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The Impact of Anxiety on Behavioral Sleep Difficulties and Treatment in Young Children: A Review of the Literature

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Abstract
Sleep difficulties are a common pediatric complaint, and the majority of these sleep difficulties are behavioral in nature (e.g., difficulties initiating or maintaining sleep). Although research supports behavioral interventions to improve sleep in young children with behavioral sleep difficulties, anxiety and child distress are common in this age range and these factors can impact treatment outcomes directly (e.g., increased distress and resistance at bedtime) and indirectly (e.g., poor parental compliance with behavioral strategies). Anxiety is an important aspect of treatment in adolescents and adults with behavioral sleep difficulties, but this factor is rarely considered in the literature for younger children. Thus, this manuscript reviews the literature on anxiety as it relates to behavioral sleep difficulties in young children (i.e., the preschool and surrounding age range), provides an overview of empirically supported behavioral intervention and research incorporating anxiety into behavioral sleep treatments, and provides recommendations and future directions for continuing to advance the literature and treatment in this area.

Keywords Behavioral sleep difficulties · Anxiety · Young children · Preschool-aged children · Sleep treatment

Sleep difficulties are common among children and adolescents and affect 20–40% of this population (Jenkins, Bax, & Hart, 1980; Meltzer, Plaufcan, Thomas, & Mindell, 2014; Owens, 2001). Insufficient sleep quantity and quality have been shown to have a plethora of negative consequences including increasing one's risk for anxiety and depressive symptoms (Alfano, Zakem, Costa, Taylor, & Weems, 2009; Gregory & Sadeh, 2016; Roberts & Duong, 2013), daytime behavior difficulties (Waxmonsky et al., 2017), memory and attention difficulties (Gomes-Tiago, Costa, Alvim-Soares, Malloy-Diniz, & de Miranda, 2016; Thomas, Monahan, Lukowski, & Cauffman, 2015), and family functioning difficulties (Byars, Yeomans-Maldonado, & Noll, 2011; Meltzer & Mindell, 2007). Additionally, sleep problems often do not resolve with age. One study found that the majority of children with sleep difficulties at 15–48 months of age continued to exhibit sleep difficulties three years later (Kataria, Swanson, & Trevathan, 1987). Prolonged sleep difficulties are associated with poorer psychosocial functioning (Gregory et al., 2005; Simola, Liukkonen, Pitkaranta, Pirinen, & Aronen, 2014). Thus, the identification and treatment of such difficulties is essential. Furthermore, nighttime fears have the potential to be persistent and negatively impact the sleep quality and quantity of preschool-aged children making addressing such difficulties essential (Kushnir & Sadeh, 2011).

In young children, the majority of sleep difficulties are behavioral in nature, including difficulties with sleep initiation, sleep maintenance, and bedtime compliance. Difficulties with initiating or maintaining sleep are often caused by negative sleep onset associations or limit-setting issues (American Academy of Sleep Medicine, 2014). Such behavior is classified as Behavioral Insomnia of Childhood (BIC) and is found in 10 to 30% of toddlers and preschoolers (Sadeh, Mindell, Luedtke, & Wiegand, 2009). There are three types of BIC: Sleep Onset Associations, Limit Setting, and Combined Type (American Academy of Sleep Medicine, 2014).

Sleep onset associations are the factors present in one's environment that become associated with sleep onset. Healthy sleep onset associations could include lying down in bed, cuddling with a favorite stuffed animal, or a final

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kiss goodnight from the caregiver. These can facilitate sleep onset when kept consistent as the child learns to associate these cues with getting sleepy and falling asleep. In contrast, negative sleep onset associations occur when the conditions under which the child falls asleep interfere with their ability to return to sleep throughout the night (Moore, 2012). More specifically, if the child's sleep conditions change during the night, such as a change in sleeping location, falling asleep with a bottle, or a change in whether someone is sleeping beside them, it will be more difficult for the child to return to sleep after night wakings (Meltzer & Crabtree, 2015; Sadeh et al., 2009). Thus, the child may seek out the conditions in which they fell asleep (e.g., moving to the parents' bed) or alert the caregivers in order to return to sleep. Such challenges are common in children with the sleep onset association type of BIC.

In children with the limit-setting type of BIC, bedtime resistance is a common presentation (Mindell, Kuhn, Lewin, Meltzer, & Sadeh, 2006). Children may refuse to get into bed, cry when the lights are turned off, or avoid engaging in the bedtime routine (Mindell et al., 2006). Bedtime resistance may also involve attempts to delay bedtime by coming out of their room after being placed in bed to make additional requests such as a drink or another hug. Such difficulties are most common in the absence of a consistent bedtime routine or when parents give in to bedtime temper tantrums or delay tactics (Moore, 2012). These difficulties often emerge along with the increasing independence of toddlers when parental limits are tested for the first time (Moore, 2012). Although parental limit-setting difficulties and reinforcement play a central role in maintaining bedtime resistance, child anxiety and nighttime fears can also contribute to bedtime resistance (see Gordon, King, Gullone, Muris, & Ollendick, 2007, for review).

Behavioral Insomnia of Childhood, Combined Type, is indicated when the child has features of both sleep onset association and limit-setting types (Moore, 2012). Typically, difficulties with limit setting occur first. For example, the child may exhibit bedtime resistance, such as tantrum throwing. As a result of the child's distress, parents may lay down with their child to alleviate the child's distress and allow him or her to go to sleep (Johnson, 1991). However, the parental presence at bedtime can then result in difficulties returning to sleep following night wakings or on future nights if the parent does not continue to co-sleep, resulting in negative sleep onset associations (Sadeh et al., 2009). Furthermore, this solution is temporary as it does not address the cause of the child's distress or provide the child with coping strategies in order to ameliorate bedtime anxiety.

It is important to note that although sleep difficulties are reported by parents cross-culturally, cultural factors impact expectations for children's sleep including the sleep setting (e.g., sleep arrangements such as co-sleeping, transitional objects), the typical sleep schedule secondary to factors such as school start times, and how sleep problems are interpreted. See Jenni and O'Connor (2005) for a review.

Sleep Difficulties and Anxiety

Nighttime fears, worries about nightmares, and separation anxiety are common concerns in the preschool age range that can cause distress at bedtime and may impact healthy sleep habits in children. Nighttime fears are experienced by approximately 60% of preschool-aged children, and 75–80% of school-aged children (Muris, Merckelbach, Ollendick, King, & Bogie, 2001). These fears can include the fear of the dark, the safety of oneself or others, and imaginary "monsters" or other figures, among others (for review, see Gordon et al., 2007). Although nighttime fears in this age are normative, for approximately 10–20% of children, nighttime fears are persistent and interfere with the functioning of the child and his or her family (Gordon & King, 2002; Muris et al., 2001). Furthermore, preschool-aged children with nighttime fears obtain less sleep, have more night wakings, and have poorer quality of sleep compared to same-aged peers without nighttime fears (Kushnir & Sadeh, 2011). Separation anxiety is also associated with sleep problems in preschool-aged children (Schlarb, Jaeger, Schneider, In-Albon, & Hautzinger, 2016). In fact, separation anxiety and overall anxiety both partially mediated the relationship between parental relationship quality and child sleep difficulties, highlighting the importance of preschoolers' anxiety on their sleep difficulties (Schlarb et al., 2016).

Sleep difficulties and anxiety symptoms are frequently comorbid in children. In a study of psychological symptoms in 995 preschool-aged children, insomnia symptoms were related to symptoms of generalized anxiety disorder, separation anxiety, specific phobia, and depression (Steinsbekk, Berg-Nielsen, & Wichstrom, 2013). However, when the insomnia/hypersomnia symptom included in depression was excluded, the relationship between insomnia and depression was no longer significant. This study highlights the specific relationship between sleep difficulties and anxiety symptoms in this age range. Preschoolers with an anxiety disorder also exhibit greater sleep problems than same-aged peers without an anxiety disorder (Dougherty et al., 2013).

While the majority of the research on sleep difficulties in youth with anxiety disorders has been conducted with school-aged children, this literature suggests that anxiety may play a role in comorbid sleep difficulties. In particular, 90–98% of children and adolescents aged 6 to 18 with an anxiety disorder experience at least one sleep-related problem and 82% report two or more sleep problems (Alfano, Ginsburg, & Kingery, 2007; Chase & Pincus, 2011). Further, in children with Generalized Anxiety Disorder or Separation

Anxiety Disorder, the severity of anxiety symptoms and interference in family functioning were positively associated with the total amount of sleep-related problems (Alfano et al., 2007). Children with an anxiety disorder go to bed significantly later and obtain substantially less sleep on school nights compared to typically developing peers (Hudson, Gradisar, Gamble, Schniering, & Rebelo, 2009). However, in this study, children with an anxiety disorder fell asleep more quickly and were awake less on weekend nights in comparison to non-anxious children, suggesting that anxiety could play a role in the decreased sleep children with anxiety disorders receive on weeknights. Of note, research has suggested that greater weeknight to weekend irregularity is associated with increased sleep problems, daytime sleepiness, and internalizing symptoms (e.g., Pesonen et al., 2010; Wolfson & Carskadon, 1998). Thus, this irregularity may cause further sleep and daytime impairments for youth with anxiety disorders. Research also suggests that rumination and worry, two common symptoms of anxiety-related disorders, may interfere with onset and maintenance of sleep in youth, thereby negatively impacting overall sleep quality (Alfano et al., 2009). Although cognitive-related anxiety symptoms are most commonly studied in older school-aged children and adolescents, worry is present in preschool-aged children as well (Vasey, Crnic, & Carter, 1994).

Evidence also suggests that sleep difficulties may be a risk factor for the development of anxiety problems in youth (Gregory & O'Connor, 2002; Leahy & Gradisar, 2012). In a longitudinal study, Gregory and O'Connor (2002) assessed child sleep and behavioral/emotional problems in a large sample of youth over the span of approximately ten years. They found that the presence of sleep problems at age 4 predicted emotional and behavior problems in adolescence, even after accounting for demographic factors. Further, the strength of the association between sleep problems and anxiety significantly increased over this ten-year period. Similarly, a study of children aged 3 to 6 years found that sleep difficulties predicted anxiety symptoms four years later (Simola et al., 2014). These relationships were strongest when the sleep difficulties persisted throughout the follow-up period. Persistent sleep problems in childhood are also predictive of adulthood anxiety disorders, even when controlling for demographic factors and childhood internalizing symptoms (Gregory et al., 2005). These longitudinal studies suggest that sleep difficulties in early childhood are associated with the future development of anxiety problems that could persist through adulthood. However, further research is needed to understand the underlying mechanisms of this relationship. Currently proposed mechanisms include a causal relationship, that sleep problems represent subclinical anxiety symptoms, or that sleep difficulties and anxiety may have common underlying risk factors (Gregory et al., 2005). Regardless, the high rates of comorbidity indicate that effective treatments for addressing children's anxiety in addition to sleep difficulties are essential.

Empirically Supported Treatment for Behavioral Sleep Difficulties

Behavioral sleep problems tend to persist in a significant portion of children (Gregory et al., 2005; Kataria et al., 1987; Simola et al., 2014) making identifying effective treatments important. Behavioral therapy is the empirically supported treatment for pediatric behavioral sleep difficulties (Meltzer & Mindell, 2008; See Table 1 for a summary of intervention strategies for young children with sleep difficulties and/or nighttime anxiety). Behavioral treatments for disordered sleep begin with psychoeducation about sleep hygiene, the rationale for treatment, and healthy sleep habits (Moturi & Avis, 2010). Healthy sleep hygiene is the behaviors that promote healthy sleep habits, good quality sleep, and daytime alertness (American Sleep Disorders Association, 1990; Sadeh, Tikotzky, & Scher, 2010; van der Heijden, Stoffelsen, Popma, & Swaab, 2018). In particular, children who follow a consistent bedtime routine have improved sleep onset latency, reduced night wakings, fewer daytime behavior problems, and increased sleep duration (Kouloughlioti et al., 2014; Mindell, Telofski, Wiegand, & Kurtz, 2009; Mindell, Li, Sadeh, Kwon, & Goh, 2015; Sadeh et al., 2009). Bedtime routines should involve three to five calming activities such as reading, singing, or taking a bath (Allen, Howlett, Coulombe, & Corkum, 2016; Mindell, Leichman, Lee, Williamson, & Walters, 2017). An important part of the bedtime routine is falling asleep at the same time every night. The bedtime should take into account the time at which the child needs to wake up to ensure that they are receiving a sufficient amount of sleep. For preschoolers, the recommended number of hours of sleep per night is 10 to 13 h (National Sleep Foundation, 2015). The location that the child sleeps should also be consistent throughout the night (Stepanski & Wyatt, 2003), and children should fall asleep on their own, which can be difficult for those with nighttime anxiety. Falling asleep independently will increase the likelihood of the child returning to sleep independently following night wakings (Allen et al., 2016). Additionally, avoiding stimulation such as caffeine, high levels of activity, and electronic use before bed is associated with improved sleep quality and quantity (Brockmann et al., 2016; Calamaro, Yang, Ratcliffe, & Chasens, 2012; Mastin, Bryson, & Corwyn, 2006).

Bedtime fading is one component that may be included in behavioral treatment when a child is having difficulty with sleep initiation and falling asleep too late. This strategy starts with putting the child to bed when they are falling asleep naturally. After they are able to consistently fall asleep quickly, their bedtime is gradually moved back in

Table 1 Summary of interventions for young children with sleep difficulties and/or nighttime anxiety

Intervention	Description	Treatment rationale	Symptoms addressed
Psychoeducation and healthy sleep hygiene	Teaches parents and children age-appropriate expectations for sleep and healthy sleep hygiene strategies	Promotes understanding of healthy sleep habits. Establishing healthy sleep habits is a critical first step and building block to the effectiveness of the strategies discussed below	Appropriate for most sleep concerns
Bedtime routines	Three to five calming activities that occur in the same order every night to prepare the child for bedtime (e.g., take a bath, brush teeth, read a book, and sing a song)	Establishes positive sleep onset associations to facilitate sleep initiation	Appropriate for most sleep concerns
Standard extinction	The child is placed in bed and parents do not attend or respond to subsequent protests	Extinction strategies allow children to develop the ability to initiate sleep independently by removing parental attention that may be maintaining sleep difficulties. Graduated extinction methods offer a more gradual and systematic exposure to independent sleep initiation and tend to be less distressing to children and parents	Bedtime resistance, Nighttime wakings, Sleep onset latency
Graduated extinction (checking method)	The child is placed in bed and parents check on them at predetermined intervals. Between checks, parents do not respond to the child's protests. During checks, parent–child interactions are minimal		Bedtime resistance, Nighttime wakings, Sleep onset latency
Graduated extinction with parental presence	The parent gradually moves farther from the child at sleep onset until the child is able to initiate sleep independently		Bedtime resistance, Nighttime wakings, Sleep onset Latency, Separation anxiety
Bedtime pass	The child is given a pass that allows them to leave their room once after being put to bed. The parent responds to a reasonable request when presented with the pass (e.g., a hug, a drink of water) and the pass is relinquished. The parent does not attend to subsequent requests		Bedtime resistance, Sleep onset latency
Bedtime fading	The child is put to bed when they are naturally falling asleep. Once falling asleep quickly, the bedtime is gradually moved earlier (typically by 15 min increments) until the child is falling asleep at the desired time	Temporarily moving the bedtime to the time the child is falling asleep results in the child spending less time in bed awake, strengthening the association between the bed and sleep initiation. Gradually moving the bedtime earlier maintains the sleep onset association while incrementally getting closer to a desired bedtime	Bedtime resistance, Sleep onset Latency, Night wakings, Co-sleeping
Cognitive-behavioral therapy for insomnia (CBT-I)	Addresses sleep-interfering thoughts and behaviors through techniques such as cognitive restructuring and relaxation strategies. CBT-I also includes many of the behavioral strategies described above	Incorporating cognitive strategies addresses the anxiety at bedtime that can cause or exacerbate sleep initiation difficulties	Nighttime fears, Bedtime resistance, Night wakings, Anxiety

Table 1 (continued)

Intervention	Description	Treatment rationale	Symptoms addressed
Cognitive-behavioral play intervention (CBPI)	Teaches cognitive-behavioral strategies including positive self-talk and problem-solving to young children through play. CBPI is implemented in conjunction with behavioral strategies as described above	Play is a developmentally appropriate medium for teaching cognitive-behavioral strategies to young children. CBPI allows children to practice coping strategies and gain mastery over their nighttime fears	Nighttime fears, Anxiety (e.g., separation anxiety, fears about bad dreams), Child distress at bedtime

A comprehensive behavioral approach is typically implemented using multiple strategies to treat behavioral sleep difficulties

15-min increments until an appropriate bedtime is established (Meltzer & Crabtree, 2015). For preschool-aged children, a bedtime before 9:00 PM is recommended because the likelihood of daytime behavior problems is decreased compared to children with later bedtimes (Yokomaku et al., 2008). This treatment is considered probably efficacious for reducing night wakings, co-sleeping, bedtime resistance, and sleep onset latency (Mindell et al., 2006).

Extinction is another behavioral treatment effective in treating pediatric behavioral sleep difficulties (Meltzer & Mindell, 2014). While both standard extinction and graduated extinction are effective in reducing night wakings, bedtime resistance, and sleep onset latency (Kuhn & Elliot, 2003; Owens, France, & Wiggs, 1999; Taylor & Roane, 2010), the effects of standard extinction are observed more quickly (France & Blampied, 2005). When using extinction, parents are instructed to not respond to the child's protests after being put to bed as parental attention often maintains bedtime resistance and behavioral non-compliance. Standard extinction is often difficult for parents to adhere to (Taylor & Roane, 2010), and inconsistent adherence (i.e., alternating between responding to and ignoring the child's protests) can result in intermittent reinforcement of the child's tantrums and increased bedtime resistance (Reid, Walter, & O'Leary, 1999; Owens, Palermo, & Rosen, 2002). Therefore, graduated forms of extinction are recommended more commonly in practice (Moore, 2010).

Graduated extinction is a gentler approach than standard extinction that may be useful for children with anxiety as it allows for a parental presence while minimizing involvement in the sleep initiation process. Although the child's distress and other protests are not directly addressed, the parent's presence may reassure the child and assist in addressing bedtime resistance related to parental separation. With typical graduated extinction (also called the checking method), parents are instructed to place the child in their bed and then leave the room and ignore subsequent protests for a certain period of time. After the predetermined interval has passed, parents go back into their child's room to check on them. Parents then continue to check on their child at set intervals until the child falls asleep (Byars & Simon, 2016). These intervals may be gradually increased over time. Another form of graduated extinction, graduated extinction with parental presence, may be helpful if the child requires the parent's presence in order to fall asleep. This form of extinction allows parents to gradually fade their presence in the child's room as the child is falling asleep. For example, parents may start by lying or sitting near the child while the child falls asleep then gradually move farther from the child until the child is able to fall asleep without parents in the room (Sadeh, 1994). If implemented consistently, effects can be seen within approximately 1 week (Taylor & Roane, 2010). Graduated extinction with parental presence may be

particularly beneficial for children with separation anxiety because the child can gradually become desensitized to separation from their parents (France, 2011). The use of a "bedtime pass" is another graduated option, which allows the child to leave their bedroom and receive a parental response one time after being put to bed. Parents do not respond to future requests once the bedtime pass has been used. This strategy has been shown to reduce the number of times the child leaves their bed and the time it takes to fall asleep (Moore, Fritman, Fruzzetti, & MacAleese, 2007).

Behavioral treatments have been found to be very effective for behavioral sleep difficulties, and large effect sizes have been found for standard extinction, graduated extinction, and positive bedtime routines (Kuhn & Elliott, 2003). A combination of the above behavioral intervention strategies are typically implemented depending on the specific sleep difficulties of the individual child. In one study of young children, the rate of improvement with behavioral intervention was 77% for children aged one through five years (Richman, Douglas, Hunt, Lansdown, & Levere, 1985). This high rate of improvement suggests that behavioral strategies are highly effective for many children. However, this rate of improvement also highlights that even comprehensive behavioral treatment does not address all children's sleep concerns. These behavioral strategies also do not address young children's distress at bedtime, which could impact sleep outcomes directly (e.g., increased bedtime resistance) as well as indirectly through decreased parental compliance with behavioral strategies.

Interventions Addressing Sleep Difficulties and Anxiety

Cognitive-behavioral strategies are effective in treating anxiety in children and adolescents (Chorpita et al., 2011). Common elements included in general anxiety treatments are psychoeducation, relaxation strategies, cognitive restructuring, exposure, and reinforcement (e.g., Davis & Ollendick, 2005). Many of these treatment components are also included in the cognitive-behavioral treatment of sleep difficulties for older children and adolescents. Cognitive-behavioral therapy for insomnia (CBT-I) is recommended for adults with difficulties initiating or maintaining sleep and includes cognitive aspects to address sleep-related anxiety and worries (Schutte-Rodin, Broch, Buysse, Dorsey, & Sateia, 2008). In school-aged children, several studies have demonstrated effectiveness of cognitive-behavioral strategies in treating nighttime fears, with improvements in anxiety and sleep behaviors that are maintained over time (e.g., Graziano & Mooney, 1980; Leitenberg & Callahan, 1973; Pincus, Weiner, & Friedman, 2012).

Many interventions that aim to treat nighttime fears in school-aged children implement multicomponent treatments. Exposures are a common treatment component, especially in the treatment of fear of the dark (Leitenberg & Callahan, 1973), and they are often accompanied by other cognitive and behavioral strategies such as deep breathing, muscle relaxation, and bravery statements (Graziano & Mooney, 1980). Pincus et al. (2012) conducted an investigation to compare the effectiveness of treatment components in children aged 6 to 11 years. One group of participants received treatment that included home monitoring and reinforcement to address nighttime fears and bedtime behavior difficulties, and another group received these treatment components and additional training in coping skills (i.e., relaxation and positive self-talk). Results were that while home monitoring and reinforcement effectively treated the nighttime fears and bedtime resistance, the addition of coping skills were essential for maintaining these gains at the 6-week follow-up (Pincus et al., 2012).

The caregiver's role is important for the successful implementation of behavioral sleep treatment for nighttime anxiety, either as the main treatment provider or as a means to practice learned skills at home. Cognitive-behavioral treatment for nighttime fears in children often includes in vivo exposures at home, reward systems, and practicing coping strategies, all of which require caregiver involvement to ensure that these strategies are utilized and reinforced at home (Graziano & Mooney, 1980; Stewart & Gordon, 2014). For example, Graziano and Mooney (1980) conducted an intervention involving 33 six- to twelve-year-old children with severe nighttime fears. Strategies such as muscle relaxation, imagery, and cognitive self-talk were taught, and parents were encouraged to model and reward their child for practicing these skills at home. After 3 weeks, children had significantly less parent-reported nighttime anxiety (Graziano & Mooney, 1980). These gains were maintained in a 3-year follow-up study (Graziano & Mooney, 1982). In a similar study, four children (age 6 to 10 years) and their caregivers presented for treatment of nighttime fears (Stewart & Gordon, 2014). The children presented with a variety of fears including a fear of the dark, murders, monsters, being alone, burglars, and being stabbed. Strategies such as exposures, muscle relaxation, cognitive restructuring, and rewarding "brave" behaviors were utilized. The caregivers were instructed to practice these skills with their child at home. After 5 weeks, parents and children reported reduced nighttime fear and parents reported decreased bedtime resistance. Further, these gains were maintained 1 month after treatment termination (Stewart & Gordon, 2014).

While these studies highlight the use of cognitive-behavioral strategies to address nighttime fears in school-aged children, there is limited research applying these principles to preschool-aged children despite the clear evidence of anxiety-related nighttime distress in this age range. In fact, as young children's fears often involve magical and

imaginary components created in the child's mind, the exclusion of cognitive treatment components for young children has been argued to be particularly problematic (Graziano & Mooney, 1980). As young children often have difficulties verbalizing their fears, play or other modalities can be used as a developmentally appropriate medium to introduce and practice cognitive-behavioral skills (Knell, 1993a). In one such approach, Kahn, Ronen, Apter, and Sadeh (2017) developed a two-session protocol for treating preschool-aged children presenting with significant nighttime fears through cognitive-behavioral strategies and parent-led play. Children were randomized to receive a cognitive-behavioral treatment or a non-directive play-based treatment. The cognitive-behavioral treatment involved psychoeducation, exposures, coping strategies, and practice of coping strategies and exposures through play. The non-directive play involved parent–child free play while the therapist provided reflections and interpretations of emotions. If bedtime did not come up naturally, the therapist encouraged the family to play that it was time to go to bed. No directions or encouragement regarding behavioral sleep strategies or coping strategies were provided. Following treatment, parents in both groups reported decreased nighttime fears, night wakings, and time awake during the night. Parents in the cognitive-behavioral treatment group also reported improved sleep habits and decreased co-sleeping (Kahn et al., 2017). Kushnir and Sadeh (2012) also tested a play-based intervention utilizing a puppy doll at bedtime. In one condition, the child was asked to take care of the doll, based on the theory that this would promote their self-esteem and that they would project their fear onto the doll. In a second condition, the child was told that the doll would protect them, and the doll acted as a security object. In both conditions, nighttime fears were reduced and children's sleep improved based on parent-completed sleep logs and actigraph data (Kushnir & Sadeh, 2012).

Bibliotherapy has also been used to introduce cognitive-behavioral treatment components in treating children's nighttime fears. Lewis, Amatya, Coffman, and Ollendick (2015) investigated the effectiveness of parent-implemented bibliotherapy in children who are 5 to 7 years old with a fear of the dark. Parents were asked to read a book that included coping strategies, exposures, reinforcement, and modeling. The book was accompanied by a parent guidebook that provided parents with ways to encourage their children to practice the skills while reading each night. After reading this book at least two times over the course of 4 weeks and receiving brief biweekly phone check-ins with the therapist to address parent questions and issues that arose, participants demonstrated significant reductions in their fear of the dark, decreased general anxiety symptoms, and an increased number of nights sleeping independently (Lewis et al., 2015). Similarly, a story about a child who was afraid of a monster was read to preschoolers to decrease nighttime fears (Muris, Verweij, & Meesters, 2003). In the control condition, the story was only read to the children, and it did not offer a resolution to the child's fears. In the treatment condition, the story was resolved with the child overcoming the fear, and the parents were encouraged to read a poem with their children at bedtime about how the child also was not afraid of monsters. Children in the treatment condition reported decreased frequency and intensity of nighttime fears, although parent-reported fears decreased across both groups. Instead of targeting one specific fear, McMenamy and Katz (1989) adapted the procedures of Graziano and Mooney (1980) described above to evaluate the effectiveness of these strategies with five 4- to 5-year-old children by using a storybook to teach relaxation, imagery, and positive self-statements. In addition to reading the story, the experimenter modeled the coping strategies in the book and instructed the child to practice the strategies. All five children's parents reported reductions in fear behaviors at bedtime.

A related fear that can impact bedtime, the fear of the dark, has also been reduced by using cognitive strategies in two studies including young children. In one study, five- and six-year-old children rehearsed positive self-statements, statements focused on decreasing the fear intensity, or neutral statements (Kanfer, Karoly, & Newman, 1975). Children in the positive self-statements group were able to tolerate the dark for longer periods of time compared to children in the other two groups. A parent manual based on this protocol was developed and implemented with six parents of children aged 3–11 years (Giebenhain & O'Dell, 1984). In addition to the manual, parents were instructed to play a game aimed at desensitizing the child's fear of the dark by decreasing the amount of light present while in bed, encouraging their children to use positive self-statements, and providing reinforcement when children were successful at staying in bed with the decreased light. All children participating reduced the light present at bedtime by the end of the 2-week study period.

These studies demonstrate that cognitive-behavioral coping strategies can be taught to preschool-aged children and that addressing children's nighttime fears through brief intervention also improves children's sleep habits. However, additional research is needed to examine the effectiveness of cognitive-behavioral strategies in treating preschool-aged children with nighttime fears. The majority of the studies reviewed and focused on only one fear or fear category rather than providing coping strategies for a wide range of anxieties young children may have at bedtime. Additionally, the majority of these interventions did not directly teach children the coping strategies or a problem-solving approach to identify the appropriate coping strategies. Finally, many of these studies have very small sample sizes and few included a

control group. While the play-based intervention conducted by Kahn et al. (2017) addressed many of these limitations, it should be noted that parents and children were encouraged to identify coping strategies together and then play out these strategies both in session and at home. Thus, it is unclear how much the child internalized the coping strategies such that they would be able to use the strategies without parental instruction and/or support. Given these limitations, additional research is still needed to establish an effective intervention that provides direct instruction in coping strategies that are tailored to the child's specific challenges.

Cognitive-Behavioral Play Intervention

One promising intervention approach that provides tailored instruction and practice with coping strategies for a range of anxiety-provoking scenarios is Cognitive-Behavioral Play Therapy (CBPT). CBPT was developed for children aged 2 ½ to 6 years and uses play to teach specific cognitive-behavioral coping strategies to young children with a wide range of presenting problems (Knell, 1993a). By playing out specific anxiety-provoking scenarios with a therapist who provides modeling and reinforcement, children practice coping strategies and can master the anxiety-provoking situation (Knell, 1998). Successful case studies using CBPT have been described for a wide range of presenting problems including selective mutism (Knell, 1993a, b), phobias (Knell, 1993a; Knell & Dasari, 2009) and separation anxiety (Knell, 1993c).

Based on CBPT principles, a structured three-session Cognitive-Behavioral Play Intervention (CBPI) was developed to empirically evaluate the strategies of CBPT, reduce school anxiety, and increase hope in preschool-aged children (Pearson, Fehr, & Russ, 2019). Typically developing preschoolers were randomly assigned to receive the CBPI, free play, or an attention control. In the CBPI condition, three scenarios about a range of worries that could present at school were provided and children were instructed to play out coping strategies. The play interventionist provided direct instruction in using hopeful thinking and positive self-statements, introduced a problem-solving approach, modeled the use of various coping strategies, and provided encouragement and reinforcement when the child identified and played out coping strategies. Following three 20-min sessions, children in the CBPI group had less anxiety, higher social competence, and higher hope than children in the attention control group, as rated by teachers.

Following these promising results, the CBPI was adapted for preschoolers with sleep difficulties (Fehr, Russ, & Ievers-Landis, 2016). In this pilot study, four preschool-aged children (ages 4–6) were provided with three 20–30-min CBPI sessions. During each session, story stems related to (a) nighttime fears, (b) nightmares, and (c) parental separation were presented. These three themes were selected given the high rates of each of these worries in this age range and with the goal of increasing generalization of the coping strategies to a wide range of anxieties that could present at bedtime. The play facilitator was active in the play sessions and provided instruction, modeling, and reinforcement of positive self-statements and a problem-solving approach. In addition to the CBPI, each child's parent received a 30-min sleep information session that provided behavioral sleep information about the number of recommended hours of sleep for preschool-aged children, bedtime routines, and graduated extinction. For the three parents who returned post-treatment questionnaires, improvements in child sleep habits and sleep anxiety were found. In addition, parents reported decreases in their children's general fears, suggesting generalization of the results to a wide range of fears. Parents were also highly satisfied with the intervention. These preliminary results suggest that this child-focused intervention may be a promising adjunct to behavioral sleep strategies to teach a variety of coping strategies for a range of anxieties that may be present at bedtime in order to reduce child distress and, hopefully, increase parental compliance. Although these pilot results are promising, a larger sample size and the inclusion of a control group are needed before additional conclusions may be drawn.

Future Directions

The current literature supports a relationship between anxiety and behavioral sleep difficulties. However, this area remains understudied, particularly in young children, and significantly more research is needed to clarify how these factors are related and the role this plays in treatment. In particular, additional longitudinal studies are needed to clarify if the relationship between these factors is causal. If it is established that sleep consistently tends to precede anxiety, this would have implications for intervention and prevention. Relatedly, the majority of the current research connecting sleep difficulties and anxiety occurs within the anxiety disorder literature or with typically developing youth. However, less is known about the role of anxiety in children with behavioral insomnia of childhood or other behavioral sleep concerns. For example, given that anxiety can manifest behaviorally (e.g., non-compliance, protesting) in young children, it seems likely that a subset of children with behavioral insomnia of childhood could be exhibiting unrecognized anxiety rather than, or in addition to, purely behavioral causes of their behavior. Thus, when children present clinically with behavioral sleep difficulties, it may be beneficial to assess for symptoms of anxiety.

The theoretical connection between anxiety and bedtime resistance is the underlying premise of child-focused

treatment components that aim to improve behavioral sleep difficulties, such as CBPI. Therefore, identifying which children with behavioral sleep difficulties could benefit from a child-directed treatment component is an important future direction. Cognitive-behavioral interventions must be adapted for effective use with young children. Researchers have used play-based and bibliotherapy approaches, supplemented with parental involvement, to ensure these approaches are developmentally appropriate. However, many of these studies have methodological limitations such as small sample sizes or lack of a control group, which limit the generalizability of the intervention results. Further, most of the previous interventions developed for young children have focused on addressing a specific fear, and many do not teach coping strategies directly to the children. Interventions that address both of these limitations, such as CBPI, may address a wider range of anxiety that children may experience at bedtime and may assist children in being able to identify when and how to use coping strategies to address their anxiety. Thus, future research examining the effectiveness of interventions that target generalization directly in the treatment approach is needed.

CBPI in particular recognizes that anxiety and behavioral sleep difficulties can be comorbid and both influence a child's behavior at bedtime. Further, bedtime resistance and avoidance due to nighttime anxiety could result in behavioral insomnia over time if parent limit setting changes in response to child distress or if the child's distress results in habitually going to sleep at a later time than desired, resulting in a change in the circadian rhythm. Thus, parents would likely benefit from receiving behavioral sleep management strategies in addition to the child receiving CBPI treatment in order to address both components. Future research is indicated to determine which components (CBPI, behavioral intervention, or the combination) are most effective for which children. However, given the strong empirical support for behavioral sleep interventions, even when indicated, child-focused components should currently be considered an adjunct to these well-established treatments.

Behavioral sleep interventions are empirically supported and effective for the majority of preschool-aged children with behavioral sleep difficulties, but child anxiety and distress are not addressed within purely behavioral sleep interventions. In older children and adults, cognitive-behavioral treatment is recommended for symptoms of insomnia. Although further research is needed in younger children, a growing literature supports the connection between anxiety and behavioral sleep difficulties in this age range also, which can impact treatment outcomes. In addition to not addressing the child's full psychopathology, neglecting to include a child component in behavioral sleep treatment could impact parental adherence for young children with anxiety, thus resulting in decreased efficacy. Fortunately, promising play-based interventions have been developed that have the potential to address anxiety that may occur in young children with behavioral sleep difficulties.

Compliance with Ethical Standards

Conflict of interest Karla K. Fehr, Danielle E. Chambers, and Jennifer Ramasami declare that they have no conflicts of interest to disclose.

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