

Longitudinal Associations Between Parenting Practices and Youth Sleep Problems

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ABSTRACT: *Objective:* Sleep problems among youth are highly prevalent and associated with adjustment difficulties. When considering influences on youth's sleep, bidirectional links between youth's sleep health and family functioning have been suggested. Parenting practices are among the many familial factors that could be transactionally related to poor sleep in youth; however, research is lacking on potential longitudinal associations between parenting practices and sleep problems in youth. In addition, sensitive periods for this link are mostly unknown. The current study examined longitudinal relations between constellations of parenting practices and youth sleep health to identify profiles of parenting practices that are predictive of sleep problems in youth across different developmental stages. *Method:* Participants were 292 parents ($M = 36.51$, $SD = 7.3$) of children between the ages of 3 and 14 years ($M = 8.4$, $SD = 3.6$). A person-centered approach was used to create profiles across traditionally labeled positive and negative parenting practices, as well as supportive and unsupportive parental emotion socialization strategies. Parenting profiles were then examined as longitudinal predictors of youth sleep problems. *Results:* Findings revealed 3 distinct parenting profiles, which were differentially associated with sleep problems in youth, with the first profile predicting the lowest levels of sleep problems and the third profile predicting the highest levels of sleep problems, particularly among peripubertal youth. *Conclusion:* This study extends previous findings by elucidating distinct constellations of parenting practices that are differentially predictive of youth sleep problems and highlighting parenting among the various family processes that can longitudinally contribute to youth's sleep health.

(*J Dev Behav Pediatr* 42:751–760, 2021) **Index terms:** Parenting, youth sleep health, youth sleep problems.

Sleep problems among youth are highly prevalent and associated with difficulties across several developmental domains (e.g., emotional, behavioral, cognitive, and physical health).^{1,2} Indeed, sleep problems (e.g., insufficient sleep and poor quality sleep) are pervasive in mental health disorders and among the most prominent clinical symptoms of several mood and anxiety disorders.³ Furthermore, sleep health, characterized by dimensions of duration, regularity, satisfaction, alertness, timing, and efficiency,⁴ is a pivotal predictor of socio-emotional adjustment,⁵ and evidence supports that

dimensions in sleep health that are problematic may precede internalizing pathology in childhood and adolescence.⁶ Specifically, poor sleep in youth has been demonstrated to prospectively predict depression,⁷ suicide,⁸ risk-taking behavior,⁸ and low academic achievement⁹ among other negative outcomes. Consequently, sleep problems in youth are recognized as a serious health risk and public health concern that necessitates urgent attention.¹⁰

YOUTH'S SLEEP WITHIN THE CONTEXT OF FAMILY FUNCTIONING AND PARENTING

Attempts at elucidating contributors to poor sleep health in youth have identified family functioning as intrinsically interconnected with youth's sleep behaviors.⁵ For example, research has demonstrated higher youth sleep problems in families with high levels of conflict and parenting stress. Conversely, youth who live in supportive family environments sleep better and longer.⁵ Research on the influence of family functioning on youth's sleep has predominantly considered parenting behaviors and the parent-youth relationship.¹¹ For instance, parental monitoring of sleep-wake activities (e.g., bedtime routine) has been linked to longer sleep duration in youth.¹² Conversely, parent-child interactions that lack consistent limit setting, especially during bedtime routines, have been associated with youth bedtime

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resistance, difficulty initiating sleep, and nightmares.¹³ Importantly, parenting practices are among the various family processes that transactionally influence one another to affect youth's sleep. Consequently, it is important to emphasize the reciprocal nature of the relationship between children's sleep and parenting practices given the possibility that youth's individual characteristics could similarly influence parents' behavior. Correspondingly, youth sleep problems have been demonstrated to predict increased maternal negativity and decreased maternal sensitivity and closeness, highlighting the bidirectional association between youth sleep problems and parenting practices.¹⁴

Although research has linked general parenting behaviors, including behavioral control (i.e., structured nighttime routine), to youth sleep health, there has been scant attention to how emotion-related parenting practices may be related to sleep.¹⁵ Emotion socialization (ES) behaviors encompass the myriad ways parents teach their children about emotion identification, expression, and modulation.¹⁶ A large body of research has focused specifically on parental reactions to youth emotion. For example, parental nonsupportive reactions (i.e., dismissive, critical, and punitive) to youth negative emotions (i.e., distress, sadness, and anger) have been associated with less skillful emotion regulation, emotional overarousal, and heightened distress in youth,^{15,17} which could potentially manifest in sleep problems. Alternatively, emotion-related aspects of parenting, such as emotional responsiveness, warmth, and supportiveness, have been shown to predict youth's development of skillful regulation of emotions,¹⁷ which, in turn, could protect against sleep problems.

Theoretically, and consistent with transactional and ecological models, parenting environments perceived as conflicted, unstable, and stressful result in vigilant states in youth that directly oppose sleep processes and can therefore disrupt sleep.⁵ More specifically, negative parenting practices can undermine youth's ability to manage negative emotions and thereby affect their psychological well-being through greater emotional dysregulation and poor emotion-related coping,¹⁸ which may, in turn, lead to vigilant states known to disrupt sleep.¹⁹ Accordingly, harsh parenting (e.g., psychological control and hostility) has been previously linked to youth sleep problems.²⁰ In addition, mother-child relationships characterized by greater conflict and less closeness have been associated with greater sleep problems in children.¹⁴ Conversely, positive parenting practices (e.g., warmth, closeness, clear limit setting, and monitoring) have been linked to more optimal sleep in children.¹⁴

Collectively, research findings support a contribution of parenting to youth sleep health and highlight the need to target parenting practices to improve youth sleep problems and associated emotional and behavioral difficulties. However, research is lacking on the type of parenting practices that most strongly predict youth's sleep health. Furthermore, most research on parenting practices and children's sleep has been exclusively conducted with infants and young children,⁵ which widens the research gap on the

nature of the relations between parenting and youth's sleep at other developmental stages. Importantly, growing evidence suggests that youth sleep health is increasingly vulnerable to disruption around specific developmental periods (e.g., early adolescence),⁶ which warrants examination of familial factors that contribute to disrupted sleep in youth at different stages. Unfortunately, sensitive developmental periods for the relationship between parenting practices and youth sleep health are mostly unknown.

Scarce data on longitudinal models of parenting practices and youth's sleep at different developmental stages limit the clinical applicability of research findings on how to offer parents interventions that are tailored to optimize sleep health in youth at various stages of development. The identification of key parenting practices that affect youth's sleep health throughout development is integral to enhance interventions that address poor sleep and accompanying mental health difficulties in youth. Specifically, examining dynamics between positive (e.g., warmth and supportiveness) and negative (e.g., hostility and laxness) parenting, as well as ES practices and youth's sleep health, may explain under which parenting conditions youth's sleep health suffers or thrives across development. In turn, the literature on youth sleep warrants expansion on conceptual models, especially longitudinal designs, that can serve to inform interventions aiming to promote youth's emotional and behavioral health by enhancing their sleep health. A thorough understanding of how constellations of parenting practices promote or stifle sleep health is not only uncharted research territory but also important to attempt to reduce the high prevalence of sleep problems in youth and thereby prevent psychosocial problems that ubiquitously coexist with disrupted sleep in youth.

The current longitudinal study examined the relationship between parenting and youth's sleep problems. This study used a person-centered approach to identify profiles of parenting practices and ES strategies that are most predictive of sleep problems in youth. To explicate possible developmental differences and potentially discern sensitive periods, we investigated whether associations between distinct constellations of parenting practices and youth sleep problems differ across age groups. We predicted that positive and emotionally supportive parenting practices would predict lower levels of sleep problems in youth across all age groups. Conversely, we predicted that negative and emotionally unsupportive parenting practices would predict higher levels of sleep problems in youth across age groups. Finally, we explored predictors of parenting profile membership to examine the influence of family income, parent and youth sex, and youth internalizing and externalizing problems on profile membership probability.

METHOD

A sample of 292 parents of children between the ages of 3 and 14 years from a larger study on the assessment

of parenting was used for the current study. The parent study included a community sample of 564 parents who were recruited online through Amazon's Mechanical Turk and completed electronic surveys at 4 waves throughout a 12-month period. Demographic information for the current study's sample is presented in Table 1. Given the community sample, only 16% of children were reported to experience clinically significant internalizing and externalizing pathology. The current study examined data collected at the third (8-month) and fourth (12-month) waves because a relevant measure of emotion socialization was first incorporated at the third wave. Missing data were less than 1% for all study variables. Full maximum likelihood estimation techniques were used to include all available data.

PROCEDURE

Mechanical Turk (MTurk), a dominant crowdsourcing application in the social sciences, was used to recruit parents and obtain study data. Inclusion criteria included being a parent of a child between the ages 3 and 17

Table 1. Descriptive Statistics of the Participants

Demographic characteristic	M (SD) or %, N = 292
Child age	8.4 (3.6)
Child sex (% female)	50.3
Parent age	36.51 (7.3)
Parent sex (% mothers)	60.8
Parent race/ethnicity	
White	82
Black	8.9
Latinx	5.1
Asian	3
Others	1
Family structure	
Single	16.8
Cohabiting	63.5
Married	17.9
Family income	
Under \$30,000	21.7
\$30,000–\$49,000	28.7
\$50,000–\$69,000	19.5
\$70,000–\$99,000	16.8
\$100,000 or more	13.3
Parent education	
Did not complete HS	0.6
HS or GED	13.9
Some college	26.7
College degree	41.8
More than college degree	15.7

GED, General Education Diploma; HS, high school.

years, who resided in the United States. In addition, a minimum of 95% task approval rate was required, a criterion that ensures a high-quality sample of users with better reputations (i.e., approval rating) because of a history of consistently passing attention checks at a high rate, responding in less socially desirable manners, and providing reliable responses to questionnaires similar to those of "traditional" samples. Previous research has demonstrated that obtaining data from parents through crowdsourcing methods is as reliable as obtaining data through more traditional data collection methods.²¹ Parents consented online before completing the survey following approved institutional review board procedures. A 12-month study involving the completion of 5 surveys was listed on MTurk for which participants were compensated a total of \$22 for completing surveys.

To ensure that parents' responses were not random, 10 attention check items were included in the survey. Participants were excluded from the current study for having more than 1 incorrect response on these items. In addition, participants were also excluded for failing to report the same demographic characteristics across study waves. The 53 participants excluded were not included in the total sample above.

MEASURES

Demographic Information

Parents responded to demographic questions about themselves (e.g., education and age), their children (e.g., sex and age), and families (e.g., household income).

Youth Sleep Problems

A shortened version of the Children's Sleep Habits Questionnaire (CSHQ)²² was used to measure youth sleep problems. The CSHQ is a widely used parent-report measure of youth sleep behavior that includes items relating to key sleep domains that encompass clinical sleep complaints (e.g., bedtime behavior, and sleep onset and duration). The CSHQ has been demonstrated to correlate with objective measurements of sleep functioning and has been shown to be both reliable and valid in community and clinical samples. Parents reported the frequency of sleep behavior for the most recent or "typical" week on a 4-point Likert scale that included the following response options: usually (5–7 times per week), sometimes (2–4 times per week), rarely (0–1 time per week), and never (less than once a week). The shortened version of the CSHQ inquired about sleep latency (i.e., amount of time it takes to fall asleep), consistency of sleep timing, continuity of sleep (i.e., amount of sleep versus wakefulness during the sleep period), sleep efficiency (i.e., ratio of total sleep time to amount of time spent in bed), and daytime sleepiness. Higher scores represented greater sleep problems in youth. Given our interest in examining levels of problems across various sleep dimensions, we used a Total Sleep Disturbances Index to reflect overall sleep problems in youth. A total

score above 14 was used as the clinical cutoff, which corresponded to 1 SD above the mean, similar to the clinical sleep population mean used in the original CSHQ study. Cronbach's alpha in the current sample averaged 0.70 across both waves.

Youth Internalizing and Externalizing Problems

Parents completed the 19-item Brief Problem Monitor (BPM),²³ which comprises items from the Child Behavior Checklist and Youth Self-Report²³ and examines both internalizing and externalizing pathology. Excellent internal consistency, test-retest reliability, and validity of the BPM have been previously demonstrated.²³ Internal consistency for subscales at the third and fourth waves ranged from 0.82 to 0.88.

Parenting Practices

The Multidimensional Assessment of Parenting Scale (MAPS)²¹ is a self-report measure of parenting practices, whose 34 items were selected and subsequently adapted from well-established parenting scales. The Broadband Positive Parenting factor of the MAPS includes 4 narrowband subscales: Proactive Parenting, Positive Reinforcement, Warmth, and Supportiveness. The Broadband Negative Parenting factor includes 3 narrowband subscales: Hostility, Physical Control, and Lax Control. The MAPS has demonstrated strong reliability, and longitudinal examinations have provided support for its subscales' validity.²¹ Cronbach's alphas in the current sample were 0.93 and 0.88 for the Positive and Negative Parenting domains, respectively.

Emotion Socialization Strategies

The Coping with Children's Negative Emotions Scale (CCNES)²⁴ is a self-report measure that includes 12 hypothetical emotionally evocative scenarios for youth in which caregivers rate how they would respond to their children's negative emotions (e.g., distress and fear). The CCNES includes 6 ways in which parents can respond to their children's negative emotions, and these include (1) emotion-focused reactions, which represent parental responses to make the child feel better; (2) problem-focused reactions, which represent parental responses to help the child solve a problem that caused his/her distress; (3) expressive encouragement, which represents parental responses that validate children's emotions while encouraging the expression of negative affect; (4) distress reactions, which capture the distress experienced by parents when children express negative affect; (5) punitive reactions, which represent punitive parental responses to decrease exposure to children's negative affect; and (6) minimization reactions, which represent parental responses that minimize or devalue the situation and children's distress from it. The 6 subscales were grouped into the 2 broader domains of supportive (i.e., expressive encouragement, emotion-focused, and problem-focused reactions) and

unsupportive emotion socialization (ES) practices (i.e., distress, minimization, and punitive reactions). The CCNES has previously demonstrated good internal and test-retest reliability as well as sensitivity to change over time.²⁵ Cronbach's alphas for the current sample were 0.95 and 0.90 for the supportive and unsupportive domains, respectively.

Data Analytic Plan

Latent profile analysis (LPA) was conducted to identify profiles of parenting practices and their association with indices of youth sleep health. LPAs allow variables to cluster that have similar indicator means and variances to identify group patterns. Specifically, the goal of LPA is to determine the most accurate number of profiles to describe the associations within the observed variables.²⁶

Profile Enumeration

To determine the optimal number of profiles, we used the Lo-Mendell-Rubin adjusted likelihood ratio test (LMR-A), the bootstrap likelihood ratio test (BLRT), the Bayesian Information Criterion (BIC), the Akaike Information Criteria (AIC), the consistent AIC (CAIC), the sample size adjusted BIC (ssBIC), and entropy to select the best fitting model (Table 2). Specifically, the LMR-A indicates statistically significant improvements (p value < 0.05) in a model in comparison with the model with 1 fewer profile.²⁷ Similarly, a statistically significant BLRT indicates superiority of a model when compared with the model with 1 fewer profile.²⁷ The AIC, cAIC, BIC, and ssBIC aid in determining model fit, with lower values on each index indicating better relative fit. Furthermore, entropy determines the accuracy of classifying individuals into the profiles identified in each model, with values closer to 1 indicating more certainty in group division. Importantly, the determination of the number of constellations or profiles of parenting practices should be theoretically driven and informed.

Predicting Distal Outcomes

When examining parenting profiles as predictors of youth sleep health, profile identification is often conducted through "hard classification," i.e., fixing individuals to a profile in which they had the highest likelihood of membership. For the current study, we used Vermont's 3-step approach in Mplus.²⁸ Specifically, once profiles were determined, cases were assigned to these profiles based on posterior probabilities. After that, family, parent, and youth covariates were introduced as predictors of the categorical latent class variable without needing to hard-classify nor resulting in distortion of profiles. Finally, we used a 3-step approach³⁴ to examine the cross-sectional and longitudinal impact of latent parenting profiles on youth sleep problems. Specifically, youth sleep problems at baseline and at the 4-month

wave (mean centered) and the stability of youth sleep problems across time were included at the latent class level so that estimates were unbiased by classification inaccuracy and without distorting class solution.

RESULTS

Latent Profiles

Latent profile analyses (LPAs) were conducted using *Mplus* version 8.3. Parenting practices, parent emotion socialization (ES) strategies, and youth sleep problems were converted into z scores. Every profile indicator was entered into the LPA models, which ranged from 1 to 5 profiles and were run with 200 random starts. Fit indices for the 5 profiles are presented in Table 2. The 3-, 4-, and 5-profile models all exhibited appropriate entropy. However, the 3-profile model had superior fit compared with other models for the bootstrapped likelihood ratio test, Bayesian Information Criterion, and entropy and represented the model that is most theoretically robust and empirically defensible (see Fig. 1 for complete profiles). The 4- and 5-class models had the same 3 primary classes and introduced classes that did not meaningfully add to the interpretation of the results. Thus, the 3-class model was selected for further analysis.

The first parenting profile (33%), labeled as “High Support,” was characterized as having the highest levels of positive parenting practices and supportive emotion socialization (ES) strategies paired with the lowest levels of negative parenting practices and unsupportive ES strategies. By contrast, the third parenting profile (14%), labeled as “Low Support,” was characterized as having the lowest levels of positive parenting and supportive ES practices and highest levels of negative parenting and unsupportive ES practices. The second parenting profile (53%), labeled as “Medium Support,” demonstrated moderate levels of positive and negative parenting practices as well as moderate levels of supportive and unsupportive ES strategies. More specifically, the Medium Support profile exhibited higher levels of negative parenting practices than the High Support profile (Cohen’s $d = 0.67-0.71$) but much lower than the Low Support profile ($d = 1.66-3.05$). In addition, the difference in positive parenting between the Medium Support

profile and both the High Support ($d = -1.77$) and Low Support ($d = 1.36$) was substantial.

Overall, LPA results supported 3 clearly delineated parenting profiles that longitudinally predict youth sleep problems. After profile enumeration, we explored family (e.g., socioeconomic status [SES]), parent (i.e., sex), and youth (i.e., age, sex, and problem behavior) predictors of parenting profile membership using multinomial logistic regression through Vermunt’s 3-step approach²⁸ in *Mplus* (see Table 3 for complete results).

Family income (a proxy for family SES), youth sex, and youth internalizing problems (e.g., anxiety and depression) were not associated with parenting profile probability (p values > 0.10). However, youth age was associated with parenting profile such that the odds of being in the Medium or Low Support profile, relative to the High Support profile, increased by 11% for every year youth got older. Specifically, the probability of a parent being in the High Support profile was approximately 45% for parents of young children (i.e., 3–8 years old) but only 28% for parents of peripubertal youth (i.e., 9–14 years old). In addition, parent sex was associated with parenting profile such that fathers were more likely to be in the Low Support profile relative to mothers. Finally, youth externalizing problems (e.g., defiance and aggression) were associated with parenting profile such that the odds of being in either the Medium or Low Support profiles, relative to the High Support profile, increased with higher levels of youth externalizing problems.

Youth Sleep Problems Outcomes

Next, we used a 3-step approach²⁸ to examine the cross-sectional and longitudinal impact of latent parenting profiles on youth sleep problems. Wald’s χ^2 tests of parameter equality results indicated significant cross-sectional, Wald $\chi^2 = 10.18(2)$, $p = 0.006$, and longitudinal, Wald $\chi^2 = 8.19(2)$, $p = 0.017$, differences in youth sleep problems. Longitudinally, the parents in the High Support profile reported that their children had the lowest levels of sleep problems ($m = 10.74$, 95% confidence interval [CI] 10.12–11.35), as compared to the Medium ($m = 11.6$, CI 11.09–12.1) and Low Support parenting profiles ($m = 13.31$, CI 12.3–14.3). A similar

Table 2. LPA Model Fit Indices

Profiles	LL	Entropy	Parsimony Criteria				LRT p	
			AIC	BIC	ssBIC	CAIC	LMRa	BLRT
1	–1638.29	—	3292.58	3321.99	2396.62	3329.99	—	—
2	–1473.17	0.739	2980.35	3042.85	2988.94	3059.85	0.004	0.000
3	–1407.99	0.810	2867.99	2963.58	2881.13	2989.58	0.139	0.000
4	–1384.39	0.780	2838.79	2967.47	2856.48	3002.47	0.012	0.100
5	–1363.62	0.779	2815.23	2977.01	2837.48	3021.02	0.021	0.150

AIC, Akaike Information Criteria; BIC, Bayesian Information Criterion; BLRT, bootstrap likelihood ratio test; CAIC, consistent Akaike Information Criteria; LL, Log-Likelihood; LMRa, Lo-Mendell-Rubin adjusted likelihood ratio test; LPA, Latent Profile Analysis; ssBIC, sample size adjusted Bayesian Information Criterion.

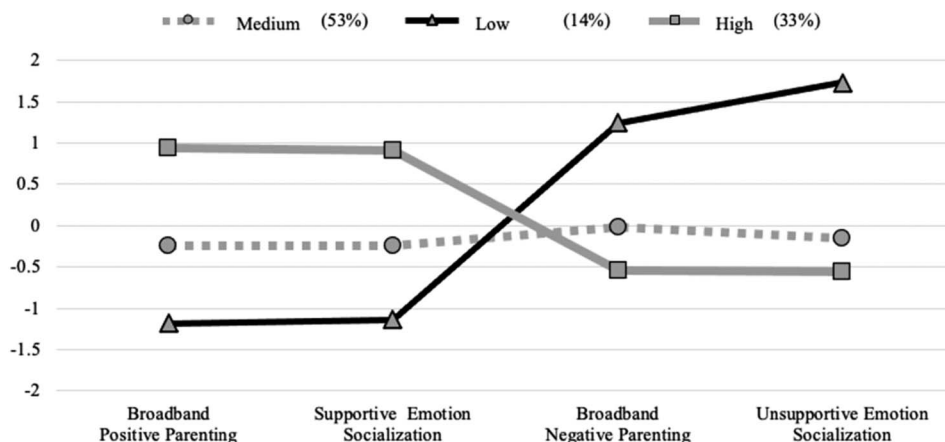


Figure 1. Z-Scored parenting practices and parent emotion socialization strategies within 3 latent profiles.

pattern of means emerged for cross-sectional associations. As expected, the Low Support parenting profile predicted the highest levels of sleep problems in youth. The differences in youth sleep problems between the High and Medium Support profiles were small ($d = 0.29$), whereas the youth sleep problems differences between the High Support and Low Support profiles were large ($d = 0.88$)—50% of youth of parents in the Low Support parenting profile were classified as having clinically elevated sleep problems relative to 12.5% of youth of parents in the High Support parenting profile. Of note, 21.4% and 26.3% of youth were reported to have sleep disturbances above the clinical cutoff in wave 3 and 4, respectively.

Finally, we explored whether youth age moderated the association between parenting profile and youth sleep problems by estimating distal outcomes separately for 2 youth developmental stages (i.e., childhood: 3–8 years old and peripuberty: 9–14 years old). The association be-

tween parenting profile and youth sleep problems was significant for peripubertal youth, Wald $\chi^2 = 9.16(2)$, $p = 0.010$, but not for younger children, Wald $\chi^2 = 2.29(2)$, $p = 0.318$. Although the pattern of results was similar across developmental stages, the difference in sleep problems between the parenting profiles was most pronounced for peripubertal youth such that the Low Support parenting profile had its most detrimental impact on youth sleep health during peripuberty (Fig. 1). Intercorrelations among study variables are presented in Table 4.

DISCUSSION

The current study used a person-centered approach to identify profiles of parenting practices that differentially predict youth sleep problems. Specifically, we examined cross-sectional and longitudinal relations between distinct profiles of parenting practices and sleep problems in young children, school-age children, and peripubertal

Table 3. Predictors of Profile Membership

Effect	Estimate	SE	OR	95% CI
Medium vs high				
Child sex	-0.164	0.340	0.849	0.436–1.65
Child age	0.104	0.050	1.11	1.01–1.22
Parent sex	0.596	0.596	1.82	0.845–3.90
Family income	0.068	0.068	1.07	0.956–1.19
Child externalizing problems	0.286	0.286	1.33	1.00–1.77
Child internalizing problems	0.063	0.063	1.07	0.856–1.36
Low vs high				
Child sex	0.149	0.507	1.16	0.430–3.13
Child age	0.105	0.070	1.11	0.968–1.28
Parent sex	1.27	0.544	3.54	1.22–10.3
Family income	0.020	0.098	1.02	0.841–1.23
Child externalizing problems	0.514	0.154	1.67	1.24–2.26
Child internalizing problems	0.118	0.134	1.13	0.865–1.46

Bold entries significance for $p < 0.05$.
CI, confidence interval; OR, odds ratio; SE, standard error.

youth. Findings supported a 3-profile model. Consistent with our hypothesis, we identified a profile of parenting that was cross-sectionally and longitudinally associated with the lowest levels of sleep problems in youth. Specifically, this profile, labeled as “High Support,” was characterized as having the highest levels of positive parenting practices and supportive emotion socialization (ES) strategies paired with the lowest levels of negative parenting practices and unsupportive ES strategies relative to the other 2 parenting profiles. Conversely, we identified a profile of parenting that was cross-sectionally and longitudinally associated with the highest levels of sleep problems in youth, labeled as “Low Support.” This profile was characterized as having the lowest levels of positive parenting and supportive ES practices and highest levels of negative parenting and unsupportive ES practices (Fig. 1). Finally, the most common parenting profile, labeled as “Medium Support,” was characterized as having moderate levels of positive and negative parenting practices. This parenting profile predicted higher levels of youth sleep problems than the High Support profile but lower than the Low Support profile.

Findings demonstrating that the High Support and Low Support parenting profiles differentially predicted sleep problems expand the literature on children’s sleep by highlighting the influence of positive parent-youth interactions on youth sleep health. Evidently, positive parenting practices may likely protect youth against sleep problems otherwise associated with negative parenting practices and/or dysfunctional family dynamics. Importantly, our findings are consistent with previous research highlighting the benefit of parental warmth, structure, and monitoring on youth’s sleep health.^{29,30} Our findings also support previous theoretical proposi-

tions and empirical work by highlighting the role of maladjusted family relationships on disrupted sleep through possible increased vigilant states (e.g., concern and worry) and environmental threats (e.g., parent-youth conflict and parental nonsupportive reactions to youth distress) experienced by youth.¹⁹ Our results expand the scant longitudinal area of inquiry of parenting and youth sleep by underscoring the quality of parenting practices and parent-youth interactions as important intervention targets, which have been largely unexplored in the behavioral treatment of disturbed sleep in youth. Indeed, youth sleep interventions generally have not targeted the quality of parenting practices directly but rather mostly involved parents by providing them with sleep education and/or encouraging parent-set bedtimes.²⁹ Our results demonstrate a differential impact of distinct parenting profiles on youth sleep problems, highlighting the need to offer families parenting interventions that are tailored to promoting healthy sleep habits through reductions in parent-youth conflict and related improvements in youth physiological states needed for sleeping. Notably, children’s sleep health is embedded in the family milieu, and parenting practices are merely one of the many family processes that ongoingly and bidirectionally relate to youth’s poor sleep.⁵ Further research is needed to conceptualize youth’s sleep health using a transactional framework to disentangle the mechanisms whereby children’s sleep-wake behaviors and parenting practices reciprocally influence one another.

Importantly, our moderation results demonstrated an increasingly detrimental effect of the Low Support profile on youth sleep health during peripuberty (9–14 years old). In other words, the negative sequelae of negative and unsupportive parenting practices on youth disturbed

Table 4. Intercorrelations Between Study Variables

	M (SD)	1	2	3	4	5	6	7	8	9	10	11	12	13
8-mo wave														
1. Sleep problems	11.6 (2.9)	1												
2. Externalizing problems	1.84 (2.4)	0.29**	1											
3. Internalizing problems	1.46 (2.1)	0.34**	0.41**	1										
4. Positive parenting	4.14 (0.55)	-0.29**	-0.25**	-0.21**	1									
5. Negative parenting	1.83 (0.47)	0.29**	0.46**	0.27**	-0.39**	1								
6. Supportive ES	5.21 (0.93)	-0.20**	-0.19**	-0.05	0.69**	-0.36**	1							
7. Unsupportive ES	2.39 (0.68)	0.26**	0.32**	0.18**	-0.45**	0.53**	-0.42**	1						
12-mo wave														
8. Sleep problems	11.87 (3.2)	0.60**	0.34**	0.31**	0.35**	0.36**	-0.19**	0.28**	1					
9. Externalizing	1.82 (2.5)	0.38**	0.73**	0.31**	-0.29**	0.46**	-0.27**	0.35**	0.39**	1				
10. Internalizing	1.65 (2.2)	0.31**	0.38**	0.78**	-0.29**	0.29**	-0.15**	0.28**	0.34**	0.43**	1			
11. Positive parenting	4.13 (0.55)	-0.29**	-0.26**	-0.18*	0.80**	-0.36**	0.65**	-0.42**	-0.35**	-0.23**	-0.21**	1		
12. Negative parenting	1.83 (0.48)	0.27**	0.48**	0.22**	-0.35**	0.82*	-0.38*	0.49**	0.38**	0.54**	0.32**	-0.36**	1	
13. Supportive ES	5.21 (0.94)	-0.16**	-0.26**	-0.03	0.62**	-0.34**	0.81**	-0.41**	-0.22**	-0.11**	-0.22**	0.68**	-0.36**	1
14. Unsupportive ES	2.39 (0.71)	0.19**	0.31**	0.14*	-0.37**	0.42**	-0.45**	0.78**	0.22**	0.33**	0.25**	-0.42**	0.52**	-0.51**

Intercorrelations are Pearson correlations, which are point-biserial correlations. * $p < 0.05$ and ** $p < 0.01$. ES, emotion socialization.

sleep became more pronounced as youth got older and were only statistically significant for peripubertal youth. This is concerning given that biological and social changes lead to a normative increase in insufficient sleep, social jetlag (changes in sleep timing from weekdays to weekends), and other sleep-related problems during the interval of time surrounding the onset of puberty.⁶ Our results suggest that although addressing parenting practices in the context of child sleep interventions throughout development is critical, the peripuberty period might present as a crucial developmental time to modify suboptimal parenting practices in hopes of improving youth sleep. Undeniably, parents will diminish their supervision and involvement in regulating their children's sleep-related behavior as youth grow older. However, parents continue to influence their children's sleep habits (e.g., sleep-wake routines and social media use), which suggests that continued work in this area is important. Indeed, previous literature indicates that adolescents' sleep health greatly benefits from parental monitoring and structure around sleep-wake behaviors.²⁹ However, without proper tools and education at parents' disposal, instilling enforcement measures surrounding sleep routines is likely to be an area of conflict within the family, which ironically can serve to worsen problems with sleep by impeding the necessary low-arousal emotional state for adequate sleep. In turn, the identification of parenting profiles that most likely relate to disturbed sleep in youth supports the goal of refining intervention efforts by allowing personalization of services through the emphasis on modifying maladaptive parenting practices that perpetuate sleep problems in youth, paying particular attention to dynamics of youth at developmental risk for disturbed sleep. Certainly, future research that integrates family functioning and youth's sleep into models of child development is needed. To that aim, developmental models of sleep should incorporate findings on bidirectional links between shifts in the parent-youth relationship and youth sleep health across development because parenting practices could similarly be influenced by youth's sleep and other individual characteristics, resulting in a transactional system of influence reinforced by both children's and parents' behaviors.

Finally, examinations of predictors of profile membership indicated that fathers were more likely to be in the Low Support profile. This finding reinforces the need to cast the net more broadly when it comes to measuring parenting practices in mothers and fathers, which could clarify different parent-youth dynamics that may occur based on the role or sex of the parent. Undoubtedly, given the high variability in household composition and family structure, future research is needed to ascertain the differential influence of multiple family relationships on youth's sleep. In addition, results demonstrated increased odds of being in the Medium and Low Support profiles in parents of youth with higher levels of externalizing problems. This finding is consistent with previous research suggesting transactional influences between children's ex-

ternalizing behavior and parenting quality³¹ and with recent data linking parent ES behaviors to youth conduct problems.³² Reciprocal influences between parenting practices and youth externalizing problems as well as established associations between externalizing behaviors and youth sleep problems further reinforce the potential of modifying parenting behaviors to promote not only adequate sleep but also behavioral and emotional health in youth. Unexpectedly, youth internalizing problems were not associated with parenting profile probability, a surprising finding that may be related to reporter bias by parents given evidence of higher informant disagreement on youth internalizing pathology.³³ Future work should include multiple informants to clarify reciprocal effects among parenting practices and youth psychopathology within the context of youth sleep functioning. Finally, family income (proxy for socioeconomic status [SES]) was not associated with parenting profile probability. Future research with larger samples should explore whether associations between parenting practices and youth sleep are moderated by SES and/or adversity.

It is important to interpret the current findings in light of the study's limitations. First, a limitation includes lack of data on history of youth sleep disturbances and on medical conditions that may affect sleep, hampering our ability to draw specific conclusions on the directionality of the parenting practices-youth sleep problems relationship. This is important given links between neurodevelopmental disorders³⁴ and sleep problems as well as sleep disorders (e.g., obstructive sleep apnea)³⁴ and psychopathology. Future research should include such data to better inform models on youth's sleep health within the family environment. Second, we obtained the study's data through a single reporter, increasing the risk of shared method variance and possibly resulting in skewed reports of parenting practices and youth's sleep due to social desirability biases and possible limited knowledge on youth's sleep habits, particularly those of older children. Nevertheless, our findings are consistent with previous research demonstrating an association between parenting and youth sleep health using multiple informants and observational measurements of parenting.^{14,35} Future research should include reports by youth and additional caregivers. Obtaining information on adolescents' perceptions of parenting practices might shed light on the consistency of parenting practices within the rearing environment. Although research suggests that parents and adolescents generally agree on their reports of parenting, there is evidence that adolescent report of negative parenting is more congruent with independent observations of parenting practices.³⁶ As such, the adolescent perspective could more clearly illuminate potential dysfunctional parent-child transactional dynamics that interfere with youth's sleep. Third, we measured sleep problems based on the caregiver's report on an abbreviated version of the Children's Sleep Habits Questionnaire. The growth of the literature on youth sleep health warrants strong assessment of youth sleep

health dimensions⁴ through objective methodology (e.g., actigraphy) in future investigations. Fourth, although the longitudinal nature of the study is a notable strength, the nonexperimental design prevents us from making definitive causal conclusions because of potential intervening variables. Future research should examine whether the experimental modification of parenting practices results in reduced sleep problems in youth. Finally, our sample did not exclusively include youth with clinically elevated sleep problems or clinically significant borderline or clinical psychopathology. There is a continued need to examine the link between parenting practices on youth sleep health in clinical samples to further advance our understanding of children's clinically disturbed sleep within the influence of family relationships.

Despite the study's limitations, the findings from this study serve as an important contribution to the literature by enhancing our understanding of youth's sleep health within the family context. Undoubtedly, pediatric sleep problems pose a serious risk to the physical and mental health of youth. Advancing our conceptualization on how parenting behaviors and family functioning relate to youth sleep health promotes further understanding of factors that pervasively contribute to the epidemic of youth sleep problems. Such empirical evidence can inform how to durably modify sleep dysfunction and promote adaptive psychosocial outcomes in youth with sleep problems. Our findings suggest that including caregivers in interventions that aim to promote healthy sleep practices in children and adolescents is a necessity. In addition, the impact of negative parenting on disrupted youth sleep health underscores the need to enhance caregiver well-being to mitigate the adverse sleep and mental health consequences associated with high levels of parenting stress and family conflict. Consideration of transactional dynamics between family and parent functioning and youth sleep health is imperative to further understand how to best promote youth sleep health across development.

REFERENCES

- Kelly RJ, El-Sheikh M. Reciprocal relations between children's sleep and their adjustment over time. *Dev Psychol.* 2014;50:1137-1147.
- Dahl RE, El-Sheikh M. Considering sleep in a family context: introduction to the special issue. *J Fam Psychol.* 2007;21:1-3.
- Sadeh A, Raviv A, Gruber R. Sleep patterns and sleep disruptions in school-age children. *Dev Psychol.* 2000;36:291-301.
- Buysse DJ. Sleep health: can we define it? Does it matter? *Sleep.* 2014;37:9-17.
- El-Sheikh M, Kelly RJ. Family functioning and children's sleep. *Child Dev Perspect.* 2017;11:264-269.
- McMakin DL, Alfano CA. Sleep and anxiety in late childhood and early adolescence. *Curr Opin Psychiatr.* 2015;28:483-489.
- Roberts RE, Duong HT. The prospective association between sleep deprivation and depression among adolescents. *Sleep.* 2014;37:239-244.
- Wong MM, Brower KJ, Zucker RA. Sleep problems, suicidal ideation, and self-harm behaviors in adolescence. *J Psychiatr Res.* 2011;45:505-511.
- Shochat T, Cohen-Zion M, Tzischinsky O. Functional consequences of inadequate sleep in adolescents: a systematic review. *Sleep Med Rev.* 2014;18:75-87.
- American Medical Association, American Academy of Sleep Medicine. *Resolution 503: Insufficient Sleep in Adolescents.* Chicago, IL: American Medical Association, American Academy of Sleep Medicine; 2010.
- Meijer AM, Reitz E, Dekovic M. Parenting matters: a longitudinal study into parenting and adolescent sleep. *J Sleep Res.* 2016;25:556-564.
- Gunn HE, O'Rourke F, Dahl RE, et al. Young adolescent sleep is associated with parental monitoring. *Sleep Health.* 2019;5:58-63.
- Meltzer LJ, Mindell JA. The relationship between child sleep disturbances and maternal sleep, mood, and parenting stress: a pilot study. *J Fam Psychol.* 2007;21:67-73.
- Bell BG, Belsky J. Parents, parenting, and children's sleep problems: exploring reciprocal effects. *Br J Dev Psychol.* 2008;26:579-593.
- Eisenberg N, Cumberland A, Spinrad TL. Parental socialization of emotion. *Psychol Inq.* 1998;9:241-273.
- Eisenberg N, Spinrad TL, Eggum ND. Emotion-related self-regulation and its relation to children's maladjustment. *Annu Rev Clin Psychol.* 2010;6:495-525.
- Thompson RA, Meyer S. Socialization of emotion regulation in the family. In: Gross JJ, ed. *Handbook of Emotion Regulation.* New York, NY: The Guilford Press; 2007:249-268.
- Sanders W, Zeman J, Poon J, et al. Child regulation of negative emotions and depressive symptoms: the moderating role of parental emotion socialization. *J Child Fam Stud.* 2015;24:402-415.
- Dahl RE. The regulation of sleep and arousal: development and psychopathology. *Dev Psychopathol.* 1996;8:123-139.
- Kelly RJ, Marks BT, El-Sheikh M. Longitudinal relations between parent-child conflict and children's adjustment: the role of children's sleep. *J Abnorm Child Psychol.* 2014;42:1175-1185.
- Parent J, Forehand R. The Multidimensional Assessment of Parenting Scale (MAPS): development and psychometric properties. *J Child Fam Stud.* 2017;26:2136-2151.
- Owens JA, Spirito A, McGuinn M. The Children's Sleep Habits Questionnaire (CSHQ): psychometric properties of a survey instrument for school-aged children. *Sleep.* 2000;23:1043-1051.
- Achenbach T, McConaughy S, Ivanova MY, et al. *Manual for the ASEBA Brief Problem Monitor (BPM).* Burlington, VT: University of Vermont; 2011.
- Fabes RA, Eisenberg N, Bernzweig J. *The Coping with Children's Negative Emotions Scales. (CCNES): Description and Scoring.* Tempe, AZ: Arizona State University; 1990.
- Herbert SD, Harvey EA, Roberts JL, et al. A randomized controlled trial of a parent training and emotion socialization program for families of hyperactive preschool aged children. *Behav Ther.* 2013;44:302-316.
- Roesch SC, Villodas M, Villodas F. Latent class/profile analysis in maltreatment research: a commentary on Nooner et al., Pears et al., and looking beyond. *Child Abuse Negl.* 2010;34:155-160.
- Cloitre M, Garvert DW, Brewin CR, et al. Evidence for proposed ICD-11 PTSD and complex PTSD: a latent profile analysis. *Eur J Psychotraumatol.* 2013;4. doi: 10.3402/ejpt.v4i0.20706.
- Bakk Z, Tekle F, Vermunt J. Estimating the association between latent class membership and external variables using bias-adjusted three-step approaches. *Sociol Methodol.* 2013;43:272-311.
- Randler C, Bilger S, Díaz-Morales JF. Associations among sleep, chronotype, parental monitoring, and pubertal development among German adolescents. *J Psychol.* 2009;143:09-520.
- Short MA, Gradisar M, Wright H, et al. Time for bed: parent-set bedtimes associated with improved sleep and daytime functioning in adolescents. *Sleep.* 2011;34:797-800.

31. Pearl AM, French BF, Dumas JE, et al. Bidirectional effects of parenting quality and child externalizing behavior in predominantly single parent, under-resourced African American families. *J Child Fam Stud*. 2014;23:177-188.
32. Johnson AM, Hawes DJ, Eisenberg N, et al. Emotion socialization and child conduct problems: a comprehensive review and meta-analysis. *Clin Psychol Rev*. 2017;54:65-80.
33. Youngstrom E, Loeber R, Stouthamer-Loeber M. Patterns and correlates of agreement between parent, teacher, and male adolescent ratings of externalizing and internalizing problems. *J Consult Clin Psychol*. 2000;68:1038-1050.
34. Beebe DW. Neurobehavioral morbidity associated with disordered breathing during sleep in children: a comprehensive review. *Sleep*. 2006;29:1115-1134.
35. Brand S, Gerber M, Beck J, et al. Perceived parenting styles differ between genders but not between elite athletes and controls. *Adolesc Health Med Ther*. 2011;2:9-14.
36. Parent J, Forehand R, Dunbar JP, et al. Parent and adolescent reports of parenting when a parent has a history of depression: associations with observations of parenting. *J Abnorm Child Psychol*. 2014;42:173-183.