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## Socioeconomic status and young children's sleep/wake problems: the moderating role of maternal mindful parenting

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### ABSTRACT

Lower socioeconomic status is related to sleep/wake problems in early childhood, however, the effects are not uniform and there is a need to understand individual differences. We examined whether maternal mindful parenting moderated this association. Participants were 172 mothers of 2- to 5-year-old children (children's *M* age = 3.30 years) from diverse economic and ethnic backgrounds. Socioeconomic status was indexed using income-to-needs ratio. Mothers reported on children's sleep/wake problems (insufficient sleep duration, night wakings, daytime sleepiness) and two dimensions of mindful parenting (mindful discipline, being in the moment with the child). Higher levels of maternal mindful parenting buffered the extent to which lower socioeconomic status conferred risk for children's insufficient sleep duration and night wakings. Findings build on the literature to consider sleep in the family context and illustrate that positive parenting characteristics may reduce risk for sleep/wake problems in lower socioeconomic contexts.

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Sufficient and good-quality sleep is fundamental for the well-being of young children (Healthy People, 2030). Unfortunately, *sleep/wake problems* (e.g. insufficient sleep duration, poor sleep quality, daytime sleepiness) are prevalent during this developmental period (Covington, Rogers, & Black, 2019) and are common reasons parents seek out professional help (Mindell & Owens, 2015). Sleep/wake problems may compromise multiple domains of development including socio-emotional adjustment (Conway, Miller, & Modrek, 2016), brain functioning (Gómez & Edgin, 2015), and physical health (Chaput et al., 2017). As such, there is a need to understand factors that influence young children's sleep.

Young children residing in lower socioeconomic status (SES) environments are at increased risk for *sleep/wake problems* (de Jong et al., 2016; Gellis, 2011; Hager et al., 2016). However, individual differences exist and elucidation of factors that exacerbate or attenuate risk are needed (Covington et al., 2021). Investigations of sleep in the family context are accumulating (Kang et al., 2020; Tikotzky, 2017), and some parent-level variables (e.g. parental stress) have been shown to influence rates at which young children facing socioeconomic adversity experience sleep/wake problems (Bernier, Belanger, Bordeleau, & Carrier, 2013). Considering this literature, we examined whether mothers' mindful parenting moderated relations between SES and children's sleep.

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*Mindful parenting* is a positive parenting practice that refers to dedicating attention to parenting behaviours in an intentional, present, and non-judgmental way (Duncan, Coatsworth, & Greenberg, 2009; Kabat-Zinn & Kabat-Zinn, 2021). Mindful parenting has become of increased interest to family scholars (Parent & DiMarzio, 2021) and is known to protect the well-being of children in lower SES contexts (Lengua, Ruberry, McEntire, Klein, & Jones, 2021).

A developmental ecological systems perspective adapted for sleep indicates multiple levels of influence and that relations between the broader social context (e.g. SES) and children's sleep may be contingent on family-level factors (El-Sheikh & Sadeh, 2015). Along this line, negative parenting characteristics have been shown to exacerbate the effects of low SES on children's sleep. For example, the conjoint influence of lower SES and greater parental stress predicted shorter parent-reported sleep periods over time among two-year-olds (Bernier et al., 2013). Similarly, lower SES was more strongly related to mothers' reports of insufficient sleep duration and night wakings among 2- to 5-year-olds who also experienced more maternal harsh parenting (Kelly, Martin-Cuellar, Bagley, Lemberger-Truelove, & Mayer, 2021). These studies help understand factors accounting for individual differences, however, questions remain and little is known whether positive parenting practices protect and reduce risk for sleep/wake problems in lower SES contexts. Such inquiries are part of recent calls placed in the family and sleep literature and could carry novel implications for improving sleep among children facing economic adversity (Covington et al., 2021).

Lower SES environments include multiple stressors such as financial challenge, unpredictable or exigent living conditions, and neighbourhood disorder (Evans & Kim, 2013). Young children in lower SES homes often worry and maintain heightened levels of cognitive arousal, which carry ramifications for their sleep (Bagley, Kelly, Buckhalt, & El-Sheikh, 2015; Clancy, Prestwich, Caperon, Tsipa, & O'Connor, 2020). According to the opponent-process theory on sleep, sufficient and high-quality sleep is attained when arousal and awareness are diminished, thus environments that increase arousal are not well-suited for sleep (Dahl, 1996). As such, increased arousal partially accounts for why children from lower SES backgrounds have sleep/wake problems (Bagley et al., 2015).

Parenting characteristics that reduce arousal among children may help attenuate effects of lower SES environments on children's sleep (Covington et al., 2021), and mindful parenting is particularly relevant. Mindful parenting is an intentional parenting orientation with a consistent awareness that breaks the cycle of automaticity of reactions and involves correctly discerning children's behavioural cues, parenting in accordance with goals and values, and responding calmly to children (McCaffrey, Reitman, & Black, 2017). Such parenting skills create a sense of security in the family and increase positive parent-child interactions (McCaffrey et al., 2017) in ways that promote children's emotion regulation and reduce arousal (Cheung, Cheng, Li, Lam, & Chung, 2021; Zhang, Wang, & Ying, 2019), even in lower SES environments (Duncan et al., 2009; Laurent, Duncan, Lightcap, & Khan, 2017; Lengua et al., 2021). For example, a parent's accurate awareness of their child's emotional needs and ability to regulate their own responses may allow them to engage positively and support children in ways that promote positive coping skills and suspend arousal (Laurent et al., 2017; Lengua et al., 2021). Along this line, greater maternal mindful parenting buffered the negative effect that broader contextual risk (e.g. financial challenge) had on infants' stress response (Laurent et al., 2017). In this same sense, mindful parenting may protect against sleep/wake problems among young children in lower SES environments.

The pertinence of mindful parenting in lower SES contexts is fitting for additional reasons. Whereas some positive parenting characteristics are less commonly observed in lower SES homes (Evans & Kim, 2013), many parents from lower SES backgrounds score high on mindful parenting (McCaffrey et al., 2017). Thus, socioeconomic adversity may not fully compromise the capacity to be present and accepting of children's internal psychological experiences and behavioural expressions. In practice, mindful parenting does not necessarily require additional financial resources and, instead, can be a generally accessible disposition or practice that in turn affects various parenting behaviours and children's familial influenced habits.

## Current study

Breaking new ground, we investigated maternal mindful parenting as a moderator of relations between SES and young children's sleep using a community sample. Families were recruited across a wide range of SES backgrounds, allowing for adequate testing of questions. SES was assessed using income-to-needs ratio, an established indicator pertaining to the availability of material resources and considers family size (Braveman et al., 2005; Diemer, Mistry, Wadsworth, López, & Reimers, 2013). Sleep is multi-faceted (Sadeh, 2015) and the assessment of various parameters is valuable for elucidating facets of sleep most impacted by SES and parenting. Using an established measure, mothers reported on their perceptions of three primary sleep parameters: insufficient sleep duration (e.g. child does not get enough sleep), night wakings (e.g. frequency of waking at night), and daytime sleepiness (e.g. difficulty staying awake during daytime activities).

Mindfulness is multi-faceted, with many assumptions and applications (Nilsson & Kazemi, 2016). We were concerned with aspects most relevant to types of parenting that may affect children's sleep. Mindful parenting was captured by virtue of two related, albeit distinct dimensions (McCaffrey et al., 2017), including *mindful discipline* and *being in the moment with the child*. Mindful discipline describes how a parent circumstantially reacts to one's child in an impulsive and censorious manner, whereas being in the moment entails a general dispositional quality that may contribute to children's experiences of being acknowledged and embraced without pernicious judgment (McCaffrey et al., 2017). Considered together, these facets of mindful parenting may demonstrate the default states associated with one's approach to parenting and, also, parenting traits, especially in those times most reflective of stress in children's lives.

We hypothesized that relations between lower SES and children's sleep/wake problems would be less evident when maternal mindful parenting (mindful discipline, being in the moment) was greater. Relations between lower SES and children's sleep/wake problems were expected to be more pronounced when maternal mindful parenting was reduced. Given the dearth of prior research, we had no hypotheses regarding whether certain sleep parameters would be more impacted. Similarly, we did not have hypotheses as to whether mindful discipline or being in the moment would be more likely to serve as moderators and treated this as exploratory.

## Method

### Participants

Participants were 172 mothers of children between the ages of 2 and 5 years ( $M$  age of children = 3.30 years,  $SD$  = 1.00; 48% girls, 52% boys). Mothers were recruited from a semi-urban community in the Southwestern United States. Mothers were on average 33.42 years old ( $SD$  = 5.64). Regarding relationship status, 73% of mothers were married, 20% had a romantic partner, and 7% did not have a partner. The sample was diverse in terms of children's ethnicity; 56% were White/European American, 24% were Hispanic/Latino, 8% were Native American, 4% were Asian, 2% were Black/African American, 5% were of multiple ethnicities, and 1% reported other ethnicities. Families represented diverse income backgrounds ( $M$  annual income = \$76,973.75,  $SD$  = \$81,562.35; range: \$5,000 to \$800,000;  $Mdn$  = \$64,000). Some exclusion criteria were implemented to reduce potential confounds and included children having a chronic illness or sleep disorder. Mothers were required to have lived with their child.

### Procedures

This study was approved by the university's institutional review board. Data were collected between July 2019 and December 2019. A convenience sampling strategy was used and flyers were posted in local venues and online (Facebook, Craigslist) for recruitment. Those interested called our on-campus lab for screening. Participating mothers were invited to visit our lab to complete questionnaires on a computer or alternatively, be emailed an electronic link. Only four

mothers participated at the lab. Following participation, mothers visited our lab to receive a \$25 gift card to a local retailer.

## Measures

### Socioeconomic status

SES was measured using income-to-needs ratio, a standard measure of economic circumstances that utilizes family income while accounting for family size (U.S. Department of Commerce, 2020). Mothers reported on annual family income and their family size. To calculate their income-to-needs ratio, income was divided by the federal poverty threshold for that family size (e.g. a family of four with an annual income below \$26,200 was considered living in poverty). The average income-to-needs ratio was 2.96 ( $SD = 2.28$ ;  $Mdn = 2.55$ ); 16% of families were considered to be living in poverty (income-to-needs ratio  $< 1$ ), 27% were living near the poverty line (income-to-needs ratio of 1–2), 18% were lower middle class (income-to-needs ratio of 2–3), and 39% were of middle-class standing (income-to-needs ratio  $> 3$ ) (Diemer et al., 2013).

### Maternal mindful parenting

The Mindfulness in Parenting Questionnaire (MIPQ) assessed maternal mindful parenting (McCaffrey et al., 2017). The MIPQ is designed for parents of 2- to 16-year-old children and includes two distinct subscales: the 15-item *mindful discipline* subscale and the 13-item *being in the moment with the child* subscale (McCaffrey et al., 2017). Both were included. For each item, mothers were asked to reflect on their own parenting and interactions with their child over the last two weeks. The mindful discipline subscale measures non-reactivity in parenting, parenting awareness, and goal-focused parenting (e.g. *Did you take a moment to think before punishing your child, Did you try to slow down your reactions in order to accomplish your goals as a parent, Were you able to calm yourself down when your child was making you upset*). The being in the moment with the child subscale assesses present-centred attention, empathetic understanding of the child, and acceptance (e.g. *Did you feel in tune with your child's feelings, Did you accept your child exactly how he/she is, Did you carefully listen and tune into your child when you two were talking*). Likert-type response choices ranged from 1 (infrequently) to 4 (almost always). Raw scores were converted to standard scores using the MIPQ's scoring guidelines (McCaffrey et al., 2017). Higher scores reflect more mindful parenting. The MIPQ has demonstrated good psychometric properties including construct validity and test-retest reliability (McCaffrey et al., 2017). For this study,  $\alpha = .91$  for the maternal mindful discipline subscale and  $.87$  for the being in the moment subscale.

### Children's sleep/wake problems

Mothers' completed the widely-used Children's Sleep Habits Questionnaire (CSHQ; Owens, Spirito, McGuinn, & Nobile, 2000). Three subscales were used to assess the frequency of sleep/wake problems over the past week: the 3-item *sleep duration* subscale (e.g. *Child sleeps too little*), 3-item *night wakings* subscale (e.g. *Child wakes more than once during the night*), and the 8-item *daytime sleepiness* subscale (e.g. *Child seems tired in the morning*). The CSHQ has demonstrated high internal consistency (Tyler, Donovan, Scupham, Shiels, & Weaver, 2019), strong test-retest reliability (Owens et al., 2000), and concurrent validity with early childhood samples (Goodlin-Jones, Sitnick, Tang, Liu, & Anders, 2008). For this study,  $\alpha = .80$  for the sleep duration subscale,  $\alpha = .75$  for the night wakings subscale, and  $\alpha = .79$  for the sleepiness subscale. For each subscale, items were summed and higher scores reflect greater sleep/wake problems.

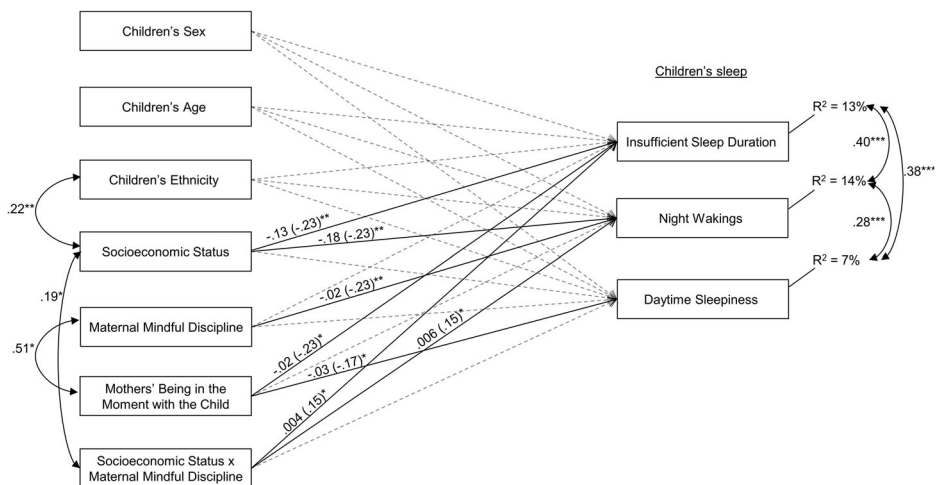
### Plan of analysis

We first fit a path model to examine the direct influence of SES (indexed by income-to-needs ratio) and maternal mindful parenting (mindful discipline, being in the moment with the

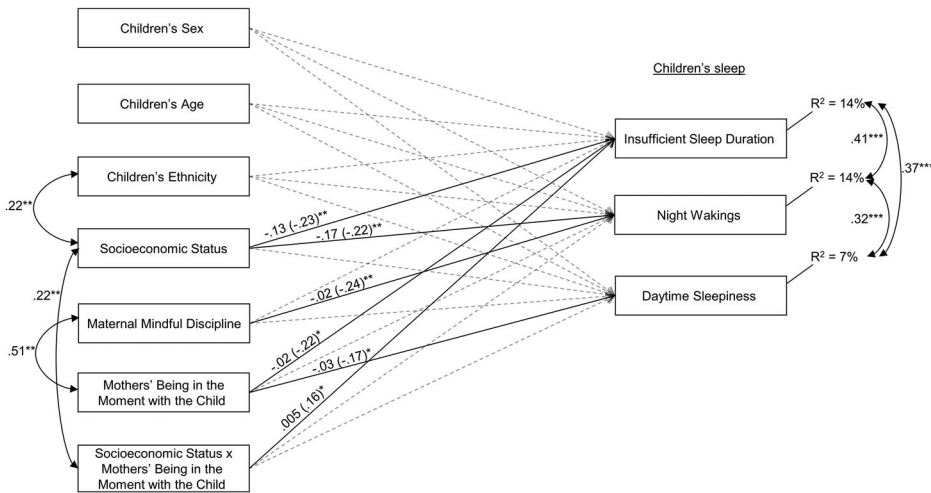
child) on children's sleep (insufficient sleep duration, night wakings, daytime sleepiness). We examined each sleep parameter in the same model to assess the unique impact of SES and mindful parenting on each sleep variable. For this reason, we fit path models rather than using multiple linear regression, given their capability to simultaneously consider multiple dependent variables. Children's sex, age, and ethnicity were controlled given their known associations with sleep (Archbold, Pituch, Panahi, & Chervin, 2002; Grandner, Williams, Knutson, Roberts, & Jean-Louis, 2016). Children's age, SES, the mindful parenting variables, and the sleep parameters were treated as continuous variables whereas sex (1 = boy, 0 = girl) and ethnicity (1 = White, 0 = other) were dichotomized.

Interaction terms were added to examine whether maternal mindful parenting moderated relations between SES and children's sleep. Two interaction terms were assessed: SES x mindful discipline and SES x being in the moment. These two interaction terms were assessed in separate path models (see Figures 1 and 2). Significant interactions were plotted using Preacher, Curran, and Bauer's (2006) online utility. Following recommendations, significant interactions were plotted at high (+1 SD) and low levels (-1 SD) of SES and mindful parenting (Preacher et al., 2006). The 'regions of significance' was calculated; this represents the range of the moderator (i.e. maternal mindful parenting) where the simple slope is significantly different from zero (Preacher et al., 2006). We used  $\Delta \chi^2$  tests to determine whether the inclusion of interaction terms changed model fit. A change in fit provides support for the inclusion of the estimated path. To help illustrate differences across varying levels of maternal mindful parenting, mean predicted values for sleep/wake problems were reported in the context of lower and higher levels of SES.

There were minimal missing data for maternal mindful discipline (no missing data), being in the moment among mothers (no missing data), income-to-needs ratio (no missing data), children's sleep duration (2%;  $n = 3$  mothers), night wakings (2%;  $n = 4$  mothers), and sleepiness (2%;  $n = 3$  mothers). Full-information maximum likelihood was used to handle missing data (Acock, 2005). High leverage values more than 4 SDs from the sample mean were replaced with the next highest observed value below 4 SDs to reduce potential outlier effects (Barnett & Lewis, 1994). Overall, 2 cases were recoded for income-to-needs ratio. Models were fit using Amos 27. The covariates were treated as exogenous variables and those that were related were allowed to covary. Residual variables among endogenous



**Figure 1.** Examination of maternal mindful discipline as a moderator of relations between socioeconomic status (as assessed by income-to-needs ratio) and children's sleep. Model fit:  $\chi^2(18) = 23.55, p = .17$ ; CFI = .97; RMSEA = .04,  $p = .57$ . Statistically significant lines are solid and non-significant lines are dotted. Unstandardized and standardized coefficients (in parentheses) are provided. Exogenous variables that were significantly related were allowed to covary (standardized coefficients are provided). Children's ethnicity (1 = White, 0 = other) and sex (1 = boys, 0 = girls) were dichotomized. \* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .



**Figure 2.** Examination of mothers’ being in the moment with the child as a moderator of relations between socioeconomic status (assessed by income-to-needs ratio) and children’s sleep. Model fit:  $\chi^2(18) = 18.76, p = .41$ ; CFI = .99; RMSEA = .01,  $p = .80$ . Statistically significant lines are solid and non-significant lines are dotted. Unstandardized and standardized coefficients (in parentheses) are shown. Exogenous variables that were significantly related were allowed to covary (standardized coefficients are provided). Children’s ethnicity (1 = White, 0 = other) and sex (1 = boys, 0 = girls) were dichotomized. \* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

variables were allowed to correlate. The following model fit indices were included:  $\chi^2$ , comparative fit index (CFI), and root mean square error of approximation (RMSEA) (Browne & Cudeck, 1993).

**Results**

**Descriptive statistics and preliminary analyses**

Descriptive statistics and correlations are shown in Table 1. Averages for insufficient sleep duration, night wakings, and daytime sleepiness were similar to past findings with young children (Goodlin-Jones et al., 2008; Sneddon, Peacock, & Crowley, 2013). White/European American status was associated with higher SES. Lower SES was correlated with insufficient sleep duration, more night wakings, and greater daytime sleepiness among children. More maternal mindful discipline was associated with less insufficient sleep duration and fewer night wakings. Higher levels of being in the moment among mothers was related to less insufficient sleep duration, fewer night wakings, and reduced daytime sleepiness. SES was not related to either dimension of maternal mindful parenting.

**Table 1.** Descriptive statistics and correlations among study variables.

	1.	2.	3.	4.	5.	6.	7.	8.	9.
1. Children’s sex	–								
2. Children’s age	–.06	–							
3. Children’s ethnicity	–.07	.07	–						
4. Socioeconomic status	–.14	–.07	.20**	–					
5. Maternal mindful discipline	–.05	.01	.10	.06	–				
6. Mothers’ being in the moment with the child	.08	–.13	–.06	.04	.51**	–			
7. Children’s insufficient sleep duration	.02	.03	–.05	–.20**	–.21**	–.26***	–		
8. Children’s night wakings	.13	–.07	–.06	–.21**	–.29***	–.18*	.47***	–	
9. Children’s daytime sleepiness	.08	.13	.00	–.16*	–.14	–.21**	.42***	.32***	–
<i>M</i>	–	3.30	–	2.96	114.38	110.16	3.64	4.59	9.25
<i>SD</i>	–	1.00	–	2.28	19.69	16.58	1.31	9.25	3.18

Note: Children’s ethnicity (1 = White, 0 = other) and sex (1 = boys, 0 = girls) were dichotomized. \* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

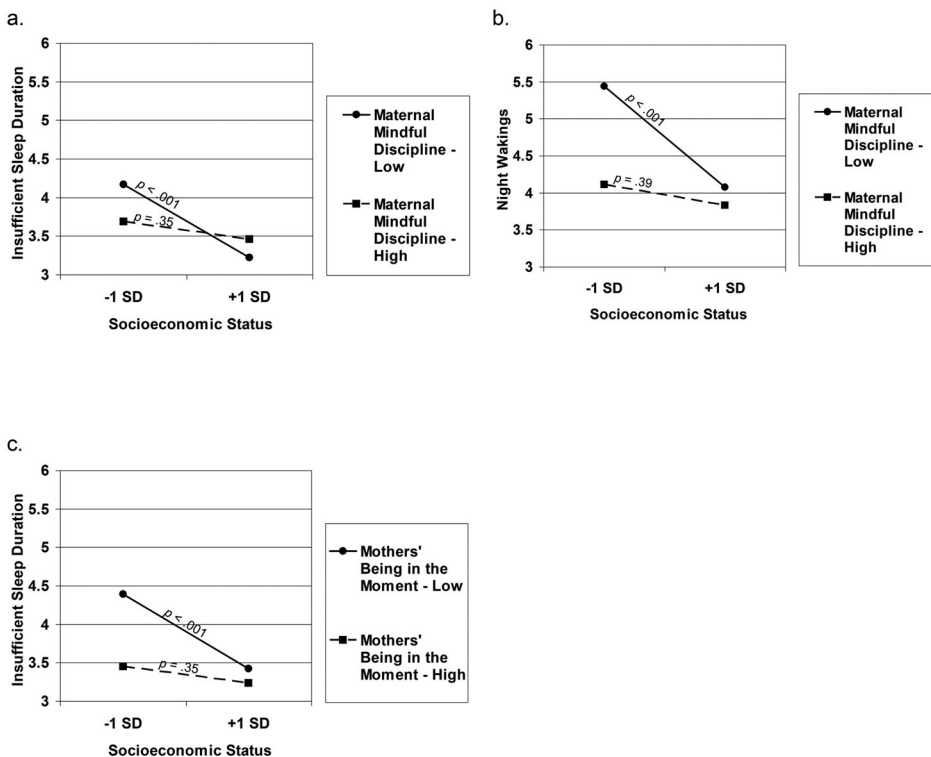


### Direct relations between SES, maternal mindful parenting, and children's sleep

Prior to moderation analyses, a model was fit to examine direct relations between SES, maternal mindful parenting, and children's sleep;  $\chi^2(13) = 18.03, p = .16$ ; CFI = .97; RMSEA = .05,  $p = .48$ . The model is not depicted for brevity. The covariates were not related to sleep. Lower SES was related to insufficient sleep duration ( $B = -.11, \beta = -.19, p = .009$ ), more night wakings ( $B = -.16, \beta = -.19, p = .009$ ), and greater daytime sleepiness ( $B = -.18, \beta = -.14, p = .05$ ). More maternal mindful discipline was related to fewer night wakings ( $B = -.02, \beta = -.24, p = .004$ ). Higher levels of being in the moment among mothers was related to insufficient sleep duration ( $B = -.02, \beta = -.22, p = .01$ ) and reduced daytime sleepiness ( $B = -.03, \beta = -.17, p = .04$ ).

### SES and children's sleep: the moderating role of maternal mindful parenting

The interaction between SES and maternal mindful discipline was added (Figure 1) and was related to children's insufficient sleep duration; the estimation of this path changed model fit ( $\Delta\chi^2(df) = 3.97(1), p < .05$ ). When SES was higher, insufficient sleep duration was reduced and similar across varying levels of maternal mindful discipline (predicted  $M_s = 3.22$  and  $3.46$  for lower and higher levels of mindful discipline, respectively) (Figure 3(a)). A larger difference was observed in the context of lower SES. Children who experienced less mindful discipline were at elevated risk for insufficient sleep duration (predicted  $M = 4.17$ ), whereas children who experienced more mindful discipline were at reduced risk (predicted  $M = 3.69$ ) and levels of insufficient sleep duration were similar to those observed in the context of higher SES. For the simple slopes, lower SES was related to insufficient sleep duration only for those who experienced less mindful discipline; this association was significant for those with a mindful discipline value  $< 127.99$  ( $n = 136$ ).



**Figure 3.** Maternal mindful parenting as a moderator of relations between socioeconomic status (assessed by income-to-needs ratio) and children's sleep.



Maternal mindful discipline also moderated relations between SES and children's night wakings (Figure 1) and this path changed model fit ( $\Delta\chi^2$  ( $df$ ) = 4.16 (1),  $p < .05$ ). When SES was higher, rates of night wakings were lower and similar across different levels of mindful discipline (predicted  $M$ s = 4.08 and 3.83 for lower and higher levels of mindful discipline, respectively) (Figure 3(b)). A larger difference was observed when SES was lower. Night wakings were more common among children who experienced less maternal mindful discipline (predicted  $M$  = 5.44). For those who experienced more mindful discipline, the frequency of night wakings was reduced and similar to levels observed in the context of higher SES (predicted  $M$  = 4.11). Regarding the simple slopes, lower SES was related to more night wakings only for children who experienced less mindful discipline; this association was significant for those with a mindful discipline value  $< 125.40$  ( $n = 136$ ).

An interaction term was added to assess whether mothers' being in the moment with the child served as a moderator (Figure 2). Being in the moment moderated relations between SES and insufficient sleep duration ( $\Delta\chi^2$  ( $df$ ) = 4.72 (1),  $p < .05$ ). When SES was higher, children's insufficient sleep duration was reduced and similar regardless of the extent to which mothers reported being in the moment (predicted  $M$ s = 3.42 and 3.24 for lower and higher levels of being in the moment, respectively) (Figure 3(c)). A larger difference between levels of being in the moment was found when SES was lower. Children's whose mothers reported being in the moment to a lesser extent were at elevated risk for insufficient sleep duration (predicted  $M$  = 4.39) compared to their counterparts whose mothers reported being in the moment more frequently (predicted  $M$  = 3.45). For the simple slopes, lower SES was related to insufficient sleep duration only for those whose mothers reported being in the moment to a lesser extent ('regions of significance' was 119.20;  $n = 134$ ).

## Discussion

We examined whether two dimensions of maternal mindful parenting, mindful discipline and being in the moment with the child, moderated relations between SES and young children's sleep. Families were recruited across diverse SES backgrounds, allowing for adequate testing of questions. Findings illustrate that more maternal mindful parenting may serve as a protective factor and reduce the negative impact that lower SES has on children's sleep. Findings build on the growing literature to consider children's sleep in the family context (Kang et al., 2020; Tikotzky, 2017) and highlight the importance of contemporaneous considerations of parenting practices and socioeconomic contexts.

Consistent with many past studies (de Jong et al., 2016; Gellis, 2011; Hager et al., 2016), lower SES was related to more sleep/wake problems among young children, including insufficient sleep duration, more night wakings, and greater daytime sleepiness. However, the effects were not uniform and moderation analyses involving mindful parenting shed new light on factors that may account for individual differences (Covington et al., 2021). We examined two maternal mindful parenting dimensions that were both operative: mindful discipline and being in the moment with the child. Supportive of the hypotheses, higher reported levels of maternal mindful discipline buffered the extent to which lower SES was related to insufficient sleep duration and night wakings. In a similar fashion, relations between lower SES and children's insufficient sleep duration were less evident when levels of being in the moment were higher. Across the interactions, the pattern was consistent such that associations between lower SES and children's sleep/wake problems were less pronounced when maternal mindful parenting was greater. Findings help address recent calls to elucidate parent-level variables that reduce risk for young children's sleep/wake problems in lower SES contexts (Covington et al., 2021) and indicate that mindful parenting may be relevant.

The consideration of maternal mindful parenting as a moderator is in line with a developmental ecological systems perspective suggesting that children's sleep may be influenced by interactions between the broader social context and parent-level variables (El-Sheikh & Sadeh, 2015). Lower SES environments often include multiple stressors that elevate children's sense of worry and

concern (Bagley et al., 2015), as well as physiological reactivity (Tarullo, Tuladhar, Kao, Drury, & Meyer, 2020), all of which may interfere with the suspension in arousal needed for optimal sleep (Bagley et al., 2015; Dahl, 1996). However, mindful parenting may help preserve sleep in such environments. Mindful parenting involves breaking the cycle of automaticity of reactions and includes dedicating attention to parenting in intentional, non-judgmental, and present ways (Duncan et al., 2009; Kabat-Zinn & Kabat-Zinn, 2021; McCaffrey et al., 2017). Such parenting characteristics may create a sense of security and help children regulate their emotions and reduce arousal (Cheung et al., 2021; Zhang et al., 2019). As such, although inimical conditions common within lower-SES homes might persist, children may be better positioned to obtain levels of equanimity compatible with sufficient and higher quality sleep. Moreover, mindful parenting may contribute to greater experiences of empathy between children and their mothers (McCaffrey et al., 2017), which might embolden the type of mindfulness in children necessary to accept one's internal experiences and not over identify or judge in ways that contribute to sleep/wake problems.

There are additional explanations for the moderation effects. Mothers facing lower SES circumstances who parent in mindful ways possibly exhibit other characteristics known to benefit children's sleep such as maternal sensitivity (Tetreault, Bouvette-Turcot, Bernier, & Bailey, 2016) and secure mother-child attachment (Pennestri et al., 2015). Further, mindful parenting may coincide with other factors that create more optimal sleeping conditions (minimized noise, reduced chaos) and this could have contributed to our findings. Overall, these explanations are offered as tentative. Investigations that address *how* maternal mindful parenting functions to moderate relations between SES and children's sleep is a next step for moving the field forward.

Maternal mindful discipline and being in the moment with the child each buffered the negative effects of lower SES on children's sleep. The relatedness between these two qualities of mindful parenting is compelling given that mindful discipline is a behavioural expression whereas being in the moment is generally an internal psychological experience (McCaffrey et al., 2017). Our study design does not provide insight into the ordinal relationship between mindful discipline and being in the moment, but we can infer that both the behavioural expression of mindfulness and the internal experience of mindfulness both contribute to the type of cognitive, affective, and behavioural attitudes that are each further associated with children's sleep and more positive parenting behaviours (Lengua et al., 2021; Snyder, Shapiro, & Treleaven, 2012).

Sleep is multi-faceted (Sadeh, 2015) and SES and family-level variables do not uniformly impact various facets of sleep (El-Sheikh & Buckhalt, 2015). We found that more maternal mindful parenting buffered the effects of lower SES on children's insufficient sleep duration and night wakings, however greater daytime sleepiness was observed regardless of mindful parenting. Daytime sleepiness often stems from poor sleep and it is possible that low SES disrupts other sleep parameters not assessed in this study that result in sleepiness (e.g. reduced deep sleep; Roehrs, Carskadon, Dement, & Roth, 2005) regardless of mindful parenting. This interpretation is offered as tentative pending additional investigation. The findings illustrate the multi-faceted nature of sleep and the importance of considering several sleep parameters.

It is important to note that results indicate no association between SES and either dimension of maternal mindful parenting. Past work has reported similar findings, such that several indicators of SES were minimally related to mindful discipline and being in the moment with the child (McCaffrey et al., 2017). In this manner, mindfulness appears to be generally accessible to many mothers, with normal variation across individual differences. This finding is consistent with prior empirical investigations of trait mindfulness in the general population (Burzler, Voracek, Hos, & Tran, 2019). The ubiquity and personal signature of stress therefore neither fully compromises the capacity to be present. This is encouraging to mothers who experience stress associated with caregiving, especially when compounded by economic pressures; mindfulness may be both accessible and useful to break the cyclical nature of stress across generations.

Although our aim was to examine maternal mindful parenting as a moderator, it was also directly related to children's sleep. More maternal mindful discipline was related to fewer night wakings, and

higher levels of being in the moment were negatively associated with insufficient sleep duration and reduced daytime sleepiness. Multiple parenting variables that cut across parenting styles (Tyler et al., 2019), attachment processes (Pennestri et al., 2015), and quality of parent–child interactions (Bordeleau, Bernier, & Carrier, 2012) are directly associated with children’s sleep. Our findings add to this work and indicate that maternal mindful parenting may also have a direct influence.

Results offer insights for service providers who support children and their mothers, especially as families are increasingly challenged with stressors consequential of the pandemic and changing social climates (Brown, Doom, Lechuga-Peña, Watamura, & Koppels, 2020; Power, 2020). Practitioners might better identify and assess dysregulated children’s sleep as indicative of compromised maternal mindfulness. In addition to more accurate assessment, findings inferentially support interventions that contribute to improved mindful parenting behaviours (Dumas, 2005). Such interventions might palliate judgement and harsh responses to economic stressors that affect children’s sleep. Mindfulness interventions and corresponding behaviours for economically challenged mothers and children, therefore, does not suggest that they ‘accept inadequate or deleterious social conditions; instead, using ... mindfulness strategies, they accept their cognitive and affective reactions and respond with clearer intentionality’ (Lemberger-Truelove, Carbonneau, Atencio, Zieher, & Palacios, 2018, p. 299).

The present study includes limitations with corresponding directions for future research. Our cross-sectional did not permit the assessment of directionality of effects between study variables and longitudinal assessments are needed to determine whether interactions between SES and mindful parenting precede changes in children’s sleep. Children’s sleep was measured using mothers’ perceptions, which is a commonly used approach, yet carries limitations. To point out one, mothers may not be fully aware of the duration of children’s night wakings (McDowall, Galland, Campbell, & Elder, 2017). Objective sleep measures including actigraphy would help overcome some of these limitations. Given that mothers commonly play a primary role in parenting, our focus on maternal mindful parenting was a logical first step for investigating research questions. However, fathers’ parenting responsibilities and involvement have increased (Lamb & Lewis, 2010) and their inclusion is highly warranted. Income-to-needs ratio is routinely used as an indicator of SES, yet it may not perfectly capture families’ economic well-being (Braveman et al., 2005). We controlled for several variables and screened for children’s sleep disorders and chronic illness, yet other factors not included may have influenced the results (e.g. children’s temperament; Molfese et al., 2015). Lastly, convenience sampling was used and individuals were required to have access to the internet or the means to visit our on-campus lab, which may impact the generalizability of results. Despite its limitations, the present study provides new evidence that maternal mindful parenting may help buffer the negative effects of lower SES on young children’s sleep.

## Disclosure statement

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