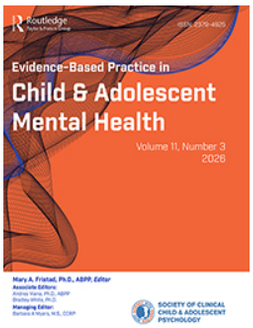

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Family-Based Treatment for Sleep Problems in Peri-Puberty: Preliminary Outcomes from a Group Telehealth Program Evaluation

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ABSTRACT

Background: Sleep problems in adolescence are pervasive and associated with physical, psychological, and functional impairment. Around the transition from childhood to adolescence (i.e. peri-puberty), sleep is vulnerable to disruption, and disturbances have been shown to prospectively predict internalizing conditions. Youth's sleep health and habits are embedded within the family context and, as such, are influenced by familial factors, with parenting practices being one of them.

Objective: The current study utilized a program evaluation framework to evaluate pre- to post-treatment changes in youth sleep, mental health, and parenting practices following a family-based sleep program for teens delivered in a group format via telehealth. Additionally, the feasibility and acceptability of the program were evaluated.

Method: A total of six peri-pubertal participants (age $M = 11.8$, $SD = 2.1$) with a history of sleep problems and anxiety, and their parents, participated in the program. Youth and parents reported on the youth's sleep and mental health, as well as on parents' nighttime and general parenting practices at pre- and post-treatment assessments.

Results: Findings revealed general within-subject improvements in the youth's sleep and mental health. Nighttime and general parenting practices at post-treatment also trended in favorable directions. Feasibility and acceptability were favorable and are discussed in the context of challenges encountered, lessons learned, and clinical implications.

Conclusions: Preliminary findings lend support for the involvement of parents as active participants in sleep interventions for peri-pubertal adolescents and highlight the promise of continued work in this area. Efforts to address the pervasiveness and gravity of poor sleep health during peri-puberty may benefit from a transactional family-based framework.

Introduction

Sleep problems in adolescence are pervasive and pose a serious threat to youth's physical and mental health, academic success, and safety (American Medical Association, American Academy of Sleep Medicine. American Medical Association, 2010). Approximately 70% of adolescents in the United States report sleep problems (National Sleep Foundation, 2014), and rates are concerningly higher (i.e., 85%) in youth with internalizing presentations (McMakin & Alfano, 2015). To add to this concern, there are established sleep disparities between White and racial and ethnic minority children and adolescents, with minoritized youth (i.e., Hispanic, Black) having shorter sleep duration, poorer sleep quality, and more delayed sleep onset (Guglielmo et al., 2018).

Increasing evidence supports the consideration of peri-puberty (i.e., 9–14 years old) as a developmental stage that is particularly sensitive to the effects of poor sleep on youth's emotional and behavioral health (Blake et al., 2016; McMakin & Alfano, 2015). During the transition from late childhood to peri-puberty, youth experience a shift in physiological susceptibilities toward a more evening-type circadian phase preference, resulting in a biologically driven delay in sleep onset (Carskadon et al., 1993). Additionally, maturational changes in youth's sleep homeostasis result in a slower rate of sleep pressure, and thus, a physiologically driven later sleep timing in peri-pubertal adolescents (Jenni et al., 2005). Said delay in sleep onset is compounded by socio-contextual

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factors unique to the adolescent period (e.g., after-school employment, diminished parental monitoring around bedtime, increased media use, and earlier school start times), ultimately shortening youth's sleep opportunity and placing them at higher risk for mental health difficulties. Indeed, when experienced during peri-puberty, sleep problems longitudinally predict internalizing difficulties to a greater extent than the reverse (Kelly & El-Sheikh, 2014; Quach et al., 2018). Alternatively, a robust relationship between sleep problems and externalizing difficulties (e.g., conduct problems, hyperactivity, inattention) has been established as bidirectional (Quach et al., 2018).

Pediatric sleep health should be considered within the familial context. Given the limited control of their immediate environment, youth's sleep health may be influenced by dynamic family processes (e.g., caffeine consumption, family conflict, screen-time monitoring) to a greater extent than adults (El-Sheikh & Kelly, 2017; Meltzer et al., 2021). Parenting practices are one among the many familial influences on children's sleep (e.g., Acosta et al., 2021). Prior research has linked "positive" parenting practices (e.g., warmth, supportiveness, limit-setting, monitoring) to more optimal sleep health (e.g., longer sleep duration in youth, less daytime sleepiness), while "negative" parenting practices (e.g., hostility, physical discipline, laxness) have been linked to poorer sleep indices (e.g., inconsistent sleep schedules, lower sleep duration) in youth (e.g., Acosta et al., 2021; Meijer et al., 2016). In peri-pubertal youth, a more pronounced relationship between negative parenting practices and youth's sleep problems has been documented, suggesting that the detrimental impact of negative nighttime parenting practices on youth's sleep health outweighs the benefits of positive nighttime parenting practices during this developmental stage (Acosta et al., 2021).

Emergent research from our team has provided evidence for a novel conceptual framework on peri-pubertal youth's sleep health within evening or nighttime family environments (Acosta et al., 2023). Our conceptual model, supported by recent findings (Acosta et al., 2023), posits that nighttime parenting may be a unique construct and different than general and/or daytime parenting due to contextual factors that characterize the evening timeframe. This construct differs from general parenting due to the specific evening context within which it occurs, characterized by factors like parental fatigue, and demonstrates a more robust influence on sleep than general parenting (Acosta et al., 2023). Specifically and consistent with the aforementioned literature, our investigation yielded a positive relationship between "positive" nighttime parenting practices (i.e., supportiveness, limit-setting around bedtimes, media monitoring) and better indices of youth's sleep health (e.g., longer sleep duration, higher sleep efficiency, higher sleep satisfaction). Conversely, "negative" nighttime parenting practices (i.e., hostility, physical discipline, permissiveness related to media use and bedtime schedule) were associated with indices reflecting worse sleep health in youth (e.g., higher sleep disturbances, worse sleep hygiene, lower sleep duration). These results lent support for clinically addressing nighttime parenting practices as a potential mechanism to ameliorate sleep problems in youth.

Gaps within intervention research addressing sleep problems in adolescence

Adolescent sleep intervention research has traditionally focused on school-based psychoeducational programs (as discussed in Blake et al., 2016). Although these interventions reach a large audience, they primarily increase sleep knowledge rather than effectuate improvements in youth's sleep and mental health (e.g., Rigney et al., 2015). In contrast, targeted and active sleep interventions appear to precipitate meaningful improvements in adolescents' sleep and related mental health difficulties by modifying sleep-interfering patterns of thinking and behavior (e.g., Blake et al., 2016; McMakin et al., 2019).

Existing sleep interventions have primarily involved parents via provision of session material and/or sleep education to instill enforcement measures (e.g., parent-set bedtimes; Bonnar et al., 2015; Short et al., 2011). Parental involvement in adolescent sleep intervention has yielded mixed evidence, with it either offering promise (e.g., by setting limits around bedtimes; Short et al., 2011) or conferring no benefits (e.g., Bonnar et al., 2015). Notably, although the differential influence of

positive and negative parenting practices on youth's sleep health has been repeatedly documented, parenting practices have yet to be incorporated and/or intervened on in clinical practice within adolescent sleep interventions (Khor et al., 2021). Concerningly, when involved in, for example, instilling bedtime rules, parents may lack the tools to effectively implement behavioral changes, which may inadvertently incite family conflict and, ironically, exacerbate youth's problems with sleep (Khor et al., 2021). Further, parenting practices at bedtime or nighttime may be uniquely challenged by competing priorities, fatigue, and mood changes, which may also exacerbate family conflict and ultimately contribute to the maintenance of sleep problems in youth. Importantly, there is evidence that parenting practices in a specific context are a more powerful predictor of youth behavior in the same context (e.g., Sanders et al., 2016), which suggests that addressing nighttime parenting practices may be of particular relevance to the reduction of sleep problems in youth. This emphasis on context-specific parenting, coupled with existing gaps in adolescent sleep intervention research, highlights the need for targeted approaches. The presented gaps in adolescent sleep intervention research, as well as the empirical evidence linking nighttime and general parenting practices to youth's sleep health and the consideration of peri-puberty as a period that is particularly sensitive for disturbed sleep, informed the development of a family-based sleep intervention for at-risk peri-pubertal youth presenting with co-occurring sleep problems and internalizing difficulties.

Family-based sleep intervention for young teens: conceptual model and empirical roots

The Family-Based Sleep Intervention for Teens (FABSleep) primarily addresses peri-pubertal youth's sleep not only to enhance it, but also as a transdiagnostic treatment target for deterring negative mental health trajectories from escalating in adolescence. FABSleep's protocol builds on established treatment principles for both sleep problems and family-based treatment of externalizing and internalizing mental health difficulties. Specifically, the intervention is composed of youth- and parent-focused protocols. The program Sleeping TIGERS (McMakin et al., 2019) was used to guide the youth-focused protocol but was adapted for a group setting. Derived from cognitive and behavioral theories and conceptual models on vigilant attention to threat (Dahl, 1996; Ricketts et al., 2018), Sleeping TIGERS leverages a motivational framework to modify perpetuating mechanisms that contribute to sleep problems. These mechanisms are targeted by encouraging sleep-promoting cognitions, emotions, and behaviors, thereby correcting maladaptive sleep habits (e.g., long afternoon naps) known to sustain sleep problems.

FABSleep's parent-focused protocol was derived from social learning and ecological systems theories, applied concepts of behavior modification, and conceptual models of youth's sleep within the family context (Acosta et al., 2021, 2023; Reitman & McMahon, 2013). Similar to traditional behavioral parent training (BPT) interventions (e.g., McMahon & Forehand, 2003), the parent-focused protocol entails the systematic modification of the social and nighttime home environment to foster ecological contexts at the microsystem level where youth's sleep may be more likely to thrive. This protocol views sleep problems as a phenomenon partly sustained by conflict within nighttime parent–youth interactions, which may arise or intensify cognitive-emotional arousal and thereby disrupt youth's sleep onset and maintenance (Acosta et al., 2021). Conceivably, nighttime demands and parental fatigue can limit parents' ability to manage challenging behaviors, which may result in increased family conflict. This conflict may increase vigilance and physiological arousal, hindering the low-arousal state necessary for sleep by interfering with self-soothing (Dahl, 1996; Ricketts et al., 2018). Maladaptive threat vigilance at bedtime is particularly relevant for youth with internalizing symptoms (anxiety, depression) due to their heightened attentional bias toward anxiety-related threats, which is known to disrupt sleep onset and maintenance (Ricketts et al., 2018). A secondary goal of the parent-focused protocol was to promote a positive spillover such that improved nighttime parenting generalizes to practices throughout the day, ultimately improving the quality of the parent–youth relationship, which can then be leveraged to create positive changes in

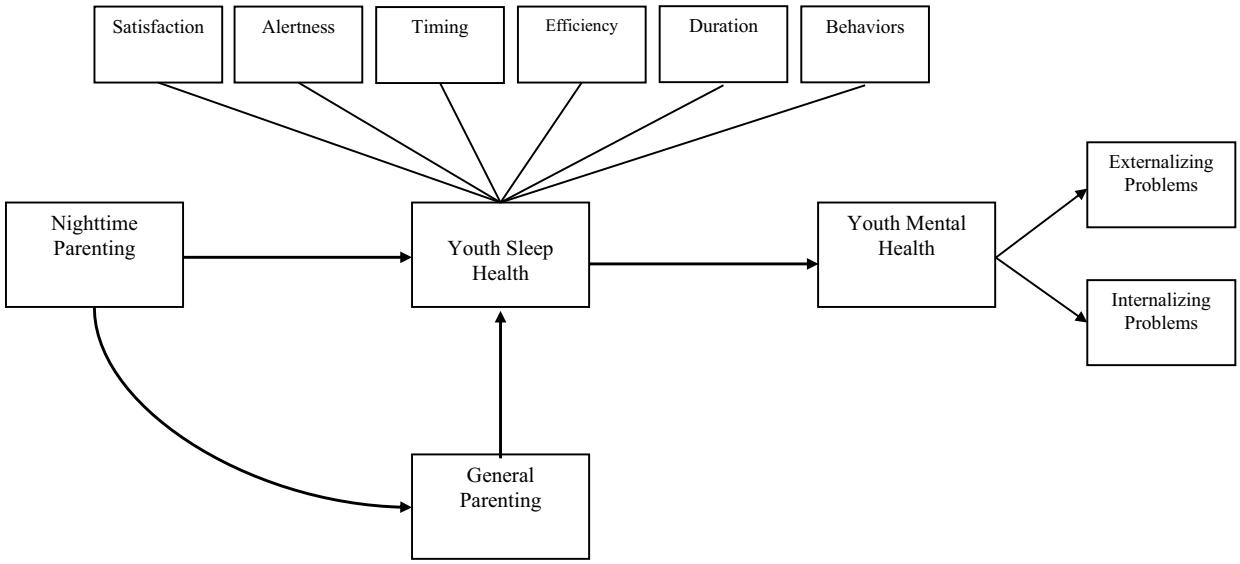

Figure 1. Family-based sleep intervention for teens – conceptual model.

youth's sleep and mental health (see Figure 1 for conceptual model and Table 1 for protocol details).

The current study

The current study utilized data from a program evaluation framework, which included six participants and their parents, to evaluate the initial utility, feasibility, and acceptability of FABSleep. We examined changes in youth's sleep and mental health, as well as in nighttime and general parenting practices, from pre- to post-treatment following participation in FABSleep, which was delivered in group format and via telehealth in 2021. We hypothesized pre- to post-treatment within-subject increases in nighttime positive parenting practices (i.e., supportiveness, limit-setting, media monitoring) and decreases in nighttime negative practices (i.e., hostility, physical control). Relatedly, we hypothesized that there would be pre- to post-treatment improvements in targeted sleep health domains (i.e., disturbances, efficiency, sleep onset latency, bedtime worries). Lastly, we hypothesized pre- to post-treatment within-subject improvements in internalizing symptoms, including anxiety and depression. Given the small sample size, our primary goal included discussing the utility, feasibility, and acceptability of the program to guide future research and provide clinical suggestions that may help address the pervasiveness and gravity of poor sleep health during a sensitive developmental stage.

Method

Participants

Participants were six parent-youth dyads (youth: two males, four females) comprising six mothers and one father. Five dyads consisted of mother–youth pairs, while one involved both parents. Most youth experienced clinically elevated sleep problems (83% T-score > 60 at pre-treatment on youth-reported PROMIS Sleep Disturbances). Additionally, youths were predominantly anxious (100% T-score > 60 at pre-treatment on youth-reported PROMIS Anxiety). The sample was primarily Hispanic (66.7%). Half (50%) of the parents reported having a college degree and having a household income of below $35.000. See Table 2 for the sample's sociodemographic characteristics.

Therapists and supervisor

The therapists were three doctoral graduate students, including a lead therapist who provided peer supervision. Therapists were trained by the lead therapist during a 3-hour training, which included didactics and role-play. Training was ongoing during both weekly peer group

Table 1. Family-based sleep intervention for teens (FABSleep) – treatment structure.

FABSleep Session	1: Motivation, Orientation, and Benefits	2: Thoughts, Feelings, and Behaviors	3: Daytime Sleep-Promoting Habit	4: Regular Sleep-Wake Schedule	5: Restricting Media Use	6: Positive Emotions and Relapse Prevention
Youth Protocol Components	Psychoeducation on sleep during adolescence. Discussion about the possibility of improving sleep. Identify "pros" and "cons" of developing healthy sleep habits. Establish goals for treatment.	Review sleep regulatory systems Psychoeducation on the thoughts-feelings-behavior triangle Exercise on functional analysis on sleep-interfering thoughts, feelings, and behaviors Discussion of nighttime sleep-promoting habits (i.e., regular bedtime, lights out cue, wind-down routine, stimulus control).	Review nighttime sleep- promoting habits and savoring practice. Psychoeducation on daytime sleep-promoting habits (e.g., light cues, brisk wake up, wake-up routine, short and early naps, restrict caffeine). Discussion of scheduled worrying. Discussion of affective switching.	Maintaining a consistent sleep and wake time. Psychoeducation on circadian rhythms and sleep. Identify barriers and solutions to a consistent sleep-wake schedule. Explore ways to limit daytime naps.	Explore how media interferes with sleep. Develop a behavioral contract for limiting media use at bedtime. Diaphragmatic breathing and savoring as sleep-promoting bedtime practices. Guided practice of diaphragmatic breathing and savoring.	Review treatment progress. Review learned skills to improve sleep. Discuss the value of positive emotions and savoring to facilitate sleep. Develop a relapse prevention plan.
Parent Protocol Components	Psychoeducation on sleep during adolescence. Discuss importance of parental involvement. Identify benefits and barriers of involvement Establish goals for treatment.	Benefits and barriers to supporting patient into changing their nighttime habits. Psychoeducation on the thoughts-feelings-behavior triangle. Identify sleep-interfering behaviors for youth. Discussion on the importance of positivity before bedtime.	Review concept of homeostatic drive. Psychoeducation on daytime sleep-promoting habits. Modeling sleep-promoting behaviors. Praising and rewarding sleep-promoting behaviors by youth.	Supporting a consistent sleep and wake time. Psychoeducation on circadian rhythms and sleep. Family problem-solving.	Explore how media interferes with sleep. Recommendations on managing youth's media use at bedtime. Effective communication.	Review overall treatment progress. Review learned parenting skills to support the improvement of youth's sleep. Psychoeducation on important adolescence milestones. Scaffolding. Develop a relapse prevention plan.
Youth & Parent Protocol Components	Youth and parents share treatment goals with one another.	In-session savoring practice.	Discuss benefits of receiving social support during treatment. Identify types of support that parents can offer. Brainstorm potential rewards.	Identify types of support parents can offer to assist patient in maintaining a regular sleep-wake schedule. Design a Sleep Plan for youth.	Discuss behavioral contract. Identify types of support that parents can offer to assist patient in restricting their media use at bedtime.	Discuss youth's relapse prevention plan. Identify types of support that parents can offer to assist patient in maintaining their relapse prevention plan.
Fidelity (%)	Youth Session = 83 Parent Session = 83 Youth + Parent = 66	Youth Session = 100 Parent Session = 93 Youth + Parent = 100	Youth Session = 66 Parent Session = 100 Youth + Parent = 88	Youth Session = 100 Parent Session = 100 Youth + Parent = 66	Youth Session = 92 Parent Session = 100 Youth + Parent = 83	Youth Session = 100 Parent Session = 100 Youth + Parent = 50

Table 2. Sociodemographic information for the present study sample.

Demographic Characteristics	*M* (*SD*) or % *N* = 6
Child Age	11.8 (2.1)
Parent Age	40.2 (9.1)
Child Sex (% Female)	66.6
Parent Sex (% Mothers)	83.3
Child Race/Ethnicity	
White	50
Hispanic	66.7
Parent Race/Ethnicity	
White	50
Hispanic	66.7
Family Structure	
Single	16.7
Married	66.7
Separated/Divorced	16.7
Family Income	
Under $20,000	16.7
$20,000–$34,999	33.3
$35,000–$49,999	16.7
$75,000–$99,999	16.7
Over $100,000	16.7
Parent Education	
H.S. or GED	33.3
Some College	16.7
College Degree	50

Note: H.S. High School.

supervision and clinic group supervision with a licensed pediatric clinical psychologist, who provided all therapists with hands-on training on the methodology for assessing and treating pediatric sleep problems and related internalizing comorbidities.

Procedure

Following approval from the University's Institutional Review Board (#20–0407), youth aged 9–14 and their parents were recruited via internal referrals and flyers at a local children's hospital. Other than age and the presence of sleep problems, no additional eligibility criteria were enforced. Prior to the administration of any research measures, written informed consent was obtained from all parents and written assent from all youth. Parents and youth completed pre- and post-treatment assessment surveys. FABSleep was delivered in group format and via telehealth, given COVID-19-related social-distancing hospital guidelines. Additionally, although most parents identified as Hispanic, all of them spoke English fluently, and thus, both the youth- and parent-focused protocols were delivered in English. Youth and parent sessions were conducted simultaneously in separate breakout rooms, with joint check-in/out discussions and skill practice. Families received a $60 payment for completing the pre- and post-treatment assessment surveys.

Intervention

FABSleep is a brief intervention, which includes content that is "easily digestible" to both families and therapists in training (see Table 1 for session-by-session details). The program consists of six 60-minute sessions conducted via a synchronous telehealth platform (e.g., Zoom). FABSleep can be delivered via group and individual formats. When delivered via group telehealth (e.g., Zoom), sessions utilize a 10–30-20 minute structure: each session begins with a 10-minute joint "check-in," followed by 30 minutes of simultaneous but separate youth and parent protocols conducted in virtual breakout rooms, and concludes with a 10-minute joint "check-out" for collaborative skill practice. This format requires a minimum of two therapists to facilitate the simultaneous delivery of the youth- and parent-focused protocols. Families utilized either two separate devices to facilitate an easier transition into breakout rooms. To foster collaboration, families were encouraged to join from a single device during the joint portions. Regardless of the number of devices used, parents

and youth were prompted to convene together for the final 20-minute collaborative practice. To respond to the ethnic diversity with respect to the predominant local ethnic tradition, the parent-focused protocol of FABSleep was developed in both English and Spanish.

Measures

Youth and parent sleep

Parents and youth reported on youth's sleep via parent proxy and self-report versions of the Children's Report of Sleep Patterns (CRSP; Meltzer et al., 2013) and of the Patient-Reported Outcomes Measurement Information System (PROMIS) Pediatric Sleep-Related-Impairment (Forrest et al., 2018) at the pre- and post-treatment assessment waves. Seven dimensions (i.e., sleep-related behaviors, alertness or daytime sleepiness, timing, efficiency, and duration) encompassing pediatric sleep health (Buysse, 2014; Meltzer et al., 2021) were calculated based on data from the CRSP. The CRSP has been demonstrated to be a reliable and valid measure of pediatric sleep health (Meltzer et al., 2013).

Youth mental health

Parents and youth reported on youth's mental health via parent proxy and self-report versions of the PROMIS Pediatric Anxiety and Depressive Symptoms (Varni et al., 2012). Strong psychometric properties have been demonstrated for both scales (Varni et al., 2012). The Brief Problem Monitor (BPM; Achenbach et al., 2011) was used to assess externalizing behavioral and attention difficulties. This 19-item scale, derived from the Child Behavior Checklist and Youth Self-Report, has been demonstrated to have excellent reliability, validity, and internal consistency (Achenbach et al., 2011). All mental health measures were completed at the pre- and post-treatment assessment waves.

Parenting practices

Parents and youth completed the Nighttime Parenting Scale (NPS; Acosta et al., 2023). The NPS is composed of six subscales: Supportiveness, Hostility, Physical Control, Limit-Setting, Media-Monitoring, and Co-Sleeping. Parents also reported on their general/daytime positive (i.e., proactive parenting, positive reinforcement, supportiveness, warmth) and negative parenting practices (i.e., hostility, physical control, laxness) through the Multidimensional Assessment of Parenting Scale (MAPS; Parent & Forehand, 2017). Additionally, parents completed the Coping with Children's Negative Emotions Scale – Adolescent Version (CCNES-A; Fabes et al., 1990) to assess their supportive (i.e., expressive encouragement, problem-focused and emotional-focused reactions) and unsupportive reactions (i.e., distress, minimization, and punitive) to their children's negative emotions. Strong psychometric properties have been established for the NPS (Acosta et al., 2023), MAPS (Parent & Forehand, 2017), and CCNES (Fabes et al., 2002). All parenting measures were completed at the pre- and post-treatment assessment waves.

Fidelity

Treatment fidelity was assessed via a therapist-report 3-point Likert rating scale (1 = *not covered*; 2 = *covered but minimally adequate*; 3 = *covered well*) on each session's main components. Jointly, all three therapists completed fidelity checklists immediately following each treatment session. Fidelity was measured separately for youth-focused sessions, parent-focused sessions, and youth and parent joint discussion/practices.

Acceptability of FABSleep

Post-treatment acceptability was evaluated via semi-structured qualitative interviews conducted by the lead therapist. Parents participated in personal communication that assessed: (1) perceived benefits and drawbacks of the program; (2) ease of use of the telehealth platform; (3) the most and least helpful session components; (4) barriers to implementing treatment strategies; and (5) perceptions of the program being delivered in a group format. Additionally, the lead therapist conducted individual meetings with the group therapists to gather qualitative feedback regarding protocol feasibility and therapist adherence. These qualitative data were used to identify clinical implications and refine the intervention for future use.

Analytic plan

Analyses were conducted using SPSS 27. There were no missing data at the pre- and post-treatment assessment waves. Given the small sample size, effect sizes and indicators of clinically significant change were used to evaluate change across sleep, mental health, and parenting practices from pre- to post-treatment. Specifically, to correct for bias in small samples, we calculated effect sizes via the Hedges *g* formula (Hedges, 1981) to describe within-subject change (0.20–0.49 small; 0.50–0.79 medium, and >.80 large). Additionally, we utilized the Reliable Change Index (RCI; Jacobson & Truax, 1991) as an indicator of clinically significant change. RCI values greater than ±1.96 suggested that the magnitude of change attributable to treatment was statistically reliable. Lastly, paired samples *t*-tests were used as an ancillary measure of within-subject change.

Results

Participant retention and engagement

The six parent–youth dyads that participated in the group intervention attended every session. Additionally, all parents completed all study surveys.

Treatment fidelity

For the youth-focused protocol, fidelity ranged from 66% to 100% across sessions, with an overall average of 90%. For the parent-focused protocol, fidelity ranged from 83% to 100% across sessions, with an overall average of 96%. Lastly, for the joint parent–youth portion of the sessions, fidelity ranged from 66% to 88%, with an overall average of 76%. See fidelity rates for each portion of all six group treatment sessions in Table 2.

Utility

Evidence for effects on parenting practices

There was a medium effect size from pre- to post-treatment on youth-reported nighttime limit-setting (Hedge's $g = .551$). Youth-reported nighttime parental limit setting decreased from pre- to post-treatment. There was also a medium effect size on reductions in youth-reported nighttime co-sleeping (Hedge's $g = .211$) from pre- to post-treatment. Based on parent report, there were medium effect sizes on nighttime supportiveness (Hedge's $g = -.724$), general/daytime positive parenting practices (Hedge's $g = -.678$), and general/daytime negative parenting practices (Hedge's $g = .501$). More specifically, 83% of parents reported increases in nighttime supportiveness and in general/daytime positive parenting practices. Eighty-three percent also reported decreases in general/daytime negative parenting practices. Lastly, there were small effect sizes on reductions in parent-reported nighttime hostility (Hedge's $g = .416$) and physical control (Hedge's $g = .377$). More specifically, 83% of parents reported decreases in nighttime hostility. Unexpectedly, there was a small effect size for increases in unsupportive emotion socialization practices (Hedge's $g = -.478$), with only one parent reporting decreased unsupportive practices. Small effect sizes were also found for increases in parent-reported nighttime limit-setting (Hedge's $g = -.461$); 83% of parents reported increases in nighttime limit-setting, one parent reported no change, and another parent reported a slight decrease in nighttime limit-setting. Table 3 depicts pre- to post-treatment mean

Table 3. Change in youth- and parent-reported sleep health domains from pre- to post-treatment.

	Youth Report					Parent Report				
	Mean (SD) – Pre	Mean (SD) – Post	T-test	Hedges' g	RCI	Mean (SD) – Pre	Mean (SD) – Post	T-test	Hedges' g	RCI
Sleep Satisfaction	2.0 (1.1)	2.83 (1.3)	−1.633	−.659	−1.63	1.33 (.52)	2.16 (.75)	−5.0*	−1.884	−4.99
SRI/Alertness	18.67 (9.0)	13.66 (4.9)	1.451	.586	−1.45	20.17 (3.9)	12.5 (5.5)	1.487	.560	1.48
Timing	2.3 (.81)	2.3 (.51)	.000	.685	0	2.83 (.4)	2.5 (.54)	1.581	.596	1.58
Sleep Efficiency (%)	90.3	95.09 (3.71)	−3.129*	−1.263	−3.13	93.84	96.1 (2.7)	−1.767	−.666	−1.76
Sleep Duration (HH:MM)	8:15 (1:57)	8:57 (1:27)	−2.087	−.843	−2.13	8:50 (1:35)	9:50 (1:20)	−1.542	−.581	1.53
Sleep Hygiene	2.46 (.69)	1.99 (.20)	1.741	.703	1.74	2.36 (.46)	2.04 (.26)	3.544*	.959	2.54
Sleep Disturbances	2.79 (.58)	2.15 (.76)	2.240	.904	2.24	2.62 (.28)	2.21 (.50)	2.909*	1.096	2.91
Electronics at Bedtime	2.88 (1.4)	1.47 (.60)	2.858*	1.077	2.66	2.22 (1.06)	1.77 (.65)	1.581	.596	1.58
Bedtime Worries	3.50 (1.18)	2.66 (.76)	2.988*	1.126	2.98	2.92 (.66)	2.58 (1.4)	.466	.176	.46
Sleep Onset Latency (Min)	33.3 (10.3)	23.3 (15)	4.0*	1.615	4	25.83 (16.18)	20.42 (15.9)	.859	.351/.324	0.86

Note. *p-value < .05; RCI = Reliable Change Index.

Table 4. Change in youth- and parent-reported mental health difficulties and parenting from pre- to post-treatment.

	Youth Report					Parent Report				
	Mean (SD) – Pre	Mean (SD) – Post	T-test	Hedges' g	RCI	Mean (SD) – Pre	Mean (SD) – Post	T-test	Hedges' g	RCI
Anxiety	32.17 (6.4)	22.33 (11.6)	3.016*	1.22	3.01	32.17 (6.4)	17.83 (5.7)	2.320	.874	2.32
Depressive Symptoms	22.17 (12)	13.66 (4.9)	3.615*	1.46	3.61	22.17 (12)	11.83 (5.5)	2.123	.80	2.12
Externalizing Problems	1.76 (.47)	1.66 (.21)	.725	.293	.725	1.76 (.47)	1.67 (.52)	2.051	.772	2.05
Attention Problems	1.94 (.70)	1.69 (.41)	1.580	.638	1.58	1.94 (.70)	1.66 (.42)	3.503*	1.32	3.76
Nighttime Supportiveness	2.71 (.85)	2.50 (.86)	.336	.126	.335	3.54 (.24)	4.10 (.54)	−1.92	−.724	−1.92
Nighttime Hostility	2.2 (.99)	2.25 (.92)	−.128	−.048	−.128	2.33 (.64)	1.87 (.96)	1.10	.416	1.10
Nighttime Physical Control	1.55 (.77)	1.50 (.93)	.415	.156	.415	1.22 (.34)	1.11 (.27)	1.0	.377	1.0
Nighttime Limit-Setting	3.61 (.74)	3.17 (1.2)	.628	.236	.627	4.11 (.72)	4.44 (.34)	−1.23	−.461	−1.22
Nighttime Media Monitoring	2.83 (1.6)	2.50 (1.0)	.415	.156	415	2.0 (1.5)	2.33 (1.5)	−.395	−.149	−.395
Nighttime Co-Sleeping	2.11 (1.5)	1.94 (1.5)	1.46	.551	−1.32	1.89 (.69)	2.0 (1.1)	−.439	−.165	−.438

Note. *p-value < .05; RCI = Reliable Change Index.

differences for each parent participant across nighttime and general/daytime parenting domains, respectively.

Evidence for effects on youth sleep health

There were large effect sizes from pre- to post-treatment on youth-reported sleep efficiency (Hedge's $g = -1.26$) as well as a very large effects size in the reduction of sleep onset latency (Hedge's $g = 1.61$), electronics use at bedtime (Hedge's $g = 1.07$), and worries at bedtime (Hedge's $g = 1.13$), all based on CRSP descriptive data. All of these domains achieved a reliable change from pre- to post-treatment (RCI > 1.96) and statistical significance in within-subject changes (all $p < .05$; see Table 4 for paired-sample t-tests results). Additionally, there were large effect sizes in within-subject changes from pre- to post-treatment on youth-reported sleep disturbances (Hedge's $g = .904$) and sleep duration (Hedge's $g = -.843$) on the CRSP (all RCI > ±1.96). Additionally, there was a medium effect size in within-subject changes from pre- to post-treatment on youth-reported sleep satisfaction on the CRSP (Hedges $g = -.659$), PROMIS sleep-related impairment (Hedges $g = -.659$), bedtime consistency on the CRSP (Hedges $g = .685$), and sleep hygiene on the CRSP (Hedges $g = .703$). However, none of these four sleep health domains achieved a reliable change (all RCIs < ±1.96).

Moreover, there were large effect sizes from pre- to post-treatment on parent-reported increased sleep satisfaction (Hedge's $g = -1.88$), decreased sleep disturbances (Hedge's $g = -1.09$), and improved sleep hygiene (Hedge's $g = .959$), based on the CRSP. These two domains achieved a reliable change from pre- to post-treatment (RCI > 1.96) as well as significant within-subject differences ($p < .05$). Further, there were medium effect sizes on parent-reported youth PROMIS sleep-related impairment (Hedge's $g = .56$), CRSP bedtime consistency (Hedge's $g = .596$), CRSP sleep efficiency (Hedge's $g = -.666$), CRSP sleep duration (Hedge's $g = -.581$), and CRSP electronics use at bedtime (Hedge's $g = .596$). See Table 4 for all youth- and parent-reported sleep health outcomes.

Evidence for effects on youth mental health

There were large effect sizes from pre- to post-treatment on youth-reported anxiety (Hedge's $g = 1.22$) and depressive symptoms (Hedge's $g = 1.46$), based on the PROMIS measures. These conditions achieved a reliable change from pre- to post-treatment (RCI > 1.96) and statistical significance in within-subject changes (all $p < .05$). More specifically, 66% ($n = 4$) of the entire sample showed clinical improvement (RCI > 1.96) in their anxiety, while 83% showed clinical improvement (RCI > 1.96) in their depressive symptoms. Further, there was a large effect on youth-reported attention problems (Hedge's $g = 1.46$), yet it did not achieve a reliable change (RCIs < ±1.96). More specifically, 50% of youth reported reduced attention problems, one youth reported no change, and two (33%) youths reported increased attention problems. Regarding externalizing problems, 66% reported reductions, whereas 33% reported increases.

Similarly, there were large effect sizes from pre- to post-treatment on parent-reported anxiety (Hedge's $g = .874$) and depressive symptoms

(Hedge's $g = .80$), based on the parent-proxy PROMIS measures. Specifically, 66% of parents reported decreases in their children's anxiety, while the resting 33% reported no change. Regarding depressive symptoms, 83% of parents reported reductions in their children's depressive symptoms, while one parent reported increases. Further, there was also a large effect size on parent-reported attention problems (Hedge's $g = 1.32$), based on the BPM. Lastly, there was a medium effect size on parent-reported externalizing problems (Hedge's $g = .772$), based on the BPM. More specifically, 100% and 66% of parents reported decreases in their children's attention problems and externalizing problems, respectively. All parent-reported mental health outcomes achieved a reliable change (RCIs < ±1.96). See Table 5 for all youth- and parent-reported mental health outcomes.

Discussion

The current manuscript describes the conceptual model and implementation of a family-based program for peri-pubertal youth with sleep problems. The current study utilized data from six peri-pubertal participants and their parents and provided preliminary support for the utility, feasibility, and acceptability of FABSleep. Furthermore, this study yielded preliminary evidence for a positive effect of the program on both sleep and internalizing symptoms. Our study achieved full participant retention, which contrasts with typical high attrition rates in parenting interventions (up to approximately 60%; Tully & Hunt, 2017). While the current sample is too small to limit generalization, briefer interventions may enhance engagement, particularly for families who face significant barriers to accessing and engaging with evidence-based services (Derr, 2016). The lack of attrition in the current study aligns with previous studies on brief parenting interventions documenting lower attrition rates (i.e., from 9% to 27%; Tully & Hunt, 2016). Nevertheless, the aforementioned conclusions are purely speculative. Perhaps high retention in our study might be due to families' perceived benefits of the intervention. Additionally, the presumed ease of attending telehealth sessions likely contributed to the consistent attendance and ultimately the full participant retention we observed, consistent with findings on reduced barriers in internet-based interventions (Comer et al., 2017). Also, delivering the intervention in a group format may have fostered peer support and knowledge sharing, which may have increased buy-in and session engagement. This type of support may have been particularly beneficial during the pandemic (Prime et al., 2020).

Sleep health

Consistent with previous sleep intervention research (e.g., Blake et al., 2016; McMakin et al., 2019), there were medium to large effect sizes on within-subject changes in almost all sleep health dimensions from pre- to post-treatment. However, 33% of the sample exhibited slightly increased daytime sleepiness and sleep disturbances at post-treatment. Speculatively, these results may reflect a greater awareness of problems with sleep and related impairment and/or of what constitutes adequate sleep health. Indeed, research on adolescent sleep problems incidence has documented a subjective underestimation of self-identified sleep problems despite evidence of clinical indicators of disturbed sleep (Short et al., 2013). As such, via the intervention, increased awareness of the detrimental impact of poor sleep may have precipitated worries or rumination about sleep, an experience that has been commonly documented in poor sleepers (Hiller et al., 2015). Alternatively, given the narrow timeframe of the intervention, these unexpected increases in sleepiness and sleep disturbances may have signaled environmental stress (e.g., spike in COVID-19 cases). Nevertheless, both youth- and parent-reported sleep health outcomes were primarily favorable, which is notable given the brevity of treatment and the limitations in treatment personalization due to the group format.

Within-subject improvements in many domains encompassing youth's sleep health boosts the enthusiasm for the dissemination of brief, targeted sleep interventions to promote population-level health gains, particularly during sensitive developmental periods, which can be optimized to prevent mental health difficulties (McMakin & Alfano, 2015). To maximize their public health potential,

the delivery of evidence-based sleep-promoting practices may be crucial to reduce the sleep health disparity suffered by low-income, racially and ethnically diverse families (Guglielmo et al., 2018). However, a concerningly large number of pediatric health-care clinicians lack knowledge about developmentally appropriate sleep milestones, sociocontextual and biological shifts in sleep disruption vulnerability, and most importantly, how to treat pediatric sleep problems via evidence-based practices (Meltzer et al., 2021). Moreover, even if pediatric providers have sleep intervention knowledge, recommendations such as "*Do not let your children use their smartphones before bedtime*" or "*Make sure that your child has a regular sleep-wake schedule*" often lack the provision of helpful parenting strategies to follow through with said recommendations. As such, including parents as active participants in targeted sleep interventions, even as children grow older, may be particularly beneficial. Although the program evaluation design of the current study precludes an understanding of the mechanisms underlying improvements in the current sample's sleep health, the positive changes (medium effect size) in nighttime supportiveness and general/daytime positive practices may have contributed to the sleep health outcomes. Certainly, to avoid "reinventing the wheel," a future randomized-controlled trial (RCT) comparing the youth-focused intervention to FABSleep may answer questions related to the level of ancillary benefit of actively involving parents in sleep interventions for adolescents.

Furthermore, consistent with previous research on adolescent sleep (e.g., Short et al., 2013), there were discrepancies among youth and parent reports of youth's sleep problems, which may be associated with parents' increasingly reduced awareness of their children's sleep patterns as they grow older. For example, there was a large effect size in youth-reported reductions in bedtime worries from pre- to post-treatment, compared to a small effect size reported by parents. Clearly, worrying at sleep onset is a more internal phenomenon that parents may be unaware of, and that adolescents, in particular, may be less prone to disclose. Alternatively, sleep-related behaviors such as bedtime regularity and daytime sleepiness may be more observable behaviors to parents, which may lead to more congruent perceptions. Perceptual discrepancies on what constitutes poor sleep health are relevant, as they may result in underutilization of sleep interventions due to parents being uninformed about the severity or even the presence of their childrens' sleep problems. Systematically inquiring about children's sleep during physical and mental health visits could signal the importance of good sleep and facilitate appropriate referrals.

Mental health

There were large effect sizes on changes from pre- to post-treatment youth- and parent-reported anxiety and depression, with 66% and 83% of the sample reporting reliable clinical improvement in youth-reported anxiety and depressive symptoms, respectively. These results are notable, as the current youth sample was a predominantly anxious one, and because the intervention did not specifically target anxiety and depression. Improvements in these conditions were corroborated by parents' reports. Similarly, there were large effect sizes on decreased youth- and parent-reported attention problems. Parents also reported a medium effect size on decreased externalizing problems. Improvements in mental health align with past studies documenting reduced anxiety and depression following cognitive-behavioral and mindfulness-based sleep interventions (e.g., Bei et al., 2013; Blake et al., 2016), though these interventions often show small effects on mental health difficulties. Although mechanisms for mental health improvements in our study cannot be discerned, the family-based nature of the intervention may have contributed to these large effects via increased positivity and/or presumed decreased conflict within parent–youth interactions, consistent with an abundance of evidence on parenting programs leading to reductions in externalizing and internalizing difficulties (Higa McMillan et al., 2016).

Improvements in anxiety are noteworthy, given several past studies revealing that anxious youth's problems with sleep revolve primarily around onset and maintenance due to a vigilant and/or cognitively (e.g., rumination) and somatically (e.g., muscular tension) aroused pre-sleep state, partly attributed to underdeveloped self-regulatory/soothing skills (Alfano et al., 2010;

Dahl, 1996; Ricketts et al., 2018). For these reasons, FABSleep intentionally targeted youth's emotional state at the pre-sleep period via sleep-promoting bedtime practices (e.g., winding-down, savoring) and, presumably, via more positive nighttime parent–youth interactions and/or parent supportive behaviors (e.g., rewarding, praising). These findings fit within the framework of hyperarousal models of insomnia (Riemann et al., 2010) and highlight the clinical importance of addressing psychological and physiological arousal at bedtime to not only improve the quality of sleep (Blake et al., 2016), but also to decrease general anxiety among at-risk youth. These results also call attention to the need to systematically incorporate a sleep enhancement component (e.g., savoring at bedtime) to cognitive-behavioral interventions for anxious youth (e.g., McMakin et al., 2019).

It is important to contextualize youth's mental health improvements, given the potential isolation and loneliness experienced by families during the pandemic. Perhaps improvements in mental health may have also been linked to increased socialization, intimacy, and support via participation in a group intervention with similarly aged peers who experienced similar psychological distress. A future RCT may answer questions related to disentangling the mechanisms underlying improvements in mental health following FABSleep. Nevertheless, the current findings suggest that delivering a brief behavioral group sleep intervention may assist in the transdiagnostic amelioration of sleep and mental health difficulties during highly stressful and unprecedented times (Gassman-Pines et al., 2020). Additionally, these findings also support FABSleep's implementation as a brief and targeted triage opportunity to address the high number of youths awaiting psychological services for months.

Parenting practices

As hypothesized, there were general increases in positive nighttime practices (i.e., supportiveness, limit-setting) and general/daytime positive parenting practices as well as general decreases in parent-reported nighttime negative practices (i.e., hostility, physical control). Youth's reports, however, did not corroborate these findings. Indeed, youth reported a slight decrease in their parents' nighttime supportiveness, limit-setting, and media monitoring. Poor concordance among youth- and parent-reported parenting practices is not uncommon (e.g., Taber, 2010) and, in the current study, may have been partially related to social desirability biases on the part of parents, parents' "emotional" investment into the intervention and desire to perceive positive self-changes, and/or youth simply not noticing changes in their parents' parenting practices. Additionally, differences in perceived parenting practices may reveal underlying conflict within the parent–youth relationship. Indeed, adolescents' subjective perceptions of parenting practices have been shown to relate to the quality of the parent–youth relationship and to adolescents' well-being (e.g., Bosco et al., 2003). Such evidence highlights the importance of incorporating both youth- and parent-report measures of parenting practices, both in research and clinical settings, as differences in perceived parents' behaviors may contribute to increased parent–outh relational conflict. Incorporating coded observations of parenting behaviors during parent interactions may also be warranted in future trials.

Furthermore, although the effect sizes for within-subject changes in parenting practices ranged from small to medium (and all RCIs were insignificant), they are consistent with the larger parenting intervention literature (e.g., Chu et al., 2015; Florean et al., 2020; Forehand et al., 2012) and noteworthy given the limited treatment personalization and the shortness and format (i.e., group and via telehealth) of the intervention. These smaller effect sizes are unsurprising for two main reasons: FABSleep's brevity (~1.5 months vs. ~4 months for well-established parenting programs like Parent-Child Interaction Therapy, Helping the Noncompliant Child), and the generally smaller effect sizes observed in parenting interventions for older children or adolescents (e.g., Chu et al., 2015; Florean et al., 2020). Despite this, the current preliminary findings suggest that a brief parenting intervention focused on supporting youth's sleep health may foster improved parent–youth nighttime interactions with a presumed spillover effect on adaptive general/daytime parenting practices, and a possibly improved family milieu. From a clinical perspective, the discussion of addressing

negative parent–youth dynamics within the context of a sleep intervention almost provided a low-stigma opportunity to create parental insight on possibly unsupportive or conflicted family environments that may have sustained youth's sleep and mental health difficulties. This seemingly greater awareness is corroborated by the qualitative comments by parents emphasizing the importance of a calm and positive family environment at nighttime to foster higher-quality and more sleep.

Lastly, similar to our interpretations on the study's mental health findings, it is vital to contextualize the presumed "improvements" in parent-reported parenting practices findings within the context of a pandemic when parents were navigating ongoing unprecedented and highly stressful uncertainties and, very possibly, high levels of psychological distress (Patrick et al., 2020). Although we didn't assess for parents' psychological well-being, it is likely that all families were in one way or another impacted by the pandemic, which may have increased family conflict and diminished parents' emotional resources to effectively engage in skill practice or handle "difficult" youth behavior. Similar to youth, receiving peer parental support—through empathy, understanding, and advice from others with similar familial experiences—may also have motivated them to engage in the discussed parenting practices and/or strategies.

Limitations, strengths, and clinical implications

The findings previously discussed should be interpreted within the study's limitations. First, the sample was very small, limiting the findings' generalizability. Future replicatory studies with a larger sample of youth and parent dyads is warranted. Second, the causal influence of the intervention cannot be concluded, and thus, improvements in sleep and mental health could have been attributed to alternative factors other than the program itself. A future RCT could answer these questions. Third, data were entirely collected during the COVID-19 pandemic, which again, may limit the findings' generalizability. Fourth, the lack of objective sleep data limits the enthusiasm of the current findings, given our inability to corroborate subjective improvements in sleep. Despite the small sample and related cautious interpretations of the results, the current study's sample was primarily Hispanic and of lower socioeconomic background, which is notable given the underrepresentation of this population in the literature and sleep health disparities among Hispanic and non-Hispanic Whites (Williams et al., 2015). Additionally, most data, including nighttime parenting practices, were collected via both youth and parent reports, allowing for different perspectives to be explored and for said differences to be clinically interpreted in meaningful ways. Further, the intervention was accepted by both therapists in training and families, suggesting that the content was "easily digestible" and applicable. Additionally, the current research addressed an understudied question on the influence of parenting practices on adolescent youth's sleep health. Indeed, associations among parenting practices and children's sleep have primarily been studied during infancy and early childhood (El-Sheikh & Kelly, 2017). In turn, the current study corroborates previous empirical data (e.g., Acosta et al., under review) and adds to the conceptualization of peri-pubertal youth's sleep health within the family context.

Conclusion

The current study provides initial evidence that FABSleep, a brief, family-based intervention, is feasible, acceptable, and potentially effective for peri-pubertal youth with sleep problems. Findings from the current study provided preliminary support for the use of sleep enhancement as a transdiagnostic target for improving sleep health, with potential to deter negative mental health trajectories and improve overall family functioning, while simultaneously screening for mental health difficulties that may warrant a higher level of care. Further, the current study lends further support for parenting practices as contributors to youth's sleep health (e.g., Acosta et al., 2021). The lesson learned via our clinical experiences and supported by empirical data is that parents' active involvement in their children's treatment may be of key importance when fostering ecological immediate environments that support healthy sleep and good mental health. Capitalizing on sensitive developmental periods such as peri-puberty to enhance youth's sleep health may prove fruitful in ameliorating the mental health crisis that intimately affects both families and providers.

Author contributions

CRediT: **Juliana Acosta:** Conceptualization, Data curation, Formal analysis, Funding acquisition, Investigation, Methodology, Project administration, Resources, Writing – original draft, Writing – review & editing; **Justin Parent:** Conceptualization, Data curation, Investigation, Methodology, Resources, Supervision, Writing – review & editing; **Dana L. McMakin:** Conceptualization, Investigation, Methodology, Project administration, Supervision, Writing – review & editing.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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Data availability statement

Data are available upon request from the primary author.

References

Achenbach, T. M., McConaughy, S. H., Ivanova, M. Y., & Rescorla, L. A. (2011). *Manual for the ASEBA brief problem monitor (BPM)*. University of Vermont, Research Center for Children, Youth, and Families.

Acosta, J., Parent, J., Hare, M. S., DiMarzio, K., Sisitsky, M., & McMakin, D. L. (2023). Development of the Nighttime Parenting Scale: Differentiating nighttime versus general parenting practices and their impact on youth sleep health. *Sleep health*, *9*(4), 489–496.

Acosta, J., Parent, J., McMakin, D. L., McKee, L., DiMarzio, K., & Dale, C. (2021). Longitudinal associations between parenting practices and youth sleep problems. *Journal of Developmental & Behavioral Pediatrics*, *42*(9), 751–760. https://doi.org/10.1097/DBP.0000000000000953

Alfano, C. A., Pina, A. A., Zerr, A. A., & Villalta, I. K. (2010). Pre-sleep arousal and sleep problems of anxiety-disordered youth. *Child Psychiatry and Human Development*, *41*(2), 156–167. https://doi.org/10.1007/s10578-009-0158-5

American Medical Association, American Academy of Sleep Medicine. American Medical Association. (2010). *Resolution, 503: Insufficient sleep in adolescents*.

Bei, B., Byrne, M. L., Ivens, C., Waloszek, J., Woods, M. J., Dudgeon, P., Murray, G., Nicholas, C. L., Trinder, J., & Allen, N. B. (2013). Pilot study of a mindfulness-based, multi-component, in-school group sleep intervention in adolescent girls. *Early Intervention Psychiatry*, *7*(2), 213–220. https://doi.org/10.1111/j.1751-7893.2012.00382.x

Blake, M., Waloszek, J. M., Schwartz, O., Raniti, M., Simmons, J. G., Blake, L., Murray, G., Dahl, R. E., Bootzin, R., Dudgeon, P., Trinder, J., & Allen, N. B. (2016). The sense study: Post intervention effects of a randomized controlled trial of a cognitive-behavioral and mindfulness-based group sleep improvement intervention among at-risk adolescents. *Journal of Consulting & Clinical Psychology*, *84*(12), 1039–1051. https://doi.org/10.1037/ccp0000142

Bonnar, D., Gradisar, M., Moseley, L., Coughlin, A. M., Cain, N., & Short, M. A. (2015). Evaluation of novel school-based interventions for adolescent sleep problems: Does parental involvement and bright light improve outcomes? *Sleep Health*, *1*(1), 66–74. https://doi.org/10.1016/j.sleh.2014.11.002

Bosco, G. L., Renk, K., Dinger, T. M., Epstein, M. K., & Phares, V. (2003). The connections among adolescents' perceptions of parents, parental psychological symptoms, and adolescent functioning. *Journal of Applied Developmental Psychology*, *24*(2), 179–200. https://doi.org/10.1016/S0193-3973(03)00044-3

Buysse, D. J. (2014). Sleep health: Can we define it? does it matter? *Sleep*, *37*(1), 9–17. https://doi.org/10.5665/sleep.3298

Carskadon, M. A., Vieira, C., & Acebo, C. (1993). Association between puberty and delayed phase preference. *Sleep*, *16*(3), 258–262. https://doi.org/10.1093/sleep/16.3.258

Chu, J. T., Bullen, P., Farruggia, S. P., Dittman, C. K., & Sanders, M. R. (2015). Parent and adolescent effects of a universal group program for the parenting of adolescents. *Prevention Science*, *16*(4), 609–620. https://doi.org/10.1007/s11121-014-0516-9

Comer, J. S., Furr, J. M., Miguel, E. M., Cooper-Vince, C. E., Carpenter, A. L., Elkins, R. M., Kerns, C. E., Cornacchio, D., Chou, T., Coxe, S., Deserisy, M., Sanchez, A. L., Golik, A., Martin, J., Myers, K. M., & Chase, R. (2017). Remotely delivering real-time parent training to the home: An initial randomized trial of internet-delivered parent-child interaction therapy (I-PCIT). *Journal of Consulting & Clinical Psychology*, *85*(9), 909–917. https://doi.org/10.1037/ccp0000230

Dahl, R. E. (1996). The impact of inadequate sleep on children's daytime cognitive function. *Seminars in Pediatric Neurology*, *3*(1), 44–50. https://doi.org/10.1016/s1071-9091(96)80028-3

Derr, A. S. (2016). Mental health service use among immigrants in the United States: A systematic review. *Psychiatric Services (Washington, D.C.)*, *67*(3), 265–274. https://doi.org/10.1176/appi.ps.201500004

El-Sheikh, M., & Kelly, R. J. (2017). Family functioning and children's sleep. *Child Development Perspectives*, *11*(4), 264–269. https://doi.org/10.1111/cdep.12243

Fabes, R. A., Eisenberg, N., & Bernzweig, J. (1990). *The coping with children's negative emotions scales*. (CCNES): Description and scoring. Arizona State University.

Fabes, R. A., Poulin, R. E., Eisenberg, N., & Madden Derdich, D. A. (2002). The coping with children's negative emotions Scale (CCNES): Psychometric properties and relations with children's emotional competence. *Marriage and Family Review*, *34*(3–4), 285–310. https://doi.org/10.1300/J002v34n03_05

Florean, I. S., Dobrean, A., Păsărelu, C. R., Georgescu, R. D., & Milea, I. (2020). The efficacy of internet-based parenting programs for children and adolescents with behavior problems: A meta-analysis of randomized clinical trials. *Clinical Child & Family Psychology Review*, *23*(4), 510–528. https://doi.org/10.1007/s10567-020-00326-0

Forehand, R., Thigpen, J. C., Parent, J., Hardcastle, E. J., Bettis, A., & Compas, B. E. (2012). The role of parent depressive symptoms in positive and negative parenting in a preventive intervention. *Journal of Family Psychology*, *26*(4), 532–541. https://doi.org/10.1037/a0028406

Forrest, C. B., Meltzer, L. J., Marcus, C. L., de la Motte, A., Kratchman, A., Buysse, D. J., Pilkonis, P. A., Becker, B. D., & Bevans, K. B. (2018). Development and validation of the PROMIS pediatric sleep disturbance and sleep-related impairment item banks. *Sleep*, *41*(6). https://doi.org/10.1093/sleep/zsy054

Gassman-Pines, A., Ananat, E. O., & Fitz-Henley, J., 2nd. (2020). COVID-19 and parent-child psychological well-being. *Pediatrics*, *146*(4), e2020007294. https://doi.org/10.1542/peds.2020-007294

Guglielmo, D., Gazmararian, J. A., Chung, J., Rogers, A. E., & Hale, L. (2018). Racial/ethnic sleep disparities in US school-aged children and adolescents: A review of the literature. *Sleep Health*, *4*(1), 68–80. https://doi.org/10.1016/j.sleh.2017.09.005

Hedges, L. V. (1981). Distribution theory for Glass's estimator of effect size and related estimators. *Journal of Educational Behavioral Statistics*, *6*, 107–128. https://doi.org/10.3102/10769986006002107

Higa McMillan, C. K., Francis, S. E., Rith-Najarian, L., & Chorpita, B. F. (2016). Evidence base update: 50 years of research on treatment for child and adolescent anxiety. *Journal of Clinical Child & Adolescent Psychology*, *45*(2), 91–113. https://doi.org/10.1080/15374416.2015.1046177

Hiller, R. M., Johnston, A., Dohnt, H., Lovato, N., & Gradisar, M. (2015). Assessing cognitive processes related to insomnia: A review and measurement guide for Harvey's cognitive model for the maintenance of insomnia. *Sleep Medicine Reviews*, *23*, 46–53. https://doi.org/10.1016/j.smrv.2014.11.006

Jacobson, N. S., & Truax, P. (1991). Clinical significance: A statistical approach to defining meaningful change in psychotherapy research. *Journal of Consulting & Clinical Psychology*, *59*(1), 12–19. https://doi.org/10.1037/0022-006X.59.1.12

Jenni, O. G., Achermann, P., & Carskadon, M. A. (2005). Homeostatic sleep regulation in adolescents. *Sleep*, *28*(11), 1446–1454. https://doi.org/10.1093/sleep/28.11.1446

Kelly, R. J., & El-Sheikh, M. (2014). Reciprocal relations between children's sleep and their adjustment over time. *Developmental Psychology*, *50*(4), 1137–1147. https://doi.org/10.1037/a0034501

Khor, S. P. H., McClure, A., Aldridge, G., Bei, B., & Yap, M. B. H. (2021). Modifiable parental factors in adolescent sleep: A systematic review and meta-analysis. *Sleep Medicine Reviews*, *56*, 101408. https://doi.org/10.1016/j.smrv.2020.101408

McMahon, R., & Forehand, R. L. (2003). *Helping the noncompliant child: Family-based treatment for oppositional behavior* (2nd ed.).

McMakin, D. L., & Alfano, C. A. (2015). Sleep and anxiety in late childhood and early adolescence. *Current Opinion in Psychiatry*, *28*(6), 483–489. https://doi.org/10.1097/YCO.0000000000000204

McMakin, D. L., Ricketts, E. J., Forbes, E. E., Silk, J. S., Ladouceur, C. D., Siegle, G. J., & Dahl, R. E. (2019). Anxiety treatment and targeted sleep enhancement to address sleep disturbance in pre/early adolescents with anxiety. *Journal of Clinical Child & Adolescent Psychology*, *48*(sup1), S284–S297. https://doi.org/10.1080/15374416.2018.1463534

Meijer, A. M., Reitz, E., & Dekovic, M. (2016). Parenting matters: A longitudinal study into parenting and adolescent sleep. *Journal of Sleep Research*, *25*(5), 556–564. https://doi.org/10.1111/jsr.12406

Meltzer, L. J., Avis, K. T., Biggs, S., Reynolds, A. C., Crabtree, V. M., & Bevans, K. B. (2013). The children's report of sleep patterns (CRSP): A self-report measure of sleep for school-aged children. *Journal of Clinical Sleep Medicine: JCSM: Official Publication of the American Academy of Sleep Medicine*, *9*(3), 235–245. https://doi.org/10.5664/jcsm.2486

Meltzer, L. J., Williamson, A. A., & Mindell, J. A. (2021). Pediatric sleep health: It matters, and so does how we define it. *Sleep Medicine Reviews*, *57*, 101425. https://doi.org/10.1016/j.smrv.2021.101425

National Sleep Foundation. (2014). Sleep in America poll – sleep in the Modern Family. *Sleep Health*, *1*(2), 13. https://doi.org/10.1016/j.sleh.2015.04.013

Parent, J., & Forehand, R. (2017). The multidimensional assessment of parenting scale (MAPS): Development and psychometric properties. *Journal of Child and Family Studies*, *26*(8), 2136–2151. https://doi.org/10.1007/s10826-017-0741-5

Patrick, S. W., Henkhaus, L. E., Zickafoose, J. S., Lovell, K., Halvorson, A., Loch, S., & Davis, M. M. (2020). Well-being of parents and children during the COVID-19 pandemic: A national survey. *Pediatrics*, *146*(4), e2020016824.

Prime, H., Wade, M., & Browne, D. T. (2020). Risk and resilience in family well-being during the COVID-19 pandemic. *The American Psychologist*, *75*(5), 631–643. https://doi.org/10.1037/amp0000660

Quach, J. L., Nguyen, C. D., Williams, K. E., & Sciberras, E. (2018). Bidirectional associations between child sleep problems and internalizing and externalizing difficulties from preschool to early adolescence. *JAMA Pediatrics*, *172*(2), e174363. https://doi.org/10.1001/jamapediatrics.2017.4363

Reitman, D., & McMahon, R. J. (2013). Constance "Connie" Hanf (1917-2002): The mentor and the model. *Cognitive and Behavioral Practice*, *20*(1), 106–116. https://doi.org/10.1016/j.cbpra.2012.02.005

Ricketts, E. J., Price, R. B., Siegle, G. J., Silk, J. S., Forbes, E. E., Ladouceur, C. D., Harvey, A. G., Ryan, N. D., Dahl, R. E., & McMakin, D. L. (2018). Vigilant attention to threat, sleep patterns, and anxiety in peripubertal youth. *Journal of Child Psychology and Psychiatry, and Allied Disciplines*, *59*(12), 1309–1322. https://doi.org/10.1111/jcpp.12923

Riemann, D., Spiegelhalder, K., Feige, B., Voderholzer, U., Berger, M., Perlis, M., & Nissen, C. (2010). The hyperarousal model of insomnia: A review of the concept and its evidence. *Sleep Medicine Reviews*, *14*(1), 19–31. https://doi.org/10.1016/j.smrv.2009.04.002

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. https://doi.org/10.1016/j.sleep.2015.02.534

Sanders, W., Parent, J., Forehand, R., & Breslend, N. L. (2016). The roles of general and technology-related parenting in managing youth screen time. *Journal of Family Psychology*, *30*(5), 641–646. https://doi.org/10.1037/fam0000175

Short, M. A., Gradisar, M., Gill, J., & Camfferman, D. (2013). Identifying adolescent sleep problems. *PLOS ONE*, *8*(9), e75301. https://doi.org/10.1371/journal.pone.0075301

Short, M. A., Gradisar, M., Wright, H., Lack, L. C., Dohnt, H., & Carskadon, M. A. (2011). Time for bed: Parent-set bedtimes associated with improved sleep and daytime functioning in adolescents. *Sleep*, *34*(6), 797–800. https://doi.org/10.5665/SLEEP.1052

Taber, S. M. (2010). The veridicality of children's reports of parenting: A review of factors contributing to parent-child discrepancies. *Clinical Psychology Review*, *30*(8), 999–1010. https://doi.org/10.1016/j.cpr.2010.06.014

Tully, L. A., & Hunt, C. (2016). Brief parenting interventions for children at risk of externalizing behavior problems: A systematic review. *Journal of Child and Family Studies*, *25*(3), 705–719. https://doi.org/10.1007/s10826-015-0284-6

Tully, L. A., & Hunt, C. (2017). A randomized controlled trial of a brief versus standard group parenting program for toddler aggression. *Aggressive Behavior*, *43*(3), 291–303. https://doi.org/10.1002/ab.21689

Varni, J. W., Thissen, D., Stucky, B. D., Liu, Y., Gorder, H., Irwin, D. E., DeWitt, E. M., Lai, J. S., Amtmann, D., & DeWalt, D. A. (2012). PROMIS® parent proxy report scales: An item response theory analysis of the parent proxy report item banks. *Quality of Life Research*, *21*, 1223–1240. https://doi.org/10.1007/s11136-011-0025-2

Williams, N. J., Grandner, M. A., Snipes, A., Rogers, A., Williams, O., Airhihenbuwa, C., & Jean-Louis, G. (2015). Racial/ethnic disparities in sleep health and health care: Importance of the sociocultural context. *Sleep Health*, *1*(1), 28–35. https://doi.org/10.1016/j.sleh.2014.12.004