Y. (2007). Associations between sleep duration patterns and behavioral/cognitive functioning at school entry. *Sleep: Journal of Sleep and Sleep Disorders Research, 30*(9), 1213-1219.

Tudor, M. E., Hoffman, C. D., & Sweeney, D. P. (2012). Children with autism: Sleep problems and symptom severity. *Focus on Autism and Other Developmental Disabilities, 27*(4), 254-262.

Werner, H., Molinari, L., Guyer, C., & Jenni, O. G. (2008). Agreement rates between actigraphy, diary, and questionnaire for children's sleep patterns. *Archives of Pediatrics & Adolescent Medicine, 162*(4), 350-358.

Wichstrom, L., Belsky, J., Jozefiak, T., Sourander, A., & Berg-Nielsen, T. S. (2014). Predicting service use for mental health problems among young children. *Pediatrics, 133*, 1054–1060.

Verhulst, F. C., & van der Ende, J. (1997). Factors associated with child mental health service use in the community. *Journal of the American Academy of Child & Adolescent Psychiatry, 36*(7), 901-909. doi:http://dx.doi.org/10.1097/00004583-199707000-00011

Zuckerman, B., Stevenson, J., & Bailey, V. (1987). Sleep problems in early childhood: Continuities, predictive factors, and behavioral correlates. *Pediatrics, 80*(5), 664-671.

Zwaanswijk, M., Van Der Ende, J., Verhaak, P. F. M., Bensing, J. M., & Verhulst, F. C. (2005). Help-seeking for child psychopathology: Pathways to informal and professional services in the netherlands. *Journal of the American Academy of Child & Adolescent Psychiatry,44*(12), 1292-1300.

Chapter 4

General Discussion

Adam T. Newton

4.1 Overview

This thesis investigated help-seeking networks and mechanisms for pediatric insomnia. Chapter 2 provided insight into the informal and formal help sources parents utilized or would utilize, as well as the main motivating factors that parents reported, or expected to, lead them to seek help from a professional. Chapter 3 provided identified key predictors of parents' perception of a sleep problem and help-seeking, reasons why parents may not seek help, and factors that differentiated between parents who sought professional help; parents who wanted to seek help, but did not; and parents who did not want to seek help. This chapter provides an integration of the findings of the two stand-alone manuscripts and a general discussion of theoretical considerations, limitations, implications, and the future directions of this research.

4.2 Help-Seeking Networks for Pediatric Insomnia

Chapter 2 identified the informal, informational, and formal sources of help for pediatric insomnia. The most common informal sources (i.e., any person who is not a health care professional) reported were partners, friends, and family members. Most parents reported seeking, or that they would seek, help from at least one informal source. Previous research has suggested that teachers are a key informal help source for children's mental health problems (Zwaanswijk et al., 2005). In this study, teachers were not among the most frequently endorsed informal sources (22.7-28.3% of parents reported that they sought or would seek help from a teacher). However, neither of the present studies investigated the specific function of various informal sources. Research by Zwaanswijk and colleagues suggests that teachers have an important role in guiding parents toward appropriate services, at least for children's mental health problems (Zwaanswijk et al., 2005). Indeed, school personnel (i.e., teachers, support staff, administration) may be in more of a position of authority to direct parents toward sleep-related guidance, compared to friends or family members. However, research has not compared sleep knowledge or the ability to

recommend resources for pediatric sleep problems between school personnel and other informal sources (i.e., friends, family members). There is a growing body of research evaluating school-based programs for sleep education (Bonuck, Blank, True-Felt, Chervin, 2016; Rigney et al., 2015; Wilson, Miller, Bonuck, Lumeng, Chervin, 2014). Intervention programs such as these may be effective in providing parents sleep-related information and increasing positive sleep outcomes; however, more research is needed to support the efficacy of these programs.

Parents sought or expected to seek information most commonly from the internet, books, and pamphlets. However, it is possible that this internet-based study overestimated the number of parents who would seek information from the internet. However, previous research has documented parents' interest in using internet-based interventions at similarly high rates (84%; Thorndike, 2009). Given these high rates of actual and expected internet usage, it is paramount that empirically-based pediatric sleep information is accessible to parents online. As mentioned in Chapter 2's discussion, a myriad of webpages exist (with varying degrees of scientific accuracy). Parents may benefit from some guidance as to which sites to gravitate toward. This guidance may come from trusted formal (e.g., family doctor) or informal (e.g., teacher) sources. Groups of sleep researchers have already responded to this need for accurate web-based information. The Pediatric Sleep Council is an international group of sleep researchers who aim to provide empirically-based advice to parents around sleep related issues (Pediatric Sleep Council, 2017). This group has created a website to aid in the dissemination of children's sleep information (babysleep.com; Pediatric Sleep Council, 2017). Further, these results speak to the need for evidence-based treatments that can be delivered over the internet. Research in this area is ongoing (Corkum et al., 2016)

However, internet-based information is unlikely to be enough. The Canadian Radio-Television and Telecommunications Commission (CRTTC, 2015) reported that, as of 2014, 28% of Canadians were without reliable internet at home. Home internet access is particularly low among low income families (i.e., 59.7% for those in the lowest income quintile; 77.6% for those in the second lowest income quintile; CRTTC, 2015). Alternative methods would be required to reach these parents with sleep-related information. Providing information or interventions through schools offers one solution. Another potential solution may be the provision of services and information through a primary health care provider.

Nearly all parents sought or would seek formal help first from a primary care provider. This result did not differ by sociodemographic factors or by the actual or expected main negative impact of the sleep problem on the child or the parent. However, as mentioned in Chapter 2's discussion, parents seem to rarely raise pediatric sleep concerns with their primary care provider and primary providers rarely discuss sleep, unprompted, (Blunden et al., 2004). A recent systematic review of pediatric sleep in primary care suggests great variability in providers' sleep knowledge and comfort in assessing and intervening for sleep concerns (Honaker & Meltzer, 2016). Together, these findings and the results from this thesis raise a series of questions. It seems to be unclear whether the parent or the provider is responsible to discuss pediatric sleep concerns first. Although parents report (almost unanimously) that help would first be sought from a primary care provider, it seems that the actual occurrence of these discussions may be low (Blunden et al., 2004). Blunden and colleagues hypothesize that parents and providers may have opposing views that lead to the under-discussion of sleep concerns (e.g., providers believe parent would raise the concern; parents believe provider would inquire if there was a concern). Given the high prevalence of pediatric insomnia, it may be advisable for primary providers to routinely screen for sleep

problems; however, some researchers have argued that it may be unethical for primary care providers to routinely screen for sleep problems, as they are unable to effectively treat these problems (Ewart, 2000; Perrin, 1998). Instead, a system for the adequate treatment of pediatric sleep concerns should be established prior to routine screening by primary care providers (Perrin, 1998).

Primary care providers struggle to address psychosocial issues in general (Gold & Shaw, 2003), and sleep issues in particular (Honaker & Meltzer, 2016; Owens, 2001). The growth of family health teams, which are community health care groups that can include family physicians, nurses, social workers, psychologists, and other professionals, help address these challenges. In Ontario (as of 2012), there were 184 family health teams that service approximately 3 million individuals (Ministry of Health and Long-Term Care, 2016). Though family doctors may not necessarily have the expertise or time to provide behavioural sleep interventions (i.e., best practices), other members within the team could certainly develop the necessary expertise and apply interventions (e.g., social workers or psychologists). This application of family health teams represents one potential solution to the problems within primary care identified by the Honaker and Meltzer (2016) review.

4.3 Reasons Why Parents Seek Help

The reasons and predictors of parents help-seeking for pediatric insomnia were investigated in two ways. In Chapter 2, the main negative impact of the sleep problem (on child and parent functioning) that motivated help-seeking was reported by parents. In Chapter 3, a two-stage nested model of help-seeking was tested. Importantly, the proportion of parents who sought formal help (5.4%) was as expected, given the rates of pediatric insomnia and the rates of help-seeking among

parents with a child with a mental health problem (Blader et al.,1997; Simola et al., 2012). Although the methodology was distinct in the two chapters, the results are complementary.

In Chapter 2, parents reported the main negative impact that motivated, or that would motivate, professional help-seeking from a list of options. In Chapter 3, parents reported on child, parent, and sleep related factors to generate a predictive model of sleep problem perception and help-seeking. Behavioural problems were the most commonly reported child factor motivating help-seeking among "help-seeking," "help wanted, not sought," and "help not wanted" parents. Mood/ irritability concerns were also particularly relevant for "help-seeking" parents, but not for parents who did not seek help. Relatively few parents endorsed fatigue/ daytime sleepiness as the child factor that motivated or would motivate help-seeking, suggesting that co-occurring problems may be particularly important to help-seeking decisions. In the two-step model, child mental health problems were a significant predictor of perceiving a sleep problem, but not of subsequent help-seeking. Thus, parents appeared to be led to help-seeking for sleep problems by more than exclusively fatigue/ daytime sleepiness, using both methodologies.

With respect to parent factors that motivated help-seeking, impacts of children's sleep problems on the parent's own daytime functioning were the most commonly reported non-child-related factor that motivated or would motivate help-seeking. A parent functioning-related factor was also relevant in the two-stage prediction model – higher levels of parental mental health problems predicted help-seeking. Results from both chapters are consistent with the children's mental health help-seeking literature, as increased problem severity, behavioural problems, co-occurring problems, and parental stress and mental health problems have been frequently related to help-seeking in this literature (e.g., Ford et al., 2008; Rickwood et al., 1994; Verhulst et al., 1997; Wichstrom et al., 2014).

Parental perception of a sleep problem was modelled as a necessary step, prior to help-seeking. Previous help-seeking research has supported parental perception of a problem as either necessary for help-seeking (e.g., Pavuluri et al., 1996) or significantly predictive of help-seeking (e.g., Costello et al., 1998; Ryan et al., 2015; Zwannswijk et al., 2005). This approach is also consistent with the Revised NEM (Costello et al., 1998) and the Pathways to Care Model (Pavuluri et al., 1996). However, we found that three help-seeking parents (13.6% of help-seeking parents) did not in fact perceive their child to have a sleep problem. As mentioned in Chapter 3's discussion, these parents were thought to have received an effective intervention at some point during the previous six months and then no longer perceived a child sleep problem during the time of the study. However, it is also possible that these parents accessed professional services for pediatric insomnia via a pathway other than perceiving a sleep problem themselves (e.g., spouse's insistence on seeking help). Further research and alternative models may be required to investigate these alternative pathways to help-seeking. Specifically, future research may consider longitudinal studies of parents' help-seeking intentions and actions for pediatric insomnia, rather than the cross-sectional design employed in this thesis.

4.4 Reasons Why Parents May Not Seek Help

Chapter 3 identified reasons parents may not seek help by applying the Revised NEM (Costello et al., 1998) and the Pathways to Care Model (Pavuluri et al., 1996), and in association with more recent help-seeking research (Oh et al., 2015). Common in both models is problem perception. If a problem is not perceived, help-seeking is extremely uncommon. Beyond this factor, the Pathways to Care model aids in the conceptualization of the main reasons parents did not seek help. A full discussion of this conceptualization was presented in Chapter 3. Parents are thought to traverse a series of hierarchically-ordered filters as they consider formal help-seeking

and the unsuccessful navigation of anyone of these filters can account for not seeking help. Specifically, parents are thought to navigate problem conceptualization filters (e.g., thinking the problem will get better on its own or that the parent can manage the problem themselves), a filter considering the need for professional help, a filter for the perceived efficacy of professional help (i.e., belief that a professional could not help), and a final filter consisting of logistic barriers (e.g., treatment would be too expensive). Further, unsuccessful navigation of these filters is not always problematic. For example, pediatric sleep research suggests that, for many young children who develop pediatric insomnia, symptoms do improve with age (Gregory & O'Connor, 2002; Petit et al., 2007). Therefore, unsuccessful navigation may only become problematic when the appraisal is incorrect (e.g., problem does not improve with time). In contrast, the unsuccessful navigation of logistic barriers may always be problematic. In this case, parents have tried seeking help, but have been unable to access services. Two avenues are suggested by these findings. First, educational approaches may address incorrect problem conceptualization appraisals related to the persistence of sleep problems. This could be accomplished through several methods, including internet sites on typical and atypical child sleep patterns. Second, more accessible treatment options may circumvent logistic barriers, such as distance-based interventions (Mindell et al., 2011; Thorndike, 2009) or web-based interventions (Corkum et al., 2016).

The motivating factors for help-seeking, results from the two-step prediction model, and the reasons why parents may not seek help begin to identify the major influences involved in a help-seeking model for pediatric insomnia. Specifically, parents reported that negative impacts of pediatric insomnia on the child's behaviour or on the parent's daytime functioning would motivate help-seeking, the two-stage model suggested that a more severe sleep problem and greater child mental health problems predict the perception of a sleep problem; whereas the presence of

increased parent anxiety, depression, and stress symptoms predict formal help-seeking. Therefore, help-seeking behaviour may be anticipated by increased sleep problem severity, increased co-occurring child problems, and increased co-occurring child problems. Conversely, parents may not seek help if the main negative impact expected to motivate help-seeking is not present (e.g., if the parent believes she will seek help if the child is also experiencing behavioural problems, and behavioural problems have not occurred). Parents may also not seek help if the problem is believed to be a transient developmental stage or manageable without professional intervention. Lastly, among parents who have conceptualized a significant sleep problem or have experienced additional negative impacts on the child or parent's mental health functioning, help-seeking may be impeded by logistic barriers (e.g., too costly, services too difficult to get to).

4.5 Differentiating between Help-Seeking and Non-Help-Seeking Parents

Finally, this thesis identified key differences between help-seeking and non-help-seeking parents. These results provided additional insights beyond the two-step prediction model by comparing parents who sought help (i.e., "help-seeking"); parents who considered seeking help, but did not complete these plans (i.e., "help wanted, not sought"); and parents who did not want help (i.e., "help not wanted"). "Help-seeking" and "help wanted, not sought" parents were not significantly differentiated by sleep problem severity, but both of these groups did have higher sleep problem severity than "help not wanted" parents. As documented in the children's mental health help-seeking literature, higher problem severity is related to a greater likelihood of help-seeking (Costello et al., 1998; Pavuluri et al., 1996; Rickwood et al., 1994; Wichstrom et al., 2014. Help-seeking groups were also differentiated by the child's mental health problem scores (SDQ). There was a consistent linear trend among these scores: "help-seeking" parents had the most severe child mental health problem scores (as compared to the other help-seeking statuses), followed by

"help wanted, not sought," and "help not wanted" parents. These differences highlight the importance of co-occurring problems (Costello et al., 1998; Ford et al., 2008; Verhulst et al., 1997; Wichstrom et al., 2014). In the children's mental health help-seeking literature, behavioural and emotional problems are often considered separately, and behavioural concerns are usually more strongly tied to help-seeking (Ford et al., 2008; Wichstrom et al., 2014). However, this thesis did not differentiate between these two factors. Future research may address which aspect of child mental health problems are more impactful for help-seeking decisions. Results from Chapter 2 suggest that behavioural problems may also be the driving factor for pediatric insomnia help-seeking decisions.

With respect to parent factors, "help-seeking" parents had more severe parental mental health problem scores (DASS-21) than "help not wanted" parents. This difference identifies parental co-occurring problems as relevant to help-seeking decisions. The difference between "help wanted, not sought" parents' parental mental health problem scores did not differ significantly from "help-seeking" or "help not wanted" parents; however, the trend was in the expected direction (i.e., "help-seeking" highest, then "help wanted, not sought" parents, then "help not wanted" parents). As observed in the children's mental health help-seeking literature, increases in parental symptoms of depression, anxiety, and stress (whether directly tied to the child's problem behaviour or not), are associated with increases in help-seeking (Verhulst et al., 1997; Zwaanswijk et al., 2005).

4.6 Theoretical Considerations

The theoretical considerations for the models used in this thesis are briefly described.

4.6.1 Revised NEM

As described above, the main negative impacts on child and parent functioning motivating help-seeking and the significant predictors in the two-step model are consistent with the Revised NEM (Costello et al., 1998). However, sociodemographic factors (e.g., child age, ethnicity, income, parental education, gender) were not found to be predictive of help-seeking for pediatric insomnia, nor were parenting variables (i.e., parental laxness and parental over-reactivity). Results from this thesis suggest that a diverse network of help-seeking options related to pediatric sleep problems. Thus, this thesis provides moderate support for specific variables in the Revised NEM, as applied to pediatric sleep. However, due to the relatively small influence of parental sleep beliefs and knowledge, a simpler version of the Revised NEM may adequately explain pediatric insomnia perception and help-seeking.

4.6.2 Gateway Provider Model

The first formal source for help that parents reported – primary care providers – is consistent with the Gateway Provider Model (Stiffman et al., 2004). The presence of informal persons as potential help sources is also consistent; however, this thesis did not disentangle the specific involvements of informal help sources and their function in parent's transition from informal to formal help-seeking. So, it remains unclear as to whether teachers have a similar role in informal help-seeking for pediatric insomnia, as was noted in children's mental health help-seeking (Zwaanswijk et al., 2005). However, it may be the case that teachers are not influential in the perception of child sleep problems or in recommendations for help-seeking. As opposed to behavioural problems, teachers rarely observe children sleeping (apart from preschool or kindergarten nap times). As such, teachers may not be in a position to comment on children's sleep or potential problems, unless daytime consequences (e.g., behavioural problems or irritability) are observed in the classroom.

4.6.3 Pathways to Care Model

This model provided an excellent conceptual framework for understanding reasons why parents may not seek help. Parents were proposed to follow a similar sequence of filters and levels in the present study. However, more research would be required to truly validate a sequenced Pathways to Care Model in pediatric insomnia help-seeking. Pavuluri and colleagues observed some parents to "skip" specific filters in their application of the model (Pavuluri et al., 1996). It is possible there may be similar imperfections in the present application, as in most theoretical models. For example, it is unclear why 1.3% of parents who reported no perceived sleep problem indicated that logistic barriers were the main reason they did not seek help.

4.6.4 Parental Cognitions and Child Sleep Model

This model is the newest of models utilized in this thesis and has not yet been published. In this thesis, there were no observed linkages between sleep knowledge and beliefs and perceived sleep problems, contrary to what the Parental Cognitions and Child Sleep Model might predict (Coulombe et al., 2012). Neither perception nor help-seeking seemed to be influenced by sleep-related beliefs or sleep knowledge in multivariate models. As such, the results of the thesis are largely inconsistent with this model. Further, the model or the measures used to evaluate it may need to be reconsidered. For explain, the model may benefit from additional factors such as beliefs about whether the sleep problem will resolve on its own.

4.7 Limitations

This thesis was limited in some key respects. First, both studies employed a retrospective design. "Help-seeking" parents reported on their help-seeking behaviours over the previous six months; whereas non-help-seeking parents reported on help-seeking behaviours they *would*

engage in, if pediatric insomnia became a concern in the future. Parents reported on their child, sleep, and parent-related variables in the present and over the past month. These factors then predicted previous help-seeking and current perception of child sleep problems. However, this methodology is common in the children's mental health help-seeking literature and has been used in several large-scale studies (e.g., Reid et al., 2006; Zwaanswijk et al., 2005). Future research using longitudinal designs may represent a next logical step for this research and would reduce confounds related to the timing of the predictor and outcome variables. Second, there are no definitive mechanisms to determine the legitimacy of internet-based respondents. With this limitation in mind, several steps were taken to increase the likelihood of attaining a completely credible sample, including verifying IP and email addresses and cross-validating participants' location data as generated by their (1) IP address, (2) longitude and latitude data, and (3) reported postal/ zip code. This approach did identify and eliminate several illegitimate respondents. There are additional limitations with a sample generated exclusively from online sources. As mentioned above, lower income families are less likely to have at-home access to the internet (CRTTC, 2015). It is also conceivable that a sample not generated from exclusively online sources may have reported a lower rate of use of the internet for informational support. Additionally, the broader study required ongoing participation and may have discouraged overwhelmed parents from engaging in the study. Consequently, the samples used in the present study may not be representative of all parents, and may have specifically excluded parents who were overly stressed with child problems or other concerns. It is also possible that parents who had an interest in children's sleep may have gravitated toward this study [see recruitment advertisement text (Appendix L)]. Third, this study lacked ethnic, caregiver-informant, educational, and income diversity. As explained in Chapter 2's discussion, diverse samples have been demonstrated to

present with different sleep beliefs and distinct degrees of willingness to discuss parenting practices with primary providers (e.g., Dumont-Mathieu et al., 2006; Sadeh et al., 2007). Fourth, there are concerns associated with preselecting statistically significant variables for regression analyses. In this thesis, significant univariate predictors were used in multivariate analyses. Though this technique is commonly used with smaller sample sizes, statisticans have suggested the technique perturbs the distribution in unknown ways **(**Bursac, Gauss, Williams, & Hosmer, 2008). The reader should be aware of these issues while interpreting results from this thesis.

4.8 Implications

The results from this thesis may have several key implications. First, friends, family members, and to a lesser extent, teachers have a role to play in informal help-seeking for pediatric insomnia. Although friends and family members were more frequently endorsed informal help-seeking options for parents, it may be more reasonable for schools to provide accurate information about children's sleep, through specialized programs or expert-delivered presentations (e.g., Bonuck et al., 2016; Rigney et al., 2015; Wilson et al., 2014).

Second, the internet appears to be a very common source of information for parents. Research organizations (e.g., Pediatric Sleep Council) must ensure evidence-based information is accessible for parents. Additionally, resources must be made available for parents without regular access to the internet (e.g., low income families; CRTTC, 2015).

Third, primary care providers were consistently the first professional contact for pediatric insomnia help-seeking. In association with the documented gaps in primary care providers' knowledge (Honaker & Meltzer, 2016), the low proportion of parents who discuss sleep concerns with their provider, and the low proportion of providers who inquire about sleep (Blunden et al., 2004). There is a need to develop a model of care for pediatric insomnia. One solution may be a

stepped-care approach where information or distance-based approaches are used as frontline interventions and children who do not improve from these interventions then receive more specialized care (e.g., face-to-face contact with a non-specialist in a family health team, then face-to-face contact with a sleep specialist).

Fourth, differential interventions may be necessary to reach parents who do not seek help. Specifically, issues around inaccurate problem conceptualization can be addressed with quality internet information or community presentations. Alternatively, motivational interviewing techniques may be beneficial in increasing parents' use of effective child sleep techniques and have been shown to be effective in increasing parent-child health behaviours in a variety of applications in a recent meta-analysis and systematic review (Borrelli, Tooley, & Scott-Sheldon, 2015). Issues around logistic barriers may be addressed through distance-based or web-based interventions or other flexibly applied interventions (e.g., Corkum et al., 2016).

4.9 Future Directions

This thesis raises some new questions about help-seeking for pediatric insomnia. First, more research is needed to understand the function of the Pathways to Care Model (Pavuluri et al., 1996) in the context of pediatric insomnia. Further investigation of this model may aid in the successful marketing and application of intervention techniques. Future research would benefit from employing longitudinal designs to investigate these questions. Second, there may be differential predictors of informal, information, and formal help-seeking. That is, the factors that increase the likelihood of seeking support from a friend or family member may be distinct from factors that led parents to seek help from a primary care provider. Additionally, the function of these informal sources remains unclear. It may also be possible that parents receive the support required from some key informal interactions and do not need to transition to formal help-seeking.

Third, the results of this study may aid in the understanding of parents' preferences for intervention. More research is needed in this area, but this thesis can be foundational in formulating a research study to investigate the aspects of intervention programs that subgroups of parents would prefer, perhaps based on the factors that motivate their help-seeking, the barriers they foresee (among other differentiating factors). Fourth, the mechanisms driving the main motivating factors for help-seeking warrant further investigation. It may be possible that parents who reported the main negative impact of the sleep problem on their child's functioning as "behavioural problems" may already have children with elevated behavioural concerns. Further, parents who indicated the impact on their own functioning as the main negative impact of the sleep problem that would motivate help-seeking, may already have elevated mental health concerns themselves. Each of these areas of research would help to create a more rounded understanding of help-seeking for pediatric insomnia and could potentially aid in the design and implementation of intervention strategies or systems of care. Lastly, there may be other models of help-seeking that could be applied to future research. One possible model is the Common Sense Model of Illness (Leventhal et al., 1980). This model incorporates appraisals of the illness and coping, cognitive and emotional representations of the illness, and illness and emotional outcomes. This model has been used extensively for physical health problems [see Hagger & Orbell (2001) for a review] and to depression (e.g., Brown et al., 2007), and more recently to understand parents' understanding of their children's psychopathology (Shanley & Reid, 2015).

4.10 Conclusions

Pediatric insomnia is a commonly occurring problem affecting children and parents (e.g., Astill et al., 2012; Blader et al., 1997; Erath & Tu, 2011; Simola et al., 2012). Although very little is known about help-seeking for pediatric insomnia, the results from this thesis suggest that many

of the help-seeking mechanisms from the children's mental health help-seeking literature are also relevant to help-seeking for pediatric insomnia. The results of this thesis indicate diverse informal and informational help-seeking networks, suggest primary care providers as the gatekeepers for formal services, identify key predictors of perceiving a child sleep problem and seeking help, and suggest key reasons why a parent who has perceived a sleep problem may not seek help for it. There are still significant gaps in our understanding of help-seeking for pediatric insomnia. As these gaps are addressed, it may be possible to design interventions, cognizant of the function of help-seeking networks for pediatric insomnia.

4.11 References

Astill, R. G., Van, d. H., Van IJzendoorn, M. H., & Van Someren, Eus J. W. (2012). Sleep, cognition, and behavioral problems in school-age children: A century of research meta-analyzed. *Psychological Bulletin, 138*(6), 1109-1138. doi:http://dx.doi.org/10.1037/a0028204

Blader, J. C., Koplewicz, H. S., Abikoff, H. & Foley, C. (1997). Sleep problems of elementary school children: A community survey. *Archives of Pediatric Adolescent Medicine, 151,* 473-480.

Blunden, S., Lushington, K., Lorenzen, B., Ooi, T., Fung, F., & Kenny, D. (2004). Are sleep problems under-recognised in general practice? *Archives of Disease in Childhood, 89,* 708-712.

Blunden, S., & Rigney, G. (2015). Lessons learned from sleep education in schools: A review of dos and don'ts. *Journal of Clinical Sleep Medicine, 11*(6), 671-680. doi:10.5664/jcsm.4782

Bonuck, K., Blank, A., True-Felt, B., & Chervin, R. (2016). Promoting sleep health among families of young children in head start: Protocol for a social-ecological approach. *Preventing Chronic Disease, 13,* E121. doi:10.5888/pcd13.160144

Borrelli, B., Tooley, E. M., & Scott-Sheldon, L. A. J. (2015). Motivational interviewing for parent-child health interventions: A systematic review and meta-analysis. *Pediatric Dentistry, 37*(3), 254-265.

Brown, C., Battista, D. R., Sereika, S. M., Bruehlman, R. D., Dunbar-Jacob, J., & Thase, M. E. (2007). Primary Care Patients' Personal Illness Models for Depression: Relationship to

Coping Behavior and Functional Disability. *General Hospital Psychiatry*, *29*(6), 492–500. http://doi.org/10.1016/j.genhosppsych.2007.07.007

Bursac, Z., Gauss, C. H., Williams, D. K., & Hosmer, D. W. (2008). Purposeful selection of variables in logistic regression. *Source Code for Biology and Medicine*, *3*, 17. http://doi.org/10.1186/1751-0473-3-17Canadian Radio-Television and Telecommunications Commission. (2015). *Communications Monitoring Report 2015: Canada's Communications System: An Overview for Citizens, Consumers, and Creators*. Ottawa, ON: Government of Canada. http://www.crtc.gc.ca/eng/publications/reports/policymonitoring/2015/cmr2.htm

Costello, E. J., Pescosolido, B. A., Angold, A., & Burns, B. J. (1998). A family network-based model of access to child mental health services. *Research in Community and Mental Health*, *9*, 165-190.

Corkum, P., Chambers, C., Godbout, R., Gruber, R., Hall, W., Reid, J., Stremler, R., Weiss, S. & Witmans, M. (2016). *Better nights, better days: Improving psychosocial outcomes in children with insomnia, a randomized controlled trial*. Unpublished research protocol.

Coulombe, J.A., Corkum, P., Reid, G.J., & Bessey, M. (2012, October). *Thinking about sleep: A theoretical model of parental cognitions and children's sleep.* Poster session presented at the 21st Annual Department of Psychiatry Research Day (Dalhousie University), Halifax, Nova Scotia.

Dumont-Mathieu, T. M., Bernstein, B. A., Dworkin, P. H., & Pachter, L. M. (2006). Role of pediatric health care professionals in the provision of parenting advice: A qualitative study

with mothers from 4 minority ethnocultural groups. *Pediatrics, 118*(3), e839-e848. doi:10.1542/peds.2005-2604

Erath, S. A. & Tu, K. M. (2011). The parenting context of children's sleep. In El-Sheikh, M. (Ed.), *Sleep and development: familial and socio-cultural considerations* (29-47). Toronto: Oxford University Press.

Ewart , R.M. (2000) Primum non nocere and the quality of evidence: Rethinking the ethics of screening. *Journal of the American Board of Family Practice, 13*(3), 188-196.

Ford, T., Hamilton, H., Meltzer, H., & Goodman, R. (2008). Predictors of service use for mental health problems among British schoolchildren. *Child and Adolescent Mental Health, 13*(1), 32-40.

Gold M., & Shaw, E. (2003). Common parenting problems: Experience and comfort level in family medicine residency. *Canadian Family Physician, 49*, 619-622.

Gregory, A. M., & O'Connor, T.,G. (2002). Sleep problems in childhood: A longitudinal study of developmental change and association with behavioral problems. *Journal of the American Academy of Child and Adolescent Psychiatry, 41*(8), 964-971.

Honaker, S. M. & Meltzer, L. J. (2016) Sleep in pediatric primary care: A review of the literature. *Sleep Medicine Reviews, 25*, 31-39.

Leventhal, H., Meyer, D. and Nerenz, D. (1980). The common sense model of illness danger. In: Rachman, S. (Ed.), *Medical Psychology*, Vol. 2. pp. 7–30. Pergamon: New York.

Mindell, J.A., Du Mond, C.E., Sadeh. A., Telofski, L.S., Kulkarni, N., & Gunn, E. (2011). Efficacy of an internet-based intervention for infant and toddler sleep disturbances. *Sleep, 34*(4), 451e8.

Oh, E., Mathers, M., Hiscock, H., Wake, M., & Bayer, J. (2015). Professional help seeking for young children with mental health problems. *Australian Journal of Psychology, 67*(3), 187-195. doi:http://dx.doi.org/10.1111/ajpy.12072

Ontario Ministry of Health and Long-Term Care. (2016). *Family Health Teams.* Toronto, ON: Queen's Printer for Ontario. http://www.health.gov.on.ca/en/pro/programs/fht/

Owens, J. A. (2001) The practice of pediatric sleep medicine: results of a community survey. *Pediatrics, 108*(3), E51.

Pavuluri, M. N., Luk, S.L., & McGee, R. (1996). Help-seeking for behavior problems by parents of preschool children: A community study. *Journal of American Academic Child and Adolescent Psychiatry, 35*, 215-222.

The Pediatric Sleep Council. (2017, June). *About Us: Pediatric Sleep Council.* Retrieved from: https://www.babysleep.com/pediatric-sleep-council/

Perrin, E.C. (1998) Ethical questions about screening. *Journal of Developmental and Behavioral Pediatrics, 19*(5), 350-352.

Petit, D., Touchette, E., Tremblay, R. E., Boivin, M., & Montplaisir, J. (2007). Dyssomnias and parasomnias in early childhood. *Pediatrics, 119*(5), e1016-e1025.

Reid, G. J., Evans, B., Brown, J. B., Cunningham, C. E., Lent, B., Neufeld, R., Vingilis, E., Zaric, G., & Shanley, D. (2006). Help – I need somebody: The experiences of families seeking

treatment for children with psychosocial problems and the impact of delayed or deferred treatment. *Canadian Health Services Research Foundation.*

Rickwood, D. J., & Braithwaite, V. A. (1994). Social-psychological factors affecting help-seeking for emotional problems. *Social science & medicine*, *39*(4), 563-572.

Rigney, G., Blunden, S., Maher, C., Dollman, J., Parvazian, S., Matricciani, L., & Olds, T. (2015). Can a school-based sleep education programme improve sleep knowledge, hygiene and behaviours using a randomised controlled trial. *Sleep Medicine, 16*(6), 736-745. doi:10.1016/j.sleep.2015.02.534

Ryan, S. M., Jorm, A. F., Toumbourou, J. W., Lubman, D. I. (2015) Parent and family factors associated with service use by young people with mental health problems: A systematic review. *Early Intervention in Psychiatry, 9*, 433-446.

Simola, P., Laitalainen, E., Liukkonen, K., Virkkula, P., Kirjavaninen, T., Pitkaranta, A., Aronen, E. T. (2012). Sleep disturbances in a community sample from preschool to school age. *Child: Care, Health, and Development*, *38*(4), 572-580.

Shanley, D. C., & Reid, G. J. (2015). The impact of parents' illness representations on treatment acceptability for child mental health problems. *Journal of Emotional and Behavioural Disorders, 23*(2), 115-127.

Stiffman, A. R., Pescosolido, B., & Cabassa, L. J. (2004). Building a model to understand youth service access: The gateway provider model. *Mental Health Services Research, 6*, 189–198.

Thorndike, F.P. (2009). Commentary: Interest in internet interventions – an infant sleep program as illustration. *Journal of Pediatric Psychology, 34*(5)470-473

Verhulst, F. C., & van der Ende, J. (1997). Factors associated with child mental health service use in the community. *Journal of the American Academy of Child & Adolescent Psychiatry, 36*(7), 901-909. doi:http://dx.doi.org/10.1097/00004583-199707000-00011

Wichstrom, L., Belsky, J., Jozefiak, T., Sourander, A., & Berg-Nielsen, T. S. (2014). Predicting service use for mental health problems among young children. *Pediatrics, 133*, 1054–1060.

Wilson, K., Miller, A., Bonuck, K., Lumeng, J., & Chervin, R. (2014). Evaluation of a sleep education program for low-income preschool children and their families. *Sleep, 37*(6), 1117-1125. doi:10.5665/sleep.3774

Zwaanswijk, M., Van Der Ende, J., Verhaak, P. F. M., Bensing, J. M., & Verhulst, F. C. (2005). Help-seeking for child psychopathology: Pathways to informal and professional services in the Netherlands. *Journal of the American Academy of Child & Adolescent Psychiatry,44*(12), 1292-1300.

Appendix A: Ethics Approval

A.1 Western Ethics Approval

Western Research

Research Ethics

Western University Health Science Research Ethics Board
HSREB Delegated Initial Approval Notice

Principal Investigator: Dr. Graham Reid
Department & Institution: Schulich School of Medicine and Dentistry\Family Medicine, Western University

Review Type: Expedited
HSREB File Number: 106713
Study Title: Thinking about Sleep: Parental Cognitions and Behavioural Sleep Problems in Children
Sponsor: IWK Health Centre

HSREB Initial Approval Date: July 08, 2015
HSREB Expiry Date: July 08, 2016

Documents Approved and/or Received for Information:

Document Name	Comments	Version Date
Instruments	Thinking about Sleep - Sleep Diary	2015/06/17
Instruments	Thinking about Sleep Significant Change Questionnaire	2015/06/17
Instruments	Thinking about Sleep SDQ	2015/06/17
Instruments	Thinking about Sleep PSAM	2015/06/17
Instruments	Thinking about Sleep Help Seeking Questionnaire	2015/06/17
Instruments	Thinking about Sleep PS	2015/06/17
Instruments	Thinking about Sleep DASS	2015/06/17
Instruments	Thinking about Sleep CNBS	2015/06/17
Instruments	Thinking about Sleep PSKQ	2015/06/17
Instruments	Thinking about Sleep NWVS	2015/06/17
Instruments	Thinking about Sleep BRQ	2015/06/17
Instruments	Thinking about Sleep NWSS	2015/06/17
Instruments	Thinking about Sleep PNTQ	2015/06/17
Instruments	Thinking about Sleep SABS	2015/06/17
Instruments	Thinking about Sleep CSHQ	2015/06/17
Instruments	Thinking about Sleep PCSIS	2015/06/17
Instruments	Thinking about Sleep Demographic Questionnaire	2015/06/17
Recruitment Items	Thinking about Sleep Short Recruitment Ad	2015/06/17
Instruments	Thinking about Sleep Eligibility Screener	2015/06/17
Recruitment Items	Thinking about Sleep Recruitment Ad	2015/06/17
Other	Thinking about Sleep Study Timeline (received May 4/15)	
Instruments	Description of sleep diary measure to be used during Wave 2 of data collection (received May 4/15)	
Western University Protocol	Thinking about Sleep Research Protocol	2015/06/16
Instruments	Thinking about Sleep Emails and Thank you Screens	2015/06/17
Letter of Information & Consent		2015/06/17

The Western University Health Science Research Ethics Board (HSREB) has reviewed and approved the above named study, as of the HSREB Initial Approval Date noted above.

HSREB approval for this study remains valid until the HSREB Expiry Date noted above, conditional to timely submission and acceptance of HSREB Continuing Ethics Review.

The Western University HSREB operates in compliance with the Tri-Council Policy Statement Ethical Conduct for Research Involving Humans (TCPS2), the International Conference on Harmonization of Technical Requirements for Registration of Pharmaceuticals for Human Use Guideline for Good Clinical Practice Practices (ICH E6 R1), the Ontario Personal Health Information Protection Act (PHIPA, 2004), Part 4 of the Natural Health Product Regulations, Health Canada Medical Device Regulations and Part C, Division 5, of the Food and Drug Regulations of Health Canada.

Members of the HSREB who are named as Investigators in research studies do not participate in discussions related to, nor vote on such studies when they are presented to the REB.

The HSREB is registered with the U.S. Department of Health & Human Services under the IRB registration number IRB 00000940.

Ethics Officer, on behalf of Dr. Marcelo Kremenchutzky, HSREB Vice Chair

Ethics Officer to Contact for Further Information

Erika Basile	Grace Kelly	Mike Mekhail	Vikki Tran

This is an official document. Please retain the original in your files.

Western University, Research,

A.2 IWK Ethics Approval

IWK Health Centre
Research

Approval – Delegated Review
July 07, 2015

Principal Investigator: Dr. Penny Corkum
Co-Principal Investigator: Dr. Graham Reid
Title: Thinking about Sleep: Parental Cognitions and Behavioural Sleep Problems in Children
Project #:1012878

On behalf of the IWK Research Ethics Board (IWK-REB) I have reviewed the documents included in this study. I am pleased to confirm the Board's full approval for this research study, effective today.

Best wishes for a successful study.

Yours truly,

Linda Hamilton
Co-Chair, Research Ethics Board

This approval includes the following study documents:

Document Name	Version Date
Protocol	2015/06/17
Questionnaire - Eligibility Screener	2015/06/17
Information and Consent Form	2015/06/17
Questionnaire - Demographic	2015/06/17
Questionnaire - Children's Sleep Habits	2015/06/17
Questionnaire - Parent/Child Sleep Interactions Scale	2015/06/17
Questionnaire - Night-waking Strategies Scale	2015/06/17
Questionnaire - Night-waking Thoughts and Affect	2015/06/17
Questionnaire - Sleep Attitudes and Beliefs Scale	2015/06/17
Questionnaire - Night-waking Vignettes Scale, Preschool Version	2015/06/17
Questionnaire - Bedtime Routines	2015/06/17

Appendix B: Letter of Information and Consent

Letter of Information and Consent Form

Please read this letter of information and consent statement in full. You may choose to print this letter by clicking Thinking about sleep letter of information and consent form.

Title
Thinking about Sleep: Parental cognitions and behavioural sleep problems in children

Investigators
Dr. Penny Corkum, PhD.
Dr. Graham Reid, PhD.
Dr. Aimee Coulombe, PhD
Dr. Sarah Blunden, PhD.

Research Coordinator
Adam Newton

Introduction and Purpose
Many children experience difficulties getting to sleep and staying asleep at night. Being a parent of a child with sleep problems can be stressful and it can be difficult to know what to do or where to go for help. Currently, many health professionals aren't sure of the best ways to help parents make changes to their children's sleep. This research study involves researchers from the University of Western Ontario and Dalhousie University in Canada, and Central Queensland University in Australia. This study will be completed in several steps; this consent form is for all three steps of the study.

Why are the researchers doing this study?
This study is part of a larger program of research whose primary goal is to make sure that parents get the help they need, when they need it, so that children and families can sleep better. Part of this work involves trying to better understand how parents think about sleep, what they know about sleep, and how this relates to what they do to help their children sleep at night. The purpose of this study is to develop and test several new questionnaires that measure these concepts. Ultimately, this will contribute to the development of tools and resources for parents and health professionals that reflect a better understanding of parents' and children's needs.

How will the researchers do the study?
This study uses a longitudinal questionnaire-based design. Although the study will be based out of Western University in London, Ontario, it will be conducted online so that parents across Canada and Australia, and in other countries like the United States can participate. In total, we hope that approximately 400 parents of 2- to 10-year old children will participate. Parents will complete this study in three steps. Step 1, parents will complete a number of questionnaires about their families, sleep, and parenting. Step 2 takes place about one month later; parents will

complete a minimum of 4 of 7 daily sleep diaries about their child's sleep. Step 3 occurs immediately after the diaries are completed. Parents will complete some of the sleep questionnaires again, to see how things change, if at all.
We will use the data we collect to refine the questionnaires (e.g., shorten them, identify their underlying structure), to better understand how parents think about sleep, and to look at relationships between the concepts the questionnaires measure. For example, we will look for relationships between how parents think about sleep problems and how they respond to them in their own children.

What will I be asked to do?
If you decide that you would like to participate in the study, you will be asked to click the "I agree to participate" button below. After you have clicked this button, you will be taken to a demographic questionnaire that will completing the demographic questionnaire, which will inquire about descriptive information about you and your child (i.e, age, ethnicity, education level, etc.). After the demographic questionnaire you will be presented with a screen instructing you how to access the questionnaires.

Step 1) Completing the questionnaires should take about 1 – 1 ½ hours, which can be a lot to complete in one sitting. If you'd prefer, you can complete the questionnaires in multiple sessions. To do this, you will click the "Save" button on the online survey. You will then be prompted for your email address. A link to the survey will be sent to the email address you provide. We will send you an email reminder if you have not completed the questionnaires within a week after you first started them. When you complete this step, you will be eligible to receive a $10 gift card.

Step 2) We ask you to complete at least 4 daily diaries about your child's sleep. We call these "sleep diaries". You'll do at least 4 sleep diaries over one week. The sleep diaries do take some time. Depending on how your child sleeps and whether or not he or she naps, each sleep diary should take about 15 minutes. We expect that taking part in Step 2 will take approximately 1-2 hours over the course of one week. When you complete this step, you will be eligible to receive an additional $5 gift card.

Step 3) After completing completing Step 2, you will receive an email giving you access to the Step 3 questionnaires. These will take about 1 hour and can be completed over a week. When complete this step, you will be eligible to receive an additional $10 gift card.

At each step, we'll ask you to provide a consistent email address, initials, and user name. This will help us link your Step 1, Step 2, and Step 3 data.

The only identifying information that will be collected will be your email address, which will be used to allow you to stop and return to complete the questionnaires in multiple sessions. Your email address will also be used to communicate with you, at your request, once the study is completed (e.g., if you indicate that you would like to be emailed study results) and to send you appreciation with gift cards. The data you provide will be de-identified (i.e., your email address will be collected but separated from response data) before it is analyzed. A unique

participant ID will be used to maintain a link between your email address and your response data.

****Some people use email addresses with their first and last names, or some other identifying information. If this describes you, you may wish to create a new email address for the purposes of this study.****

Potential Harms and Benefits
You may find it stressful finding time to complete the questionnaires. There are no other foreseeable harms.

There may be no direct benefit in participating in this study. Results from this study will be used to inform the development of resources and tools to help parents and health professionals. This may ultimately contribute to professionals' ability to support parents seeking to improve their children's sleep.

Withdrawal from participation
Before deciding to take part in this study, you should know that you do not have to participate in this research. Participation in this study is entirely voluntary (your choice). You can withdraw from the research at any time by exiting the survey and not "saving" responses. We have also added a "prefer not to answer" option for some sensitive questions (such as family income), so that you are able to skip these questions.

Will the study cost me anything and, if so, how will I be reimbursed?
There are no costs involved in taking part in this study. You will be compensated with a gift card after completion of each step of the study. Participants who complete Step 1 will receive a $10 (CAD) gift card. Participants who complete Step 2 will a $5 (CAD) gift card. Participants who complete Step 3 will a $10 (CAD) gift card. In total, participants who complete all three steps will receive $25 (CAD) in gift cards from the research team.

Participants from Canada or the United States will receive a gift card from their choice of Amazon, Indigo, or Tim Hortons. Participants from Australia will receive a WISH Gift Card, useable at several box stores in Australia for various household and clothing purchases

What about possible profit from commercialization of the study results?
At this time, we have no formal plans to commercialize (market) the results of this study. If the results of this study were eventually commercialized as a provided service to others, research participants would not receive further financial reimbursement.

There are no conflicts of interest (including financial conflicts) on the part of the researchers and/ or the institutions involved in this study.

How will my privacy be protected?
Any information that is learned about you will be kept private. All measures will be collected via the Internet through secure software, protected by the same SSL encryption that is employed by online banking web sites. All data is housed on a secure server maintained by Western

University's Information Technology Services. The administration and management of the server are also performed over encrypted connections. Only administrators of the software (Principal Investigators, Project Coordinators) will have a password to access secure data. If the results of this study are published, your identity will remain confidential. Quantitative results will be reported as a group. We do not keep any paper versions of any forms or data. Electronic data will be kept for at least 5 years past the date of publication of this research. Records may be shown to the granting agency or the IWK Health Centre Research Ethics Board in the case of an audit.

Consent

I have read and understood the above consent form and desire of my own free will to participate in this study.

- o I AGREE to participate in this study
- o I DO NOT agree to participate in this study

Appendix C: Demographic Differences between Help-Seeking Statuses

Table C.1

Demographic Comparisons between Help-Seeking Statuses

Demographic Characteristic		Help-Seeking Status: Help-Seeking	Help Wanted, Not Sought	Help Not Wanted	χ^2 or *F* Test
		% (*n*) or *M* (*SD*)			
Parent demographics					
Age	21-24 years	4.5 (1)	4.3 (2)	1.8 (6)	χ^2 (10) = 3.86, *p* = .954
	25-29 years	9.1 (2)	15.2 (7)	11.2 (38)	
	30-34 years	31.8 (7)	37.0 (17)	36.0 (122)	
	35-39 years	40.9 (9)	32.6 (14)	36.9 (125)	
	40-44 years	13.6 (3)	8.7 (4)	11.8 (40)	
	45 years or older	0.0 (0)	2.2 (1)	2.4 (8)	
Employment status	Employed full-time	36.4 (8)	37.0 (17)	43.1 (146)	χ^2 (8) = 8.05, *p* = .429
	Employed part-time	22.7 (5)	19.6 (9)	15.3 (52)	
	On maternity leave	0.0 (0)	13.0 (6)	12.4 (42)	
	Homemaker/at-home parent	40.9 (9)	21.7 (10)	23.0 (78)	
	Other (e.g., student/ unemployed)	0.0 (0)	8.7 (4)	6.3 (21)	
Relationship with child	Birth mother	86.4 (19)	89.1 (41)	93.9 (318)	χ^2 (4) = 5.54, *p* = .236
	Birth father	9.1 (2)	6.5 (3)	4.4 (15)	
	Other (e.g., grandparent, adoptive parent)	4.5 (1)	4.4 (2)	1.5 (5)	
Ethnicity	White/ Caucasian	86.4 (19)	89.1 (41)	91.2 (309)	χ^2 (8) = 7.05, *p* = .531
	Asian (e.g., Chinese, Japanese, South Asian, West Asian)	9.1 (2)	2.2 (1)	3.3 (11)	

	Black	0.0 (0)	0.0 (0)	0.0 (0)	
	Native/Aboriginal/ Indigenous	0.0 (0)	0.0 (0)	1.8 (6)	
	Other	4.5 (1)	8.7 (4)	3.7 (13)	
Education level	Some high school	4.5 (1)	2.2 (1)	0.6 (2)	χ^2 (16) = 16.97, p = .387
	High school graduate/ GED	9.1 (2)	6.5 (3)	4.1 (14)	
	Some post-secondary	22.7 (5)	10.9 (5)	9.2 (31)	
	Diploma/ certificate from college or nursing school	18.2 (4)	17.3 (8)	17.1 (58)	
	Undergraduate degree	27.3 (6)	32.6 (15)	43.1 (146)	
	Master's degree	9.1 (2)	23.9 (11)	18.3 (62)	
	Professional degree (e.g., MD, Law degree)	0.0 (0)	2.2 (1)	0.6 (2)	
	Earned doctorate (e.g., PhD., D.Ed.)	9.1 (2)	4.3 (2)	5.0 (17)	
	Other (e.g., graduate diploma	0.0 (0)	0.0 (0)	2.1 (7)	
Country of residence	Canada	63.6 (14)	89.1 (41)	82.3 (279)	χ^2 (4) = 7.84, p = .098
	United States	31.8 (7)	8.7 (4)	13.3 (45)	
	Australia	4.5 (1)	2.2 (1)	4.4 (15)	
Family					
Income[1]	Under $40,000	9.6 (2)	8.8 (4)	13.9 (45)	χ^2 (8) = 1.85, p = .985
	$40,000 - $60,000	14.3 (3)	13.4 (6)	11.5 (37)	
	$61,000 - $80,000	19.0 (4)	15.5 (7)	14.2 (46)	
	$81,000 - $100,000	19.0 (4)	22.2 (9)	18.9 (61)	
	Over $100,000	38.1 (7)	40.0 (17)	41.5 (134)	
Child demographics					
Age	Years *M (SD)*	4.36 (2.15)	3.77 (2.11)	4.24 (1.90)	F (2, 404) = 1.29, p = .278
	Preschool age	81.8 (18)	87.0 (40)	83.8 (284)	

	School age	18.2 (4)	13.0 (6)	16.2 (55)	χ^2 (2) = .39, p = .823
Gender	Male	50.0 (11)	50.0 (23)	56.6 (192)	χ^2 (2) = 1.01, p = .603
	Female	50.0 (11)	50.0 (23)	43.4 (147)	
Birth order	Oldest	36.4 (8)	30.4 (14)	46.0 (156)	χ^2 (10) = 10.19, p = .420
	Middle	13.6 (3)	13.0 (6)	6.8 (23)	
	Youngest	18.2 (4)	23.9 (11)	20.4 (69)	
	Only	31.8 (7)	32.6 (15)	25.4 (86)	
	Multiple (e.g., twin)	0.0 (0)	0.0 (0)	1.5 (5)	

Note. [1] excluding “Prefer not to answer”.

Appendix D: Written-In Responses for Informal and Informational Help Sources

Table D.1

Written-In Responses for Informal and Informational Help Sources

Help Source	Write-In Response	Count	% of Parents endorsing out of total (N = 407)
Informal sources	Specific parenting/online group	4	.98%
	Coworkers	1	.25%
	Other unspecified source	22	5.4%
Informational sources	Research articles	4	.98%
	Specific books	3	.74%
	Specific parenting/online group	4	.98%
	Other unspecified source	130	31.9%

Appendix E: Supplemental Results for Multinomial Logistic Regression Predicting the Main Child Motivating Factor

Table E.1

Betas and Wald Statistics for Multinomial Logistic Regression Predicting Child Motivating Factor

Predictor	**Category**	**Behavioural Problems** [b]		**Attention/ concentration/ error proneness** [b]		**Impaired academic/ social functioning** [b]		**Mood disturbance/ irritability**	
		β (SE)	*Wald*	*β (SE)*	*Wald*	*β (SE)*	*Wald*	*β (SE)*	*Wald*
Help-seeking status [a]	Help wanted, not sought	<.01 (.81)	<.01	.41 (1.28)	.10	-.36 (.95)	.14	-1.76 (.91)	3.77
	Help not wanted	-.67 (.72)	.86	.16 (1.17)	.02	-.93 (.84)	1.25	-2.39 (.73)	10.82*

Note. [a] reference category is "help-seeking" parents; [b] reference category is "fatigue/ daytime sleepiness"; All Wald test degrees of freedom = 1. * $p < .05$.

Table E.2

Betas and Wald Statistics for Multinomial Logistic Regression Predicting Parent Motivating Factor

Predictor	**Category**	**Parent's Own Sleep** [b]		**Parent's Own Daytime Functioning** [b]	
		β (SE)	*Wald*	*β (SE)*	*Wald*
Help-seeking status [a]	Help wanted, not sought	-1.81* (.86)	4.40	-1.75* (.74)	5.67
	Help not wanted	-1.29 (.75)	2.97	-1.10 (.66)	2.75

Note. a reference category is "help-seeking" parents; b reference category is "Partner's sleep/ daytime functioning and impact on the rest of the family."; All Wald test degrees of freedom = 1.
* $p < .05$.

Appendix F: Supplemental Results for Multinomial Logistic Regression Predicting First Professional Contact

Table F.1

N's for Revised Categories for Multinomial Logistic Regressions Predicting First Professional Contact

Characteristic		**% (*n*)**
Parent		
Age	*20-29 years*	13.7% (56)
	30-39 years	72.6% (295)
	40 years or older	13.7% (56)
Employment Status	*Employed full-time*	42.0% (171)
	Employed part-time/ student/ unemployed	22.4% (91)
	On maternity leave	11.8% (48)
	Homemaker/ at-home parent	23.8% (97)
Education Level	*High school graduate or below*	5.7% (23)
	Some post-secondary/ college or vocational school degree	23.0% (94)
	Undergraduate degree	41.5% (169)
	Undergraduate degree and further education (e.g., Masters)	24.8% (102)
Country of Residence	*Canada*	82.1% (334)
	United States	13.7% (56)
	Australia	4.2% (17)
Family		
Income*	*Under $40,000*	14.3% (58)
	$40,000-$100,000	45.7% (186)
	Over $100,000	40.0% (163)
Child		
Age	*Preschool age*	84.0% (342)
	School age	16.0% (65)
Gender	*Male*	55.5% (226)
	Female	44.5% (181)
Birth Order	*Oldest*	43.9% (179)
	Middle/ multiple	8.9% (36)
	Youngest	20.8% (85)
	Only child	25.9% (105)

Note. * Parents who responded "Prefer not to answer" had their income imputed, therefore percentages and *n*'s represent final numbers, including imputed data.

Table F.2

Univariate Multinomial Logistic Regressions Predicting First Professional Contact

Predictor	LR χ^2	Category	Primary Care Provider [a]		Allied Health Professional [a]	
			β (SE)	*Wald*	*β (SE)*	*Wald*
Child age [b]	9.08*					
		Preschool age	-1.24 (.61)	4.12*	-1.99 (.73)	7.45*
Child gender [c]	3.46					
		Male	.49 (.29)	2.83	.11 (.47)	.05
Child birth order [d]	9.05					
		Only	.45 (.40)	1.26	.29 (.58)	.25
		Middle or multiple (e.g., twins)	-.66 (.44)	2.18	-.99 (.85)	1.37
		Youngest	.16 (.39)	.18	-1.19 (.84)	2.04
Country of residence [e]	6.04					
		Australia	-.41 (.67)	.38	.93 (.86)	1.16
		United States	.75 (.54)	1.91	1.15 (.72)	2.53
Family income [f]	5.49					
		<$40,000	-.13 (.47)	.08	-.15 (.79)	.04
		>$100,000	-.60 (.32)	3.57	<.01 (.51)	<.01
Parent education [g]	3.21					
		High school graduate or below	-.15 (.59)	.07	-.65 (1.17)	.31
		Some post-secondary or vocational/ college graduate	.51 (.39)	1.75	.13 (.62)	.04
		More than undergraduate	.01 (.36)	<.01	.11 (.56)	.04
Parent age [h]	3.28					
		20-29 years	.58 (.50)	1.35	.92 (.69)	1.76

		40 years or older	.58 (.50)	1.35	.69 (.73)	.91
Parent employment status [i]	5.89					
		Unemployed/ student/ employed part-time	.30 (.44)	.47	.12 (.64)	.03
		On maternity leave	-.26 (.45)	.33	-1.67 (1.12)	2.25
		At-home parent	-.40 (.35)	1.31	-.69 (.58)	1.41
Main child factor motivating help-seeking [j]	8.56					
		Behavioural problems	-.74 (.37)	4.12*	-.33 (.63)	.27
		Attention/ concentration/ memory problems/ errors	-.07 (.56)	.02	.96 (.78)	1.50
		Impaired social/ academic functioning	-.08 (.53)	.03	.08 (.86)	.01
		Mood disturbance/ irritability	-.15 (.61)	.06	.49 (.91)	.29
Main parent factor motivating help-seeking [k]	4.12	*Parent's own sleep*	-.53 (.40)	1.71	-1.06 (.74)	2.05
		Parent's own daytime functioning	.01 (.34)	<.01	-.61 (.56)	1.19

Note. [a] Other (non-allied) health professional is reference category; [b] School-aged is reference category; [c] Female is reference category; [d] Oldest is reference category; [e] Canada is reference category; [f] $40,000-$100,000 is reference category; [g] Undergraduate is reference category; [h] 30-39 years old is reference category; [i] Employed full-time is reference category; [j] Fatigue/ daytime sleepiness is reference category; [k] Impact on the rest of the family/ partner's sleep or daytime functioning is reference category.

LR = Likelihood Ratio. All Wald test degrees of freedom = 1; * $p < .05$.

Table F.3

Multivariate Multinomial Logistic Regression Predicting First Professional Contact

Predictor	Adjusted LR χ^2	Category	Primary Care Provider [a]		Allied Health Professional [a]	
			β (SE)	*Wald*	*β (SE)*	*Wald*
Child age [b]	7.02*					
		Preschool age	-1.02 (.66)	2.42	-2.20 (.87)	6.44*
Child gender [c]	2.66					
		Male	.52 (.32)	2.58	.33 (.57)	.34
Child birth order [d]	6.79					
		Only	.46 (.46)	1.01	-.13 (.70)	.03
		Middle or multiple (e.g., twins)	-.58 (.51)	1.32	-.85 (.93)	.84
		Youngest	.07 (.46)	.03	-1.29 (.91)	1.98
Country of residence [e]	5.99					
		Australia	-1.02 (.78)	1.70	.61 (1.02)	.35
		United States	.64 (.59)	1.18	.65 (.83)	.61
Family income [f]	2.91					
		<$40,000	-.38 (.52)	.54	-.72 (.98)	.54
		>$100,000	-.48 (.38)	1.58	.06 (.64)	.01
Parent education [g]	10.78					
		High school graduate or below	-.68 (.70)	.94	-1.38 (1.34)	1.07
		Some post-secondary or vocational/ college graduate	.02 (.43)	<.01	-.32 (.74)	.19
		More than undergraduate	-.05 (.40)	.02	-.17 (.68)	.06
Parent age [h]	3.57					
		20-29 years	.78 (.58)	1.77	1.38 (.85)	2.63

		40 years or older	.30 (.54)	.31	-.15 (.91)	.03
Parent employment status [i]	10.78					
		Unemployed/ student/ employed part-time	.23 (.51)	.20	-.02 (.76)	<.01
		On maternity leave	.07 (.54)	.02	-1.65 (.86)	2.54
		At-home parent	-.43 (.42)	1.06	-1.01 (.78)	1.71
Main child factor motivating help-seeking [j]	4.98					
		Behavioural problems	-.65 (.39)	2.73	-.31 (.72)	.19
		Attention/ concentration/ memory problems/ errors	-.31 (.60)	.27	.41 (.93)	.20
		Impaired social/ academic functioning	-.01 (.55)	<.01	.21 (.93)	.05
		Mood disturbance/ irritability	-.09 (.64)	.02	.69 (1.00)	.48
Main parent factor motivating help-seeking [k]	5.39					
		Parent's own sleep	-.78 (.44)	3.13	-1.45 (.82)	3.16
		Parent's own daytime functioning	-.07 (.37)	.04	-.63 (.61)	1.07

Note. [a] Other (non-allied) health professional is reference category; [b] School-aged is reference category; [c] Female is reference category; [d] Oldest is reference category; [e] Canada is reference category; [f] $40,000-$100,000 is reference category; [g] Undergraduate is reference category; [h] 30-39 years old is reference category; [i] Employed full-time is reference category; [j] Fatigue/ daytime sleepiness is reference category; [k] Impact on the rest of the family/ partner's sleep or daytime functioning is reference category.

* $p < .05$. LR = Likelihood Ratio.

Appendix G: Factor Structure for Sleep Attitudes and Beliefs Scale

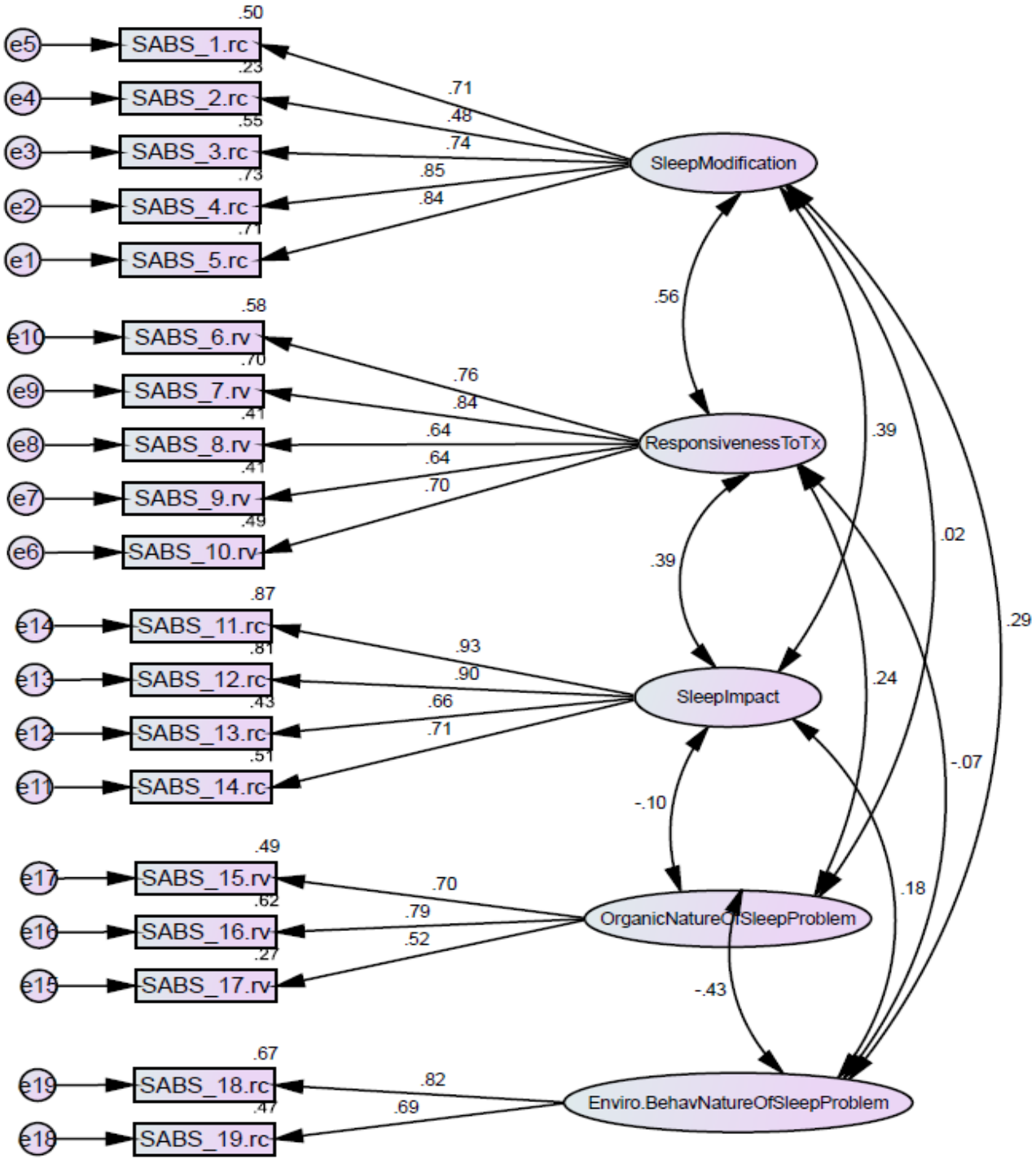

Figure G.1. Confirmatory Factor Structure for the Sleep Attitudes and Beliefs Scale (SABS). See Table G.1 for item legend. Numbers at item boxes are standardized regression weights; numbers on vectors from factor to item are factor loadings; numbers on lines connecting factors are covariates.

Table G.1

Legend for Sleep Attitudes and Beliefs Scale Items and Factors

Latent variable	Abbreviated item name	Full item text	Loading	Regression weight
Sleep Modifiability	SABS_1.rc	Sleep problems in children are the result of poor sleep routines	.71	.50
	SABS_2.rc	Solving children's sleep problems mostly takes common sense	.48	.23
	SABS_3.rc	Most children's sleep can be modified so that there are no sleep problems	.74	.55
	SABS_4.rc	Parents are able to change children's sleep habits	.85	.73
	SABS_5.rc	Childhood sleep problems can be solved through changing the child's sleep habits	.84	.71
Responsiveness to Treatment	SABS_6.rv	Parents can't change their children's sleep pattern (-)	.76	.58
	SABS_7.rv	Children's sleep patterns cannot be modified (-)	.84	.70
	SABS_8.rv	Treatments for sleep problems are not effective in children (-)	.64	.41
	SABS_9.rv	No matter what a parent does, a child will still have sleep problems (-)	.64	.41
	SABS_10.rv	Parents don't have a lot of success in changing their child's sleep patterns (-)	.70	.49
Sleep Impact	SABS_11.rc	Sleep problems affect other areas of children's physical and mental development	.93	.87
	SABS_12.rc	Sleep problems in children can cause daytime behavior problems	.90	.81
	SABS_13.rc	Children with sleep problems do less well at school	.66	.43
	SABS_14.rc	A child's sleep problem can have a big impact on the whole family	.71	.51
Organic Nature of Sleep Problems	SABS_15.rv	Children's sleep problems are due to underlying medical conditions (-)	.70	.49
	SABS_16.rv	Sleep problems are a result of neurological causes (-)	.79	.62
	SABS_17.rv	Childhood sleep problems are biological in nature (-)	.52	.27
Behavioural/ Environmental Nature of Sleep Problems	SABS_18.rc	Childhood sleep problems are behavioural in nature	.82	.67
	SABS_19.rc	Childhood sleep problems are environmental in nature	.69	.47

Note. (-) indicates a negatively worded item. Statistics are standardized.

Appendix H: Supplemental Results for Nested Logit Model

Table H.1

Beta Coefficients and Z-Scores for Nested Logit Model Predicting Perceived Problem and Help-Seeking

Predictor Variables		No perceived sleep problem vs. Perceived sleep problem			Non-help-seeking vs. Help-seeking		
		β (SE)	Z	P>|Z|	β (SE)	Z	P>|Z|
Sleep problem severity (CSHQ) [a]		.23 (.03)	8.57	<.001*	.02 (.04)	.64	.520
Sleep modifiability beliefs [b]		.08 (.21)	.40	.686	-.36 (.37)	-.96	.337
Responsiveness to treatment beliefs [b]		-.01 (.20)	-.04	.966	.11 (.36)	.31	.753
Sleep impact beliefs [b]		.39 (.25)	1.57	.116	.70 (.46)	1.51	.131
Parental laxness [b]		-.28 (.18)	-1.55	.121	-.30 (.34)	-.90	.366
Parental over-reactivity [b]		.05 (.20)	.22	.825	.27 (.38)	.72	.468
Child mental health problems (SDQ) [a]		.09 (.03)	2.55	.011*	.09 (.05)	1.83	.067
Parental mental health problems (DASS-21) [a]		.03 (.20)	1.35	.176	.08 (.04)	1.96	.050*
Parent Education [c]	High school graduate or below	-.56 (.64)	-.87	.385	-.43 (.87)	-.49	.622
	Some post-secondary or college/ vocational graduate	-.38 (.65)	-.50	.615	-.21 (.99)	-.21	.835
	Above undergraduate	-.38 (.65)	-.58	.561	-1.30 (.99)	-1.32	.187
Incursive value		-2.01 (1.93)	-1.04	.298	—	—	—

Note: [a] Odds Ratio represents increased odds per ½ *SD* units on the CHSQ (Children's Sleep Habits Questionnaire), SDQ (Strengths and Difficulties Questionnaire) or DASS-21 (Depression, Anxiety Stress Scale – 21 Item Version); [b] Odds Ratio represents increased odds per 1 unit; [c] reference group is "Undergraduate degree"; * $p < .05$.

Appendix I: Specific Logistic Barriers Endorsed by Parents

Table I.1

Specific Logistic Barriers Endorsed by Parents by Perceived Problem Severity

Logistic Barrier	No Perceived Problem	Mild Problem	Moderate-to-Severe Problem
	% (n)	*% (n)*	*% (n)*
I didn't know where to get help	.4% (1)	0.9% (1)	2.6% (1)
I never got around to it (e.g., too busy)	.4% (1)	.9% (1)	7.7% (3)
It would have been too hard to schedule	.4% (1)	0.9% (1)	9.6% (5)
I tried, but the wait was too long	0.0% (0)	0.0% (0)	0.0% (0)
It was going to cost too much	0.0% (0)	1.8% (2)	12.80% (5)
Getting there was a problem	0.0% (0)	0.0% (0)	0.0% (0)
Child refused to go	0.0% (0)	0.0% (0)	.3% (1)
Total	**1.3% (3)**	**4.5 (5)**	**35.9% (14)**

Appendix J: Chi-Square Analyses and Residuals

Chi-square analyses are omnibus tests that indicate whether an association exists between two variables, but does not indicate at which variable level(s) the association exists. Sharpe (2015) suggests a variety of strategies to assess post-hoc significance. Chief among these are the interpretation of standardized residual scores. The standardized residual scores compare variable level observed scores differ from an expected value. The expected value can be an average across the cells or the expected value, given another specified distribution (e.g., the distribution of another variable level). Sharpe (2015) suggests using the adjusted standardized residual [also referred to as the standardized residual (Agresti, 2013)]. This standardized residual can be interpreted as a z-score (i.e., absolute values exceeding 1.96 correspond to a *p*-value at or below .05). The standardized residual is computed as:

$$\frac{O - E}{\sqrt{E * \left(1 - \frac{RowMarginal}{n}\right) * (1 - \frac{ColumnMarginal}{n})}}$$

Where:
RowMarginal = the Row marginal for the cell
ColumnMarginal = the column marginal for the cell
O = the observed value
E = the expected value
n = the total number of observations

Due to the multiple comparisons made in the standardized residual analyses, a post-hoc *p*-value correction technique should be employed (e.g., Bonferroni or False Discovery Rate). Similar to Analysis of Variance (ANOVA) post-hoc testing, the standardized residual technique should only be used when a significant “omnibus” chi-square statistic exists.

References

Agresti, A. (2013). *Categorical data analysis* (3rd ed.). Hoboken, NJ: Wiley.

Sharpe, D. (2015). Your Chi-Square Test is Statistically Significant: Now What? *Practical Assessment, Research & Evaluation 20*(8), 1-10.

Appendix K: Maximum Likelihood Estimation

Maximum Likelihood Estimation is a statistic technique used in many statistical tests including logistic regression. The maximum likelihood estimation in logistic regression assumes non-complete separation. Maximum likelihood cannot be achieved if the groups are completely separated (Tabachnick & Fidell, 2008). Maximum likelihood is designed to select a probability that would maximize the likelihood for the set of observations in the sample, given the individual x_i has a distribution of:

$[F(\beta_0 + \beta_1 x_1)]^{y_i} + [1\text{-}F(\beta_0 + \beta_1 x_i)]^{y_i}$

The function is maximized as (Czepiel, no year):

$$\log(\beta) = \sum_{i=1}^{N}\sum_{j=1}^{J-1} \quad (y_{ij}\sum_{k=0}^{K} x_{ik}\beta_{kj}) - n_i \log(1 + \sum_{j=1}^{J-1} e \sum_{k=0}^{K} x_{ik}\beta_{kj})$$

Where:

K = the number of independent variables

J = the number of discrete categories of the dependent variable

n = a common vector, n_i represents the number of observations in population *i*.

y = a matrix with *N* rows and *J*-1 columns

x = a matrix with *N* rows and *K*-1 columns

β = Beta, and a matrix with *K*+1 rows and *J*-1 columns

The above function is maximized with respect to the betas. The function utilizes logarithm as this transformation allows the function to be more easily maximized (i.e., by utilizing summation instead of the product operator).

References

Czepiel, S. A. (2002). Maximum likelihood estimation of logistic regression models: Theory and implementation. Accessed from https://czep.net/stat/mlelr.pdf.

Tabachnick, B. G., & Fidell, L. S. (2008). *Using Multivariate Statistics*. Toronto, Canada: Pearson.

Appendix L: Recruitment Advertisement Text

Parents: What do you think about your child's sleep? Researchers at Dalhousie University, Western University in Canada, and the CQ University in Australia are interested in better understanding how parents think about their children's sleep and what parents do at night to help their children sleep.

If you are a parent of a 2- to 10-year old child and would be willing to help us with this study, we look forward to hearing from you!

This study involves the completion of a series of questionnaires and sleep diaries.

In appreciate for participation parents will receive an online gift card to Amazon.com or a major fast food chain (e.g., Tim Horton's) depending on the country in which you live. Your participation can play an important role in understanding children's sleep. Ultimately, you'll be helping parents and professionals help children sleep better at night.

For more information, follow the link to the study:

https://uwopsych.qualtrics.com/SE/?SID=SV_3CTFqpCPzQuajIh
You may also contact our Project Coordinator, Adam Newton, or the Study Investigator, Dr. Graham Reid.

Curriculum Vitae

Adam Newton

MSc Candidate, Clinical Psychology

EDUCATION

2017 (Expected)	**MSc, Clinical Psychology** Western University Thesis: Parent Help-seeking for Pediatric Insomnia: Where, When, and Why Do Parents Seek Help? Advisor: Graham J. Reid, Ph. D., C. Psych
June 2015	**B. A., with Distinction, Honors Specialization in Psychology** Western University Thesis: Cognitive profiles of children with mathematic learning difficulties Advisor: Marcie Penner-Wilger, Ph. D. • Dean's Honor List (2012-2015)

RESEARCH INTERESTS

Behavioural insomnia of childhood
Pediatric sleep problems and Help-Seeking
Child and Family Health Help-seeking/ Access to Care
Community and School Mental Health Education and Program Evaluation

RESEARCH EXPERIENCE

2015-Present	**Research Coordinator,** Thinking About Sleep Research Study (Co-PIs: Graham Reid & Penny Corkum)
2013-Present	**Program Director**, PEARS Mental Health Education Program
2012-2015	**Lab Manager & Research Assistant,** Cognitive Science and Numeracy Lab, King's University College at Western University (PI: Marcie Penner-Wilger)
2014	**Independent Study**, *The Influence of Psychosocial Factors and Bully Roles among University Students* Advisor: Nicholas Skinner, Ph.D. King's University College at Western University College

CLINICAL & COUNSELLING ACTIVITIES

Jan-April 2017	**Practicum Student**, Southwest Centre for Forensic Mental Health (Assessment)
Jan-April 2017	**Practicum Student**, Thames Valley District School Board (Assessment)
Summer 2016	**Practicum Student**, Student Development Centre (Intervention)
2014- 2015	**Psychology Head Mentor**, King's Academic Mentoring Program at King's University College (Volunteer)
2014- 2015	**Practicum Student**, Dr. LaRose Clinical Psychology Private Practice
2015-2016	**Inclusion/ TRACKS Coordinator,** City of London (Employment)
2014-2016	**Youth Leadership in Training Coordinator**, City of London (Employment)
2013- 2016	**Day Camp Director**, City of London (Employment)
2012	**Recreation Therapy Program Volunteer**, Mount Hope at St. Joseph's Hospital, London (Volunteer)

PROFESSIONAL ACTIVITIES

April 2017 - present	**President,** Advocacy Through Action
Winter 2017	**Instructor**, Clinical Psychology Distance Studies (PSYCH 3301G) (Co-instructed with C. Sarmiento and G. Reid)
September 2016 - present	**Reviewer,** Western Undergraduate Psychology Journal Western University
Summer 2016	**Instructor**, Clinical Psychology Summer Distance Studies (PSYCH 3301F) (Co-instructed with C. Sarmiento and G. Reid)
Jan 2016 – Dec 2016	**Teaching Assistant,** Abnormal Psychology
September 2015 – Present	**Ad-hoc Mentored Reviewer** *Journal of Pediatric Psychology* *Journal of the National Sleep Foundation* *Journal of Family Psychology* *Personality and Individual Differences*
2015 - 2016	**Teaching Assistant,** Human Sexuality
2014-2015	**Teaching Assistant,** Cognitive Psychology
2014 - 2015	**Psychology Representative**, King's University College Student Council
2014- Present	**Website Designer**, *Cognitive Science and Numeracy Lab*, King's University College, Marcie Penner-Wilger, Ph.D. & *Mental Health and Deaf Kids*, Private Practice, Cathy Chovaz, Ph.D., C. Psych

SCHOLARSHIPS & AWARDS

Award	Value	Level/ # Award	Type	Location Held	Period
Western Graduate Research Scholarship	$12, 201	Institutional	Academic	Western	2016-2017
Better Days, Better Nights Graduate Stipend	$10, 000	Organization (Better Nights, Better Days Project)	Academic	Western	2016-2017
Ontario Graduate Scholarship	$15, 000	Provincial	Academic	Western	2016-2017
Summer Student Research Award	$4, 500	Organization (Better Nights, Better Days Project)	Academic	Western	2016
CGS SSHRC Masters Award	$17, 500	National	Academic	Western	2015-2016
Western Graduate Research Scholarship	$11, 850	Institutional	Academic	Western	2015-2016
Summer Student Research Award	$4, 500	Organization (Better Nights, Better Days Project)	Academic	Western	2015
CMHA Organization of the Year	---	Community, One Awarded	Community	Canadian Mental Health Association (Middlesex)	2015
King's University College Faculty Association Award	$300	Institutional 1 Awarded	Academic & Community Service	Western	2015

King's University College Alumni Association Award	$1000	Institutional 1 Awarded	Academic & Community Service	Western	2014-2015
Academic Award in the Psychology Program	$200	Institutional 1 Awarded	Academic	Western	2014-2015
Havelka, Dr. Jaroslav Memorial Award	$400	Institutional 1 Awarded	Academic & Community Service	Western	2014-2015
King's University College Continuing Scholarship	$2000	Institutional	Academic	Western	2014-2015
CMHA Organization of the Year (Nominated)	----	Community Organization	Community Initiative	Canadian Mental Health Association	2014
King's University College Continuing Scholarship	$1500	Institutional	Academic	Western	2013-2014
King's University College Continuing Scholarship	$1500	Institutional	Academic	Western	2012-2013
King's University College Entrance Scholarship	$1500	Institutional	Academic	Western	2011-2012

COMMITTEES & COUNSELS

2015-Present	**Advocacy Through Action (ATA)**
2016-Present	**Clinical Student Advisory Committee (CSAC)**
2014 – 2015	**Research Ethics Review Committee** *King's University College at Western University*
2014 – 2015	**College Council** *King's University College at Western University*
2014 – 2015	**Faculty Council** *King's University College at Western University*
2013 – 2015	**King's University College Student Council** *King's University College at Western University*

WORKSHOPS ATTENDED

2017	**Proseminar:** Couples Therapy (led by Lisa Destun, Ph.D., C. Psych)
2016	**Proseminar:** Cognitive Behavioural Therapy for Eating Disorders (led by Phillip Masson, Ph.D., C. Psych)
2016	**Proseminar:** The Treatment of Insomnia: Integrating Cognitive Behavioural Therapy for Insomnia into Your Practice with Clients with Depression, Trauma, Pain, and Anxiety (led by Colleen E. Carney, Ph.D., C. Psych)
2016	**Proseminar:** Assessment of Malingering and Deception in Clinical and Forensic Practice (led by Marcus Juodis, Ph.D., C. Psych)
2015	**Proseminar:** Complex Trauma and Attachment (led by Richard Zayed, Ph.D., C. Psych)
2014	**CogSci 2014:** Computational Modeling of Cognition-Emotion Interactions: Relevance to Mechanisms of Affective Disorders and Therapeutic Action
2014	**safeTALK**: Suicide Awareness Training (Taken through the City of London).

PUBLICATIONS

REFEREED CONFERENCE PROCEEDINGS

Newton, A. T. & Penner-Wilger, M. (2015). Count on diversity: The cognitive and mathematical profiles of children in early elementary school. In Noelle, D. C., Dale, R., Warlaumont, A. S., Yoshimi, J., Matlock, T., Jennings, C. D., & Maglio, P. P. (Eds.). *Proceedings of the 37th Annual Meeting of the Cognitive Science Society* (pp. 1709- 1714). Pasadena, CA: Cognitive Science Society. Retrieved from https://mindmodeling.org/cogsci2015/papers/0297/paper0297.pdf

Newton, A. T., Waring, R. J., & Penner-Wilger, M. (2014). Symbiotic symbols: symbolic (but not nonsymbolic) number representation predicts calculation fluency in adults. In P. Bello, M. Guarini, M. McShane, & B. Scassellati (Eds.), *Proceedings of the 36th Annual*

Conference of the Cognitive Science Society (pp. 2753-2758). Quebec City, Canada: Cognitive Science Society.

Penner-Wilger, M., Waring, R. J., **Newton, A. T.** (2014). Subitizing and finger gnosis predict calculation fluency in adults. In P. Bello, M. Guarini, M. McShane, & B. Scassellati (Eds.), *Proceedings of the 36th Annual Conference of the Cognitive Science Society* (pp. 1150-1155). Quebec City, Canada: Cognitive Science Society.

NEWSPAPER ARTICLES

Newton, A. T. (2014, November 13). Review: Avoiding 'hotspots' key to self-control (Book Review). *The London Free Press.* Retrieved from http://www.lfpress.com/2014/11/06/review-avoiding-hotspots-key-to-self-control

Newton, A. T. (2014, February 7). No quick fix when food becomes foe: There is no cure for eating disorders. There are, however, many treatment groups (Op-ed). *The London Free Press.* Retrieved from http://www.lfpress.com/2014/02/06/newton-there-is-no-cure-for-eating-disorders-there-are-however-many-treatment-groups

RADIO INTERVIEWS

Newton, A. T. (2016, July 6). Children's sleep study and parents thoughts. *CKNI The Bend, Morning News.*

Newton, A. T. (2015, December 23). Child sleep study investigates parents' reactions. *CBC Radio One, Prince Edward Island, Island Morning.* Article retrieved from http://www.cbc.ca/beta/news/canada/prince-edward-island/child-sleep-study-investigates-parents-reactions-1.3377830

REFEREED CONFERENCE PRESENTATIONS: POSTERS

Newton, A. T., Reid, G. J., Corkum, P. V., Blunden, S. (2017, June). Family help-seeking for behavioural insomnia of childhood: Reasons why parents do not seek help. Poster presented at the 77th Annual Convention of the Canadian Psychological Association. Toronto, Canada.

Newton, A. T., Reid, G. J., Corkum, P. V., Blunden, S. (2017, April). Family help-seeking for behavioural insomnia of childhood: What motivates parents to seek help? Poster presented at the 8th Conference of the Canadian Sleep Society. Calgary, Canada.

Newton, A. T., Reid, G. J., Corkum, P. V., Blunden, S. (2016, November). Family help-seeking for behavioural insomnia of childhood: Where do parents seek help? Poster presented at the 4th Annual Child and Adolescent Psychiatry Research Half Day. London, Canada.

Newton, A. T. & Penner-Wilger, M. (2015, July). Count on diversity: The cognitive and mathematical profiles of children in early elementary school. Poster presented at the 37th Annual Meeting of the Cognitive Science Society. Pasadena, CA.

Penner-Wilger, M., Waring, R. J., **Newton, A. T.**, & White, C. (2015, July). Finger gnosis and symbolic number comparison as robust predictors of adult numeracy. Poster presented at the 37th Annual Meeting of the Cognitive Science Society. Pasadena, CA.

Newton, A. T. & Skinner, N. (2015, June). Promoting successful learning through psychological health: Pathways to resilience among university students. Poster presented at the 76th Annual Convention of the Canadian Psychological Association. Ottawa, Canada.

Newton, A. T., Waring, R. J., & Penner-Wilger, M. (2014, July). Symbiotic symbols: symbolic (but not nonsymbolic) number representation predicts calculation fluency in adults. Poster presented at the 36th Annual Conference of the Cognitive Science Society. Quebec City, Canada.

REFEREED CONFERENCE PRESENTATIONS: TALKS

Newton, A. T. & Hart, K. M. (2015, October). Psychological education, awareness, and reduction of stigma (PEARS). Talk presented at the Community-University Research Alliance (CURA2) Poverty and Social Inclusion Conference. London, Canada.

Newton, A. T. & Penner-Wilger, M. (2015, June). The cognitive and mathematical profiles of children in early elementary school. Talk presented at the Annual Meeting of the Canadian Society of Brain, Behaviour, and Cognitive Science. Ottawa, Canada.

Penner-Wilger, M., Waring, R. J., **Newton, A. T.** (2014, July). Subitizing and finger gnosis predict calculation fluency in adults. Talk presented at the 36th Annual Conference of the Cognitive Science Society. Quebec City, Canada.

NON-REFEREED CONFERENCE PRESENTATIONS: TALKS

Penner-Wilger, M., Buckland, C., Faltynek, P., Hart, K. M., **Newton, A. T.** (2014, October). Creating capstone experiences: The impact of high-impact learning from faculty and student perspectives. Talk presented at the 2nd Annual Technologies and Pedagogies at King's University College Conference. London, Canada.

NON-REFEREED CONFERENCE PRESENTATIONS: POSTERS

Newton, A. T., Hart, K. M., Hanna, J., Waring, R. J. (2014, October). PEARS mental health education program. Poster presented at the 2nd Annual Technologies and Pedagogies at King's University College Conference. London, Canada.

INVITED TALKS

Dossett, K. & **Newton, A. T.** (2017, February). Access to Mental Health Services in London. One hour talk delivered at the London Public Library, Central Branch. London, Canada.

Newton, A. T., Reid, G. J., Corkum, P., Blunden, S. (2016, November). Family help-seeking for behavioural insomnia of childhood: Where and when do parents seek help? One hour webinar presented for the Better Nights, Better Days Training Program based at Dalhousie University, Halifax, Canada.

Dossett, K. & **Newton, A. T.** (2016, February). Access to Mental Health Services in London. One hour talk delivered at the London Public Library, Central Branch. London, Canada.

Dossett, K. & **Newton, A. T.** (2016, March). Access to Mental Health Services in London. One hour talk delivered at the London Public Library, Westmount Branch. London, Canada.

WORKSHOPS LED

Newton, A. T. & Hart, K. M. (2015, August). Psychological Education, Awareness, and Reduction of Stigma (PEARS) Program. Two Day Workshop delivered at the King's University College Residence Staff Training. London, Canada.

Newton, A. T. & Hart, K. M. (2015, June). Psychological Education, Awareness, and Reduction of Stigma (PEARS) Program. Workshop delivered at City of London Child, Neighbourhood, and Fire Services Summer Coordinator Training. London, Canada.

Newton, A. T. & Hart, K. M. (2014, September). Psychological Education, Awareness, and Reduction of Stigma (PEARS) Program. Workshop delivered at the King's University College Student Council Inaugural Leadership and Development Conference. London, Canada.

Newton, A. T. (2014, June). Psychological Education, Awareness, and Reduction of Stigma (PEARS) Program. Workshop delivered at City of London Neighbourhood, Child, and Fire Services Summer Staff Training Event. London, Canada.

RESEARCH GROUPS

2015 – present	Reid Child Health Research Lab, Western University
2015 – present	Thinking About Sleep Research Study, Western University & Dalhousie University
2013-present	PEARS Mental Health Education Program
2012-2015	Cognitive Science and Numeracy Lab, King's University College at Western University
2013-2015	Dr. Nicholas Skinner: Psychosocial Factors Influencing Bullying Resilience among University Students

MEMBERSHIPS/ AFFILIATIONS

Canadian Psychological Association (CPA)
- Sections: Clinical Psychology, Students in Psychology

The Canadian Sleep Society (CSS)
Canadian Child Health Clinician Scientist Program (CCHCSP)
London Regional Psychological Association (LRPA)
Canadian Association of Paediatric Health Centres (CAPHC)
Better Nights, Better Days Trainee Program (BNBD)