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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, parenting practices have been previously linked to poor sleep in youth. However, research is lacking on which parenting practices longitudinally predict the development and maintenance of sleep problems in youth. Additionally, sensitive periods for this link are mostly unknown. The current study examined longitudinal relations between constellations of parenting practices and youth sleep health in order 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 ($M = 8.4$, $SD = 3.6$). A person-centered approach was employed to create profiles across 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 three distinct parenting profiles, which consisted of one optimal profile, a second intermediate profile, and a third maladaptive profile. These parenting profiles were differentially associated with sleep problems in youth, with the optimal profile predicting the lowest levels of sleep problems and the maladaptive 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 as a crucial and longitudinal contributor to youth's sleep health.

Key Terms: Parenting, youth sleep health, youth sleep problems.

Longitudinal Associations Between Parenting Practices and Youth Sleep Problems

Sleep problems among children and adolescents are highly prevalent and associated with adjustment difficulties across several developmental domains (Kelly & El-Sheikh, 2014). Specifically, associations between sleep problems (e.g., insufficient sleep, poor quality sleep, sleepiness) and emotional, behavioral, cognitive, and physical health issues are well established (Dahl & El-Sheikh, 2007). Indeed, sleep problems are pervasive in mental health disorders and among the most prominent clinical symptoms of several mood and anxiety disorders (Sadeh et al., 2000). Further, sleep health, characterized by dimensions of duration, regularity, satisfaction, alertness, timing, and efficiency (Buysse, 2013), is a pivotal predictor of socioemotional adjustment (El-Sheikh & Kelly, 2017), and evidence supports that dimensions in youth sleep health that are problematic may precede internalizing pathology in childhood and adolescence (McMakin & Alfano, 2015). Specifically, poor sleep in youth has been demonstrated to prospectively predict depression (Roberts & Duong, 2014), suicide (Wong et al., 2011), risk taking behavior (e.g., substance use; Wong et al., 2015), and low academic achievement (Shochat et al., 2013) among other negative outcomes in longitudinal examinations. Consequently, sleep problems in youth are recognized as a serious health risk and public health concern that necessitates urgent attention (American Medical Association, American Academy of Sleep Medicine, 2010).

Youth's Sleep Within the Context of Family Functioning and Parenting

Attempts at elucidating determinants of poor sleep health in youth have identified family functioning as intrinsically interconnected with youth's sleep behaviors and consequently with youth's disrupted sleep (El-Sheikh & Kelly, 2017). For example, previous research has demonstrated an increased number of youth sleep problems in families with high levels of conflict and parenting stress. Conversely, youth who live in supportive family environments exhibit better

quality sleep and longer sleep duration (El-Sheikh & Kelly, 2017). Research on the influence of family functioning on youth's sleep has predominantly considered parenting behaviors and the parent-youth relationship. Indeed, parenting behaviors and the parent-youth relationship have been consistently implicated in the development and maintenance of poor sleep in youth (Meijer et al., 2016). For instance, parental monitoring of sleep-wake activities (e.g., bedtime routines) has been linked to longer sleep duration in youth (Gunn et al., 2018). Conversely, parent-child interactions that lack consistent limit setting, especially during bedtime routines, have been associated with youth bedtime resistance, difficulty initiating sleep, and nightmares (Meltzer & Mindell, 2007). Correspondingly, youth sleep problems have been similarly demonstrated to predict increased maternal negativity and decreased maternal sensitivity and closeness, highlighting the reciprocal nature of relations between parenting practices and youth sleep health and the interconnectedness of youth sleep with family functioning (Bell and Belsky, 2008).

Although prior 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 (Eisenberg et al., 1998), such as responding to youth emotion, may be related to sleep. Emotion socialization behaviors encompass the myriad ways parents teach their children about emotion identification, expression, and modulation (Eisenberg, 2010). A large body of research has focused specifically on parental reactions to youth emotion. For example, parental nonsupportive reactions (i.e., dismissive, critical, punitive) to youth negative emotions (i.e., distress, fear, sadness, anger) have been previously associated with less skillful emotion regulation, emotional overarousal, and heightened distress in youth (Eisenberg et al., 1998; Denham et al., 2007; Thompson & Meyer, 2007), 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 the development of skillful regulation of emotions (Denham et al., 2007; Thompson & Meyer, 2007) which, in turn, could act as a protective factor against the development and maintenance of sleep problems in youth.

Theoretically, and consistent with transactional and ecological models of youth sleep, parenting environments perceived as conflicted, unstable, and stressful result in vigilant states in youth that directly oppose sleep processes and can therefore disrupt sleep (El-Sheikh & Kelly, 2017). More specifically, negative parenting practices can undermine youth's ability to manage negative emotions and thereby affect youth's psychological wellbeing through greater emotional dysregulation and poor emotion-related coping (Sanders et al., 2015), which may in turn lead to vigilant states known to disrupt adequate sleep (Dahl, 1996). Accordingly, harsh parenting, marked by high levels of psychological control and hostility (e.g., physical punishment), has been previously associated with youth sleep problems (Kelly et al., 2014; Liu et al., 2000). Additionally, mother-child relationships characterized by greater conflict and less closeness have been associated with greater sleep problems in children (Bell & Belsky, 2008). Conversely, parenting practices characterized by high levels of affection, sensitivity, closeness, clear limit setting, and monitoring have been linked to more optimal sleep in children (Bell & Belsky, 2008; Johnson & McMahon, 2008).

Collectively, research findings support an established contribution of parenting to youth sleep health and highlight the need to target and modify parenting practices for the long-term improvement of sleep problems and associated emotional and behavioral difficulties in youth. However, research is lacking on the type of parenting practices that, over time, most strongly predict youth's sleep health. Further, the majority of research revealing relationships between parenting practices and children's sleep has been exclusively conducted with infants and young

children (El-Sheikh & Kelly, 2017), which widens the research gap on the nature of the relations between parenting practices and youth's sleep health at various developmental stages (e.g., early and late adolescence; El-Sheikh & Kelly, 2017). Importantly, growing evidence suggests youth sleep health is increasingly vulnerable to disruption around specific developmental periods (e.g., early adolescence/peripuberty, McMakin & Alfano, 2015), 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 families well-established parenting interventions that are tailored to optimize dimensions of sleep health in youth at various stages of development. The identification of key parenting practices that impact youth's sleep health throughout development is integral to enhance interventions within pediatric contexts that address poor sleep and accompanying mental health difficulties in youth. Specifically, examining dynamics between positive (e.g., warmth, supportiveness) and negative (e.g., hostility, laxness) parenting, as well as emotion socialization practices and youth's sleep health, may explain under which parenting conditions youth's sleep health suffers or thrives at different developmental stages. In turn, the literature on youth sleep warrants expansion on conceptual models, especially longitudinal designs, that can serve to inform and refine interventions that aim to promote emotional and behavioral health in youth by enhancing their sleep health. A thorough understanding of which constellations of parenting practices promote or stifle healthy sleep practices is not only uncharted research territory, but of vital importance to

attempt to reduce the high prevalence of sleep problems in youth and thereby prevent psychosocial problems that ubiquitously coexist with disrupted sleep in children and adolescents.

The primary aim of the current study was to examine the nature and magnitude of the relations between parenting practices and youth's sleep problems in a longitudinal design. Specifically, this study utilized a person-centered approach to identify and describe profiles or constellations of parenting practices across positive and negative parenting practices as well as across supportive and unsupportive parental emotion socialization strategies that are most predictive of sleep problems in youth. Additionally, 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 different age groups. Based on previous research indicating associations between facets of parenting practices and dimensions of youth sleep health, we predicted that positive and emotionally supportive parenting practices would longitudinally predict lower levels of sleep problems in youth across all age groups. Conversely, we predicted that negative and emotionally unsupportive parenting practices would longitudinally predict higher levels of sleep problems in youth across age groups. Lastly, we explored predictors of parenting profile membership to examine the influence of family income, parent and youth gender, and youth internalizing and externalizing problems on profile membership probability.

Method

The current study included 292 parents of children between the ages of 3 and 14 (49.7% boys). Sixty-four percent of parents were mothers. All parents reported on behalf of their children. On average, parents were 36.51 years old ($SD = 7.3$). Participants identified predominantly as White (82%), followed by Black (8.9%), Latino/a (5.1%), Asian (3%), and American Indian,

Alaska Native, or Pacific Islander (1.0%). The majority of parents (41.8%) reported earning a college degree; others noted attending some college (26.7%), obtaining a high school degree or GED (13.9%), obtaining a graduate degree (12.2%), or not completing high school (0.6%). Family income ranged from less than \$30,000 per year (21.7%) to at least \$100,000 (13.3%). Participants were recruited online through Amazon's Mechanical Turk (MTurk) and completed electronic surveys at four waves throughout a 12-month period. The current study examined data collected at the 8-month and 12-month waves. Missing data were less than 1% for all study variables. Hence, full maximum likelihood estimation techniques were utilized to include all available data.

Procedure

MTurk, a crowdsourcing application in the social sciences, was utilized to recruit parents and obtain study data. Prior research has demonstrated that obtaining data from adults through crowdsourcing methods is as reliable as obtaining data through more traditional data collection methods, including for investigations of youth psychopathology (Buhrmester et al., 2011; Parent, et al., 2017). Parents consented online prior to completing the survey following approved Institutional Review Board (IRB) procedures. Participation requirements included being a U.S. resident and having at minimum a 95% task approval rate on MTurk. A 12-month study involving the completion of five surveys was listed on MTurk for which participants were compensated a total of \$22 for completing surveys. In cases of multiple children within one household, parents completed the surveys based on one child, who was randomly chosen by a computer algorithm.

To ensure that parents' responses were not random, ten attention check items were included in the survey. Participants were excluded from the current study for having more than one incorrect response on these attention check items. In addition, participants were also excluded for failing to report the same demographic characteristics across the study waves. Strict criteria for inclusion

was necessary given that in-person data collection visits were not possible. The 53 participants excluded were not included in the total sample above.

Measures

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

Youth Sleep Problems. A shortened version of the Children's Sleep Habits Questionnaire (CSHQ; Bonuck et al., 2017; Owens et al., 2000) was used to measure youth sleep problems. The CSHQ is a widely used retrospective, parent-report measure of sleep behavior in youth. It includes items relating to key sleep domains that encompass clinical sleep complaints such as bedtime behavior, sleep onset, sleep duration, sleep behavior, night wakings, anxiety around sleep, sleep-disordered breathing, parasomnias, and daytime sleepiness. The CSHQ has been demonstrated to correlate with objective measurements of sleep functioning (e.g., actigraphy) 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 four-point Likert scale that included the following response options: *usually* (five to seven times per week), *sometimes* (two to four times per week), *rarely* (zero to one time per week), and *never* (less than once a week). The shortened version of the CSHQ inquired about sleep latency (i.e., the amount of time it takes to fall asleep), consistency of sleep timing, continuity of sleep (i.e., amount of sleep versus wakefulness during a sleep period), sleep efficiency (i.e., ratio of total sleep time to amount of time spent in bed), and daytime fatigue and sleepiness. Items were scored such that higher scores represented more sleep problems in youth. Given our interest in examining levels of problems across various sleep dimensions, we utilized a Total Sleep Disturbances index to reflect overall sleep problems in

youth. A total score above 14 was used as the clinical cut-off which corresponded to one 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 for the Total Sleep Disturbances index across both waves.

Parenting Practices. Parents completed the Multidimensional Assessment of Parenting Scale (MAPS; Parent & Forehand, 2017). The MAPS is a self-report measure of parenting practices, whose 34 items were selected and subsequently adapted from well-established parenting scales (e.g., The Alabama Parenting Questionnaire, Frick, 1991). The Broadband Positive Parenting factor of the MAPS includes four narrowband subscales: Proactive Parenting, Positive Reinforcement, Warmth, and Supportiveness. The Broadband Negative Parenting factor includes three narrowband subscales: Hostility, Physical Control, and Lax Control. Parents responded using a five-point Likert scale with “*Never*”, “*Almost never*”, “*Sometimes*”, “*Often*”, and “*Always*” as response options. The MAPS has demonstrated strong reliability, and longitudinal examinations have provided support for its subscales' validity (Han et al., 2019; Parent & Forehand, 2017). Cronbach's alpha in the current sample was 0.93 for the Positive Parenting domain and 0.88 for the Negative Parenting domain.

Emotion Socialization Strategies. Parents completed the Coping with Children's Negative Emotions Scale (CCNES; Fabes et al., 1990). The CCNES is a self-report measure that includes 12 hypothetical emotionally evocative scenarios for youth in which parents and/or caregivers rate how they would respond to their children's negative emotions (e.g., distress, fear). The CCNES includes six 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 expression of negative affect, (4) distress reactions, which captures 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 aforementioned six subscales were grouped into two broader domains including supportive emotion socialization practices (i.e., expressive encouragement, emotion-focused and problem-focused reactions) and unsupportive emotion socialization practices (i.e., distress, minimization, punitive reactions) consistent with prior research (Leerkes et al., 2014). The CCNES has previously demonstrated good internal and test-retest reliability as well as sensitivity to change over time (e.g., Denham & Kochanoff, 2002; Herbert et al., 2013). Cronbach's alpha for the current sample was .0.95 for the supportive emotion socialization practices and 0.90 for the unsupportive emotion socialization practices.

Data Analytic Plan

Latent Profile Analysis (LPA; Lazarsfeld & Henry, 1968) was conducted to identify constellations or profiles of parenting practices and their association with indices of youth sleep health. LPA analyses allow variables to cluster that have similar indicator means and variances in order 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 (Pears, Kim, & Fisher, 2008).

Profile Enumeration. In order to determine the optimal number of profiles, we utilized the Lo-Mendel-Ruben adjusted likelihood ratio test (LMR-A; Lo et al., 2001), the bootstrap likelihood

ratio test (BLRT), the Bayesian Information Criterion (BIC; Schwarz, 1978), the Akaike Information Criteria (AIC; Akaike, 1974), the consistent Akaike Information Criteria (CAIC, Hurvich & Tsai, 1989), the sample size adjusted BIC (ssBIC; Sclove, 1987), and entropy (Ramaswamy et al., 1993) to select the best fitting model (see Table 1). Specifically, the LMR-A indicates statistically significant improvements (p -value < .05) in a model in comparison to the model with one fewer profile (Roesch et al, 2010). Similarly, a statistically significant BLRT indicates superiority of a model when compared to the model with one fewer profile (Cloitre et al., 2013). The AIC, consistent AIC (cAIC), BIC, and sample size adjusted BIC (ssBIC) aid in determining model fit, with lower values on each index indicating better relative fit. Further, 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 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,” that is, fixing individuals to a profile where they had the highest likelihood of membership. For the current study, we employed Vermunt’s three-step approach (Vermunt, 2010) in Mplus. Specifically, once profiles were determined, cases were assigned to these profiles based on posterior probabilities. Following 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 three-step approach (Bakk, Tekle, & Vermunt, 2013) 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 (LPA) were conducted using *Mplus* version 8.3 (Muthén & Muthén, 2017). Parenting practices, parent emotion socialization strategies, and youth sleep problems were converted into z-scores. Every profile indicator was entered into the LPA models, which ranged from one to five profiles and were run with 200 random starts. Fit indices for the five profiles are presented in Table 1. The three-, four-, and five-profile models all exhibited appropriate entropy. However, the three-profile model had superior fit compared to other models for the bootstrapped LRT, BIC, and entropy and represented the model that is most theoretically robust and empirically defensible (see Figure 1 for complete profiles). The four and five-class models had the same three primary classes and introduced classes that did not meaningfully add to the interpretation of the results. Thus, the three-class model was selected for further analysis.

The “optimal parenting” profile (33%) was labeled as such because the parents best fitting this profile exhibited the highest levels of general positive parenting practices (e.g., warmth, positive reinforcement) and supportive emotion socialization strategies (e.g., emotion-focused reactions, expressive encouragement) paired with the lowest levels of general negative parenting practices (e.g., hostility, laxness) and unsupportive emotion socialization strategies (i.e., distress reactions, punitive, minimization). In contrast, the “maladaptive parenting” profile (14%) exhibited the lowest levels of positive parenting and supportive emotion socialization practices and highest levels of negative parenting and unsupportive emotion socialization practices. The most common profile, labeled “intermediate parenting” (53%), demonstrated moderate levels of positive and negative parenting practices as well as moderate levels of supportive and unsupportive

emotion socialization strategies. More specifically, the intermediate profile exhibited higher levels of negative parenting practices than the optimal profile (Cohen's $d = .67$ to $.71$), but much lower than the maladaptive profile ($d = 1.66$ to 3.05). Additionally, the difference in positive parenting between the intermediate profile and both the optimal ($d = -1.77$) and maladaptive ($d = 1.36$) was substantial.

Overall, LPA results supported three clearly delineated parenting profiles that predict change in youth sleep problems. Following profile enumeration, we explored family (e.g., SES), parent (i.e., gender), and youth (i.e., age, gender, and problem behavior) predictors of parenting profile membership using multinomial logistic regression via Vermunt's three-step approach (Vermunt, 2010) in *Mplus* (see Table 2 for complete results).

Family income (a proxy for family SES), youth gender, and youth internalizing problems (e.g., anxiety, depression) were not associated with parenting profile probability ($ps > .10$). However, youth age was associated with parenting profile such that the odds of being in the intermediate or maladaptive profile, relative to the optimal profile, increased by 11% for every year youth got older. Specifically, the probability of a parent being in the optimal profile was approximately 45% for parents of young children (i.e., 3-8 years-old), but only 28% for parents of youth in the peripubertal developmental stage (i.e., 9-14 years-old). Additionally, parent gender was associated with parenting profile such that fathers were more likely to be in the maladaptive profile relative to mothers. Lastly, youth externalizing problems (e.g., defiance, aggression) was associated with parenting profile such that the odds of being in either the intermediate or maladaptive profiles, relative to the optimal profile, increased with higher levels of youth externalizing problems.

Youth Sleep Problems Outcomes. Next, we used a three-step approach (Bakk, Tekle, & Vermunt, 2013) to examine the cross-sectional and longitudinal impact of latent parenting profiles on youth sleep problems. Wald's chi-square tests of parameter equality results indicated significant cross-sectional, Wald $\chi^2 = 10.18(2)$, $p = .006$, and longitudinal, Wald $\chi^2 = 8.19(2)$, $p = .017$, differences in youth sleep problems. Longitudinally, the parents in the optimal profile reported that their children had the lowest levels of sleep problems ($m = 10.74$, 95% CI 10.12, 11.35), as compared to the intermediate ($m = 11.6$, CI 11.09, 12.1) and maladaptive parenting profiles ($m = 13.31$, CI 12.3, 14.3). A similar pattern of means emerged for cross-sectional associations. As expected, the maladaptive parenting profile predicted the highest levels of sleep problems in youth. The differences in youth sleep problems between the optimal and intermediate profiles was small ($d = .29$) whereas the youth sleep problems differences between the optimal and maladaptive profiles was large ($d = .88$) – 50% of youth of parents in the maladaptive parenting profile were classified as having clinically elevated sleep problems relative to 12.5% of youth of parents in the optimal parenting profile.

Lastly, we explored if youth age moderated the association between parenting profile and youth sleep problems by estimating distal outcomes separately for two youth developmental stages (i.e., childhood: 3-8-years-old, peripuberty: 9-14-years-old). The association between parenting profile and youth sleep problems was significant for peripubertal youth, Wald $\chi^2 = 9.16(2)$, $p = .010$, but not for younger children, Wald $\chi^2 = 2.29(2)$, $p = .318$. 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 maladaptive parenting profile had its most detrimental impact on youth sleep health during the peripuberty developmental stage (see Figure 1).

Discussion

The current study examined a person-centered approach to identify profiles of parenting practices that differentially predict sleep problems in youth. More specifically, we examined cross-sectional and longitudinal relations between distinct constellations or profiles of parenting practices and sleep problems in young children, school-age children, and peri-pubertal youth. Findings supported a three-profile model. Consistent with our hypothesis, we identified a profile of optimal parenting that was cross-sectionally and longitudinally associated with the lowest levels of sleep problems in youth. Specifically, the optimal profile was characterized as having the highest levels of reported proactiveness, positive reinforcement, warmth, supportiveness, emotion- and problem-focused reactions, and expressive encouragement as well as the lowest levels of hostility, physical control, lax control, and distressed, punitive, minimizing reactions to youth distress, relative to the other two parenting profiles. Conversely, we identified a profile of maladaptive parenting that was cross-sectionally and longitudinally associated with the highest levels of sleep problems in youth. The maladaptive profile was characterized as having the lowest levels of reported proactiveness, positive reinforcement, warmth, supportiveness, emotion- and problem-focused reactions, and expressive encouragement and the highest levels of hostility, physical control, lax control, and particularly high levels of distressed, punitive, minimizing reactions to youth distress (see Figure 1). Lastly, the most common parenting profile, labeled as the intermediate profile, was characterized as having moderate levels of positive and negative parenting practices. This parenting profile predicted higher levels of youth sleep problems than the optimal profile, but lower than the maladaptive profile.

Findings demonstrating that the optimal and maladaptive parenting profiles differentially predicted sleep problems expands the literature on children's sleep within the family context by

further highlighting the influence of higher quality parent-youth interactions on youth sleep health. Evidently, positive facets of parenting practices such as warmth, sensitivity, and appropriate responses to children's distress may likely protect youth against sleep problems otherwise associated with negative parenting practices and/or dysfunctional family dynamics. Our findings support previous theoretical propositions and empirical work by highlighting the role of maladjusted family relationships on disrupted sleep through possible increased vigilant states (e.g., concern, worry) and environmental threats (e.g., parent-youth conflict, parental nonsupportive reactions to youth distress) experienced by youth (Dahl, 1996). 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 children and adolescents. Indeed, youth sleep interventions generally have not targeted the quality of parenting practices directly, but rather mostly involve parents by providing them with sleep education and/or encouraging parent-set bedtimes (e.g., Short et al., 2011). Our results demonstrating a differential impact of distinct parenting profiles on youth sleep problems highlight the need to offer families well-established parenting interventions that are tailored to promoting healthy sleep habits with the aim of reducing parent-youth conflict and improving youth physiological states needed for sleeping.

Interestingly, our moderation results demonstrated an increasingly detrimental effect of the maladaptive parenting profile on youth sleep health during the peripuberty developmental stage. In other words, the negative sequelae of negative and unsupportive parenting practices on youth disturbed sleep became more pronounced as youth got older and was only statistically significant for peripubertal youth (9-14 years-old). 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 (McMakin & Alfano, 2015). 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 maladaptive 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, evident in our results, as children grow older, parents continue to influence their children's sleep habits (e.g., bedtime routines, social media use, wake-up times) in spite of their diminished involvement, which suggests that continued work in this area is important. 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 youth emotional state for adequate sleep. Importantly, the identification of parenting profiles that most likely promote disturbed sleep in youth supports the goal of refining prevention and intervention efforts by allowing personalization of services through the emphasis on modifying maladaptive parenting practices (i.e., unsupportive responses to youth's emotional distress) that perpetuate poor and reduced sleep 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 how the parent-youth relationship shifts and differentially impacts youth sleep health across development.

Lastly, examinations of predictors of profile membership indicated that fathers, relative to mothers, were more likely to be in the maladaptive parenting profile. This finding reinforces the

need to cast the net more broadly when it comes to measuring parenting practices in mothers and fathers, which can serve to clarify different parent-youth dynamics that may occur based on the role or gender of the parent. Undoubtedly, given the high variability in household composition, future research is needed to ascertain the differential influence of multiple family relationships on youth's sleep. Additionally, results demonstrated increased odds of being in the intermediate and maladaptive parenting profiles in parents of youth with higher levels of externalizing problems. This finding is consistent with prior research suggesting transactional influences between children's externalizing behavior and parenting quality (e.g., Pearl et al., 2014) and with recent data linking parent emotion socialization behaviors to youth conduct problems (Johnson et al., 2017). Reciprocal influences between parenting practices and youth externalizing problems as well as established associations between externalizing behaviors and sleep problems in youth (e.g., Stein et al., 2001) further reinforce the potential of modifying parenting behaviors to not only promote adequate sleep, but also behavioral and emotional health in youth. Unexpectedly, youth internalizing problems was not associated with parenting profile probability. Future research is needed to clarify reciprocal effects among parenting practices and youth psychopathology within the context of youth sleep functioning.

It is important to interpret the current findings and implications in light of the limitations of the study. First, we obtained the study's data through a single reporter (i.e., parents), which can result 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. Future research should include reports by youth and additional caregivers. Second, we measured sleep problems based on caregiver's report on an abbreviated version of the CSHQ. Importantly, the growth of the literature on sleep health in childhood and adolescence over the past decades

warrants strong assessment of youth sleep health dimensions (i.e., subjective quality, alertness, timing, efficiency, duration; Buysse, 2013) through objective methodology (e.g., actigraphy) in future investigations. Third, we utilized an online crowdsourcing methodology to recruit study participants, which inevitably precluded obtaining data from caregivers who may not use the internet for a myriad of reasons. It is important to include these caregivers in future studies. Fourth, although the longitudinal nature of the study is a notable strength, the non-experimental design prevents us from making definitive causal conclusions due to potential intervening variables. Future research should examine whether the experimental modification of parenting practices results in reduced sleep problems in youth. Importantly, the literature on parenting and youth sleep should be tailored to incorporate findings on nighttime parenting practices and nighttime and/or bedtime family routines given the possibility that increased youth vigilance at bedtime occurs as a result of family conflict and/or adverse parent-youth interactions that occur at nighttime or preceding bedtime. Although general and nighttime parenting practices clearly overlap, there is a need to expand the literature to include a distinct assessment of nighttime parenting as there may be a unique connection to youth's sleep due to parental responses to challenges at bedtime. For example, ulLastly, our sample did not exclusively include youth with clinically elevated sleep problems. 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 and interactions.

Despite the study's limitations, the findings from the present 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 (Owens, 2014). Advancing our conceptualization on the impact of parenting

behaviors and family functioning on youth sleep health promotes further understanding of factors that pervasively contribute to the epidemic of sleep problems in youth. Such empirical evidence can help 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. Indeed, the significant influence of parenting on the emergence and maintenance of emotional and behavioral problems in youth further reinforces the potential benefit of modifying parenting behaviors to promote optimal sleep and mental health in youth (Muris, Meesters, & Van den Berg, 2003). Additionally, the impact of negative parenting practices on disrupted youth sleep health underscores the need to enhance caregiver wellbeing 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 warranted to further understand how to best promote optimal sleep in youth at different developmental stages. We are optimistic about how this area of research will evolve.

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Figure 1.

Z-Scored Parenting Practices and Parent Emotion Socialization Strategies within Three Latent Profiles.

Table 1.*LPA Model Fit Indices.*

Profiles	LL	Entropy	Parsimony Criteria				LRT p Value	
			AIC	BIC	ssBIC	CAIC	LMRa	BLRT
1	-1638.29	--	3292.58	3321.99	2396.62	3329.99	--	--
2	-1473.17	.739	2980.35	3042.85	2988.94	3059.85	.004	.000
3	-1407.99	.810	2867.99	2963.58	2881.13	2989.58	.139	.000
4	-1384.39	.780	2838.79	2967.47	2856.48	3002.47	.012	.100
5	-1363.62	.779	2815.23	2977.01	2837.48	3021.02	.021	.150

PARENTING PRACTICES AND YOUTH SLEEP PROBLEMS

Table 2.

Predictors of profile membership.

Effect	Estimate	SE	OR	95% CI
<i>Intermediate vs. Optimal</i>				
Child Gender	-.164	.340	.849	.436, 1.65
Child Age	.104	.050	1.11	1.01, 1.22
Parent Gender	.596	.596	1.82	.845, 3.90
Family Income	.068	.068	1.07	.956, 1.19
Child Externalizing Problems	.286	.286	1.33	1.00, 1.77
Child Internalizing Problems	.063	.063	1.07	.856, 1.36
<i>Maladaptive vs. Optimal</i>				
Child Gender	.149	.507	1.16	.430, 3.13
Child Age	.105	.070	1.11	.968, 1.28
Parent Gender	1.27	.544	3.54	1.22, 10.3
Family Income	.020	.098	1.02	.841, 1.23
Child Externalizing Problems	.514	.154	1.67	1.24, 2.26
Child Internalizing Problems	.118	.134	1.13	.865, 1.46