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Relationship Between Child and Maternal Sleep: A Developmental and Cross-Cultural Comparison

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Abstract

The aim of this study was to assess the relationship between young children's sleep and maternal sleep from both a developmental and a cross-cultural perspective. Mothers of 10,085 young children completed the Brief Infant/Child Sleep Questionnaire and the Pittsburgh Sleep Quality Index. Overall, there were significant relationships between maternal and child sleep for bedtime, waketime, number of night wakings, and total nighttime sleep time across ages and cultures, although these relationships were stronger with younger children than preschool-aged children. Mothers report that their child's sleep pattern significantly impacts their sleep and daytime function, and they do not feel confident in managing their child's sleep pattern. Thus, interventions to improve children's sleep and develop good sleep habits, especially in early childhood, are likely to improve the quality of life of the whole family.

Key words: child; cross-cultural; infant; maternal; mother; sleep.

Sleep disturbances and insufficient sleep are highly prevalent across all ages. The majority of studies, however, consider these issues within individuals rather than within a family context, which is especially important in child development. Infant sleep is a major source of concern and stress for parents (Mindell, Kuhn, Lewin, Meltzer, & Sadeh, 2006). It has been associated with maternal depression and other indices of parental psychopathology (Eckerberg, 2004; Martin, Hiscock, Hardy, Davey, & Wake, 2007; Warren, Howe, Simmens, & Dahl, 2006). Infant sleep is highly influenced by a variety of parenting factors including parental cognitions and soothing behaviors (Sadeh, Tikotzky, & Scher, 2010). These established links call for research on sleep from a family systems perspective.

Considering this family context, little research has been conducted looking at the relationships between child and parental sleep. Those studies that have been done primarily look at the impact of newborns on maternal sleep during the postpartum period (Armstrong, Van Haeringen, Dadds, & Cash, 1998; Dorheim, Bondevik, Eberhard-Gran, & Bjorvatn, 2009; Goyal, Gay, & Lee, 2007), as well as investigate concurrent improvements in parental sleep following

intervention for child sleep disturbances (Mindell et al., 2006, 2011). Studies have found significant increases in maternal nighttime awakenings, decreases in sleep duration and sleep efficiency, and increases in daytime sleepiness during the immediate postpartum period compared with pregnancy (Coo, Milgrom, & Trinder, 2014; Insana & Montgomery-Downs, 2013; Insana, Stacom, & Montgomery-Downs, 2011; Nishihara & Horiuchi, 1998). Looking across the newborn period, one study of 66 mothers found an average nocturnal sleep time of 7.2 hr, which did not change from 2 weeks to 16 weeks postpartum (Montgomery-Downs, Insana, Clegg-Kraynok, & Mancini, 2010). Although total nighttime sleep was found to be higher than expected, it was highly fragmented with improvements in sleep efficiency across time. Furthermore, a review of studies investigating sleep across the postpartum period noted that the majority of postpartum mothers' sleep disturbances are caused by newborns' sleep and feeding schedules (Hunter, Rychnovsky, & Yount, 2009). An early study of 11 mother–infant pairs focused on this association and found that mother–child circadian synchronization increased across the first 12 weeks (Nishihara, Horiuchi, Eto, & Uchida, 2002).

Those studies that have been conducted past the newborn period have mostly focused on sleep in parents who are caregivers of children with medical issues (e.g., epilepsy, physically disabled, asthma, and cystic fibrosis; Ikeda, Nagai, Kato-Nishimura, Mohri, & Taniike, 2012; Meltzer & Mindell, 2006a, 2006b; Mörelius & Hemmingsson, 2013; Shaki, Goldbart, Daniel, Fraser, & Shorer, 2011; Yilmaz et al., 2008), with almost no studies on the relationship between maternal sleep and child sleep in a community sample of children. Only one study that we are aware of looked at the associations between parental sleep and child sleep in a sample of 4,470 school-aged children, ages 6–12 years (Zhang, Li, Fok, & Wing, 2010). They found that parental sleep–wake patterns significantly predicted child sleep. Bedtime, waketime, and time in bed were influenced by parental sleep patterns, but much stronger mother–child associations were found than father–child associations.

Overall, there has been little, if any, research on the relationship between maternal sleep and child sleep, beyond those studies conducted in children with medical issues. Furthermore, previous studies have found significant differences in sleep both between individuals in predominantly Caucasian (P-C) and predominantly Asian (P-A) countries/regions and across regions/countries within these groups, in that young children from P-A countries/regions have significantly later bedtimes, shorter total sleep times, increased parental perception of sleep problems, and are more likely to room-share than children from P-C countries (Mindell, Sadeh, Kwon, & Goh, 2013a; Mindell, Sadeh, Wiegand, How, & Goh, 2010). Thus, the aim of this study was to assess the relationship between young children's sleep and maternal sleep from both a cross-cultural and developmental (age-related) perspective, using a large sample of young children (birth to 6 years) and their mothers. We hypothesized that (1) there would be significant relationships between children's sleep patterns and maternal sleep, (2) mothers would perceive that their child's poor sleep patterns would negatively impact their sleep and daytime functioning, (3) child sleep would impact maternal sleep more during the first few years (birth to 3 years) compared with preschool-aged children (3–6 years) given the decreased prevalence of sleep disturbances in older children and increased independence, and (4) that this relationship would be universal across multiple countries/regions but would be impacted by cultural practices of bed-sharing.

Method

Participants

Mothers of 10,085 young children from 13 countries/regions (830 Australia–New Zealand/AUNZ; 749 Canada/CA; 1,215 China/CN; 586 Hong Kong/HK; 998 India/IN; 712 South Korea/KR; 499 Japan/JP: 513 Malaysia/MY; 396 Philippines/PH; 449 Singapore/SG; 565 Thailand/TH; 1,335 United States/US; and 1,238 United Kingdom/UK) participated in this study. Countries/regions were grouped as either P-C (Australia, Canada, New Zealand, United Kingdom, and United States) or P-A (China, Hong Kong, India, Japan, Korea, Singapore, Malaysia, Philippines, and Thailand).

The participants all had children between the ages of birth and 6 years, with children grouped according to the following ages: 0–35 months ($n = 7,499$) and 36–71 months ($n = 2,586$).

Procedure

All data were collected online. The questionnaire was set as a pop-up screen at a popular parenting Web site (BabyCenter) or via e-mail using mailing lists obtained from local marketing firms. Completion of the questionnaire was voluntary, all participants provided informed consent, there were no exclusionary criteria, and this study was approved by a university institutional review board. No identifying information was collected. A few areas offered incentives for completion (e.g., free samples or gift voucher), and participants were asked to provide their e-mail address at the end of the survey if they were interested. The complete sample was collected between February 2011 and March 2012.

All participants completed the Brief Infant/Child Sleep Questionnaire (BISQ/BCSQ) and the Pittsburgh Sleep Quality Index (PSQI). They were asked to complete the questionnaire related to just one child if they had multiple children.

Brief Infant Sleep Questionnaire/Brief Child Sleep Questionnaire

The BISQ is a well-published, highly validated measure for use with infants and toddlers up to 3 years, and the BCSQ, which is based on this scale, was developed for children aged 3–6 years (Sadeh, 2004). Both questionnaires included questions using the same wording about daytime and nighttime sleep patterns, as well as sleep-related behaviors including sleep location. Mothers were also asked about their perception of their child's sleep ("Do you consider your child's sleep a problem?") on a 5-point scale ("not a problem" to "serious problem"), as well as the impact of their child's sleep pattern on their sleep ("How much do your child's sleep patterns affect your sleep?") and daytime functioning ("How much do your child's sleep patterns negatively affect how well you function during the day?") on a 4-point scale ("not at all" to "very much"). As with the original BISQ, the major sleep variables derived from the BCSQ have been compared with actigraphy with reasonable validity for sleep schedule measures (sleep onset time, sleep duration) and lower validity for sleep quality variables such as number of night wakings (Tikotzky & Sadeh, 2001). Participants with children aged 0–35 months completed the BISQ and those with children aged 36–72 months completed the BCSQ. The respondents were asked to describe their child's behavior during the past 2 weeks.

Pittsburgh Sleep Quality Index

The PSQI is a widely used and well-validated 19-item self-report instrument that measures sleep disturbances in adults (Buysse, Reynolds, Monk, Berman, & Kupfer, 1989). The PSQI includes seven subscale scores (sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, sleep medications, and daytime dysfunction), as well as provides a global score ranging from no sleep difficulty to severe difficulties. A global score >5 indicates a "poor sleeper" and has been shown to have a diagnostic sensitivity of 89.6% and specificity of 86.5% (Buysse et al., 1989). The expanded version of the PSQI used in this study included additional questions about night wakings and naps, but these additional questions were not included in the global score. Mothers completed this measure regarding their own sleep over the past 2 weeks rather than the past month to be consistent with other measures collected.

The questionnaires were translated into each respective language and back-translated to ensure appropriate translation. For quality control, respondents could not provide extreme data (e.g., sleep onset latency > 5 hr, total sleep time < 3 hr).

In addition to the BISQ/BCSQ and the PSQI, demographic information was collected, including parental age, education, race, and employment status.

Statistical Analyses

Means and frequencies were used for demographic information. Analyses of variance were used to compare demographics across

cultures, with effect sizes (partial η^2) reported for all comparisons. Correlations were performed on the following variables: (1) bedtime, (2) waketime, (3) number and duration of night wakings, (4) nighttime sleep, and (5) PSQI score. Structural equation modeling (SEM) was used to assess models describing the relationships between infant sleep and maternal sleep. We chose to use only observed variables related to three equivalent sleep measures of the mother and the child: sleep duration, number of night wakings, and duration of night wakings. SEM analyses were conducted with the Amos program (Version 21) using the Maximum Likelihood estimation method. The underlying assumption behind the model testing was that sleep quality of the child influences maternal sleep quality because of the need to respond to the child's night wakings and signaling at night. Age was entered into the model to assess and control for developmental changes in sleep quality and the potentially changing associations between child sleep and maternal sleep. To further challenge our hypothesis, we also tested the opposite causal model that maternal sleep measures influence child sleep patterns. Logistic regressions were conducted to predict maternal perceptions of impact on maternal functioning and sleep.

To examine the question if culture or age-group (0–36 vs. 37–72 months) plays a role in moderating the links between child's and maternal sleep, we compared the correlations and the regressions between child and maternal night wakings using Fisher r to z transformations and analysis of covariance (ANCOVA; general linear model).

Because of the large cohort size and the multiple analyses, findings were considered significant if $p < .001$.

Results

Demographics
Complete demographic data for the entire sample, and within P-A and P-C, are provided in Table I. Overall, there were an equal number of mothers of boys (50.4%) and girls (49.6%), and approximately half of the respondents had just one child (54.1%). The average child age was 23.58 months ($SD = 18.86$), with no difference between P-C ($M = 23.51$) and P-A ($M = 23.64$), $p > .05$. The majority of respondents (65.9%) were between 25 and 35 years old, most had a college education (65.9%), and almost half were at home full-time or were students (49.9%). There were significant differences between P-A and P-C for age of respondent, education of respondent, and employment status, with mothers in P-A younger, less educated, and more likely to be employed full-time.

Sleep Patterns
Summary statistics for each of the sleep variables can be seen in Table II. To present the bivariate relationships between child's and maternal sleep, a correlation matrix was first created for the major variables (Table III). Overall, there were significant relationships between maternal and child sleep for bedtime ($r = .46$), waketime ($r = .58$), number of night wakings ($r = .49$), and total nighttime sleep ($r = .28$), $p < .001$. In addition, as indicated in Figure 1, these relationships were stronger between child sleep and maternal sleep in younger children (0–35 months), $p < .001$. The correlations for waketime were .58 in the younger age-group and .54 in the older age-group (all correlations were significant at $p < .0001$); for the number of night wakings, $r = .54$ and $r = .28$, respectively, and for total nighttime sleep, $r = .32$ and $r = .16$, respectively. To describe the multivariate relationships between child sleep and maternal sleep, we used SEM. We tested two SEM models that were based on child's sleep effects on mother's sleep and vice versa. The model describing the mother's sleep effects on child's sleep measures yielded poor fit indexes, and therefore, we describe only the model based on the child's sleep effects on mother's sleep measures. Good fit indices were obtained for the structural model presented in Figure 2: normed fit index (NFI) = 0.989, comparative fit index (CFI) = 0.989, root mean square error of approximation (RMSEA) = 0.043. The model demonstrates

Table I. Participant Demographics: Chi-Square Values and Effects Sizes for Between-Culture Comparisons

	Total %	Total n	Predominantly Caucasian %	Predominantly Asian %	χ^2	Effect size ϕ
Child sex					0.18	–
Boy	50.4	5,083	50.7	50.2		
Girl	49.6	5,002	49.3	49.8		
Number of children						
1	54.1	5,456	54.3	53.9	4.23	–
2	33.2	3,348	33.7	32.6		
3+	12.6	1,271	12.1	13.4		
Employment status						
Full-time	39.5	3,983	27.0	48.3	689.47**	.26
Part-time	10.6	1,071	17.6	5.7		
Home/student	49.9	5,031	55.4	46.0		
Education					122.22**	.11
Elementary school	0.4	41	0.5	0.4		
High school	33.6	3,396	34.3	33.5		
College	47.0	4,739	43.9	49.1		
Postgraduate	18.9	1,909	21.4	17.2		
Age of respondent (years)					363.61**	.19
<25	7.2	722	9.0	5.9		
25–29	27.5	2,775	21.2	32.0		
30–34	38.4	3,874	34.9	40.9		
35–39	21.0	2,114	25.6	17.7		
>40	5.9	600	9.3	3.6		

*$p < .001$; **$p < .0001$.

Table II. Sleep Variables

	Children						Mothers	
	All		0–35 months		36–72 months			
	M	SD	M	SD	M	SD	M	SD
Bedtime	9:14	1.51	9:16	1.56	9:06	1.33	10:58	1.32
Sleep onset latency (min)	20.59	14.43	20.68	14.54	20.31	14.11	21.86	22.76
Waketime	7:18	1.19	7:16	1.26	7:24	0.96	6:49	1.43
Nighttime sleep (hr)	9.58	1.57	9.47	1.65	9.93	1.22	6.96	1.16
Number of night wakings	1.25	1.21	1.46	1.24	0.63	0.84	1.97	1.66
Duration of night wakings	22.47	38.29	2722	41.15	8.71	23.48	14.41	16.85

Table III. Correlation Matrix of Key Mother and Child Variables

	Mother's measures								
	Bedtime	Sleep onset latency	Waketime	Nighttime sleep	Number of night wakings	Duration of night wakings	PSQI	Child's age	Mother's age
Child's measures									
Bedtime	**.46***	.02	**.31***	−.05*	−.09*	−.04*	.06*	−.07*	−.13*
Sleep onset latency	.12*	.16*	.06*	−.10*	.06*	.05*	.15*	.00	−.04*
Waketime	**.37***	.06*	**.58***	−.05*	−.07*	.00	−.01	.12*	−.04*
Nighttime sleep	−.15*	.00	.09*	**.28***	−.09*	−.03	−.19*	**.26***	.13*
Number of night wakings	.00	.05*	.01	**−.21***	**.49***	.03	**.26***	**−.41***	−.15*
Duration of night wakings	.03	.07*	.01	**−.26***	**.29***	.14*	**.28***	**−.37***	−.11*
Child's age	−.03	.00	.02	.17*	−.19*	−.01	−.10*	–	–
Mother's age	−.03	−.06*	.12*	−.03	−.07*	.03	−.04*	**.26***	–

Note. Correlations >.20 are indicated in bold.

*$p < .0001$.

strong effects of age on child sleep as well as strong effects of child sleep measures on maternal sleep measures. All the estimates in the model are statistically significant at $p < .001$.

To further test the strong link between child and maternal night wakings, we assessed the moderating role of age-group (0–36 vs. 37–72 months) and culture (P-C vs. P-A) using regressions and comparisons between regressions and correlations (Figure 1). In the age-related regressions, the correlations for the younger and the older children significantly differed (.54 vs. .28, respectively; based on Fisher r to z transformations, the z for difference between regressions was 13.87; $p < .0001$). ANCOVA, based on General Linear Models procedure (SAS version 9), revealed that the slopes were significantly different as well ($F = 31.24$; $p < .0001$). When the role of culture as a moderator was assessed, the correlations in the P-C and P-A countries were quite similar (.50 vs. .54, $Z_{diff} = 2.71$; $p > .001$), as shown in Figure 1. The regression slopes were also similar with no significant difference.

Maternal Perception of Sleep and Daytime Functioning

Almost half (44.2%) of mothers report that their child's sleep pattern affects their sleep ("somewhat" and "very much") and 30.1% believe that their child's sleep pattern affects their ability to function during the day ("somewhat" and "very much"). Mothers of younger children (0–35 months) compared with mothers of older children (36–59 months) report significantly more impact on their sleep (47.35% vs. 33.72%; $\chi^2 = 156$, $p < .001$) and their daytime functioning (31.08% vs. 21.46%; $\chi^2 = 156$, $p < .001$). Linear regression analyses revealed that child sleep variables accounted for 19.9% of the variance in maternal perception of the impact on her sleep quality (regression model $F = 411.46$, $p < .0001$; Table IV) and 15.6%

of impact on daytime functioning (regression model $F = 306.05$, $p < .0001$; Table IV), with number of night wakings being the most predictive child sleep factor ($t = 29.34$, $p < .0001$ and $t = 23.05$, $p < .0001$). Other child sleep variables that were involved in the prediction of mothers' perception of impact on their sleep were duration of night wakings ($t = 10.70$, $p < .0001$), sleep onset latency ($t = 8.72$, $p < .0001$), and total sleep time ($t = -5.23$, $p < .0001$). Bedtime and waketime were not found to be significant predictors. Almost identical findings were found for the prediction of mothers' perception of impact on their daytime functioning.

We also assessed the relationship between perceived sleep problems in children and poor sleep of mothers, based on the question "Do you consider your child's sleep as a problem?". Overall, 54.7% of mothers reported poor sleep, as defined by a score of ≥ 5 on the PSQI. As expected, there were significant correlations between maternal reports of sleep problems and PSQI scores, $r = .20$, $p < .001$, for the entire sample, and the correlations were significantly stronger for the younger children, $r = .22$, $p < .001$, than the older children, $r = .15$, $p < .001$ (Z score for difference between correlations = 3.22; $p < .001$).
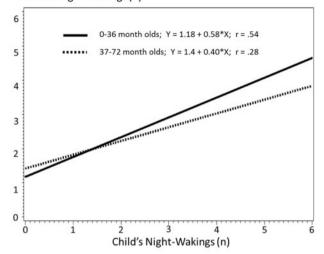
Cultural Differences and Sleep Location

As discussed above, the relationships between child and maternal sleep patterns were similar in P-C and P-A countries. However, the relationship between maternal perception of a sleep problem in her child and poor sleep as measured by the PSQI was significantly higher in P-C countries, $r = .27$, $p < .001$, in comparison with P-A countries, $r = .18$, $p < .001$ (Z score for difference between correlations = 4.32; $p < .001$).

Mother's Night-Wakings (n)

0-36 month olds; Y = 1.18 + 0.58*X; r = .54
37-72 month olds; Y = 1.4 + 0.40*X; r = .28

Child's Night-Wakings (n)

Mother's Night-Wakings (n)

P-C countries; Y = 1.57 + 0.60*X; r = .50
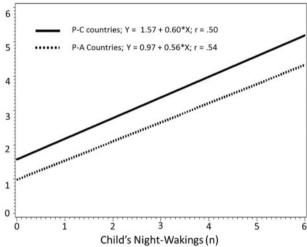P-A Countries; Y = 0.97 + 0.56*X; r = .54

Child's Night-Wakings (n)

Figure 1. Linear regression lines between reported nightly averages of child's and mother's night wakings according to age (top) and culture (bottom).

Interestingly, there were differences in the association of reported sleep patterns for mother–child pairs based on sleep location. For the number of night wakings, significantly higher correlations were reported by parents who shared a room with their child, $r = .56$, $p < .001$, than by those whose children sleep in their own room, $r = .39$, $p < .001$ (Z score for difference between correlations $= 10.22$; $p < .001$). However, there were no significant differences for bedtimes between the correlations in those who shared a room with their child ($r = .47$, $p < .001$) and those who slept in a separate room ($r = .45$, $p < .001$) (Z score for difference between correlations $= 1.17$; ns).

Discussion

In this large-scale cross-cultural study, we found strong associations between child sleep and maternal sleep, both for sleep patterns and for sleep disturbances. In terms of sleep patterns, stronger associations were found for bedtimes, waketimes, and number of night wakings. Associations were weaker, albeit still significant, for sleep onset latency and duration of night wakings, indicating the ability to

fall asleep or return to sleep may be more dependent on the individual rather than influenced by others.

In this study, 55% of mothers reported poor sleep, based on a score >5 on the PSQI. Child night waking was found to be the factor that is most highly associated with maternal poor sleep. Interestingly, bedtime, waketime, and nighttime sleep for children and their mothers were not as highly associated with maternal sleep problems. Predictive modeling in this study also indicated that night wakings, both number and duration, are the best predictors of maternal wakings and total nighttime sleep. Interestingly, this relationship was found to be unidirectional with child sleep impacting maternal sleep, but not the other way.

The relationships between maternal and child sleep observed in this study were similar for P-C and P-A cultures. Thus, although previous studies (Mindell et al., 2010, 2013a, 2013b) have found striking differences in individual sleep practices across cultures, within families, relationships among sleep variables are similar. However, it is important to note that in comparison with mothers from P-A cultures, mothers from the P-C cultures reported significantly stronger links between their child's sleep problem and their own poor sleep. It may be that the differences in perception are a reflection of a more collectivist Eastern culture in P-A countries compared with the more individualistic Western culture of P-C countries. On the other hand, not surprisingly, there are differences in the relationships between child and maternal sleep based on the child's age, with sleep patterns being more similar throughout infancy and less so during the preschool period. Furthermore, mothers are more likely to report that their child's sleep pattern affects their sleep when their child is young compared with when their child is older, which may be a reflection of the stronger relationship in sleep patterns. Similar results were found for mothers reporting that their child's sleep pattern affects their daytime functioning.

As we expected, mother sleep and child sleep were more highly associated in families who participated in room-sharing. Maternal and child night wakings were more closely synchronized when the mothers shared a room with their child compared with those whose child slept in a separate room. In contrast, room-sharing did not impact the relationship between maternal and child bedtimes.

Surprisingly, we found cosleeping did not appear to have an impact, with associations between mother and child sleep variables to be almost identical across all sleeping arrangements. Thus, recommendations that parents may sleep "better" if the child sleeps in an independent location does not appear to be the case, given that there were no differences in the relationships between child and maternal sleep patterns between those who engaged in bed-sharing or room-sharing or had their child sleep in a separate location.

Finally, one-third of the mothers, with even higher percentages of mothers of younger children, reported a perceived negative influence of their child's sleep pattern on their daytime functioning. These subjective perceptions are consistent with past studies that objectively measured the impact of sleep disturbances in postpartum women on daytime functioning and neurobehavioral performance. For example, in one study, worsened maternal neurobehavioral performance was found in 70 postpartum women compared with a control group and appeared to be influenced by the cumulative effects of sleep disturbance (Insana, Williams, & Montgomery-Downs, 2013). Similar results were found in other studies (Insana & Montgomery-Downs, 2013; Insana et al., 2011), although no studies have looked at the indirect effects of child sleep on this relationship between maternal sleep and daytime functioning.

The results of this study should be considered within its inherent limitations, especially as it is an Internet-based study. First, mothers
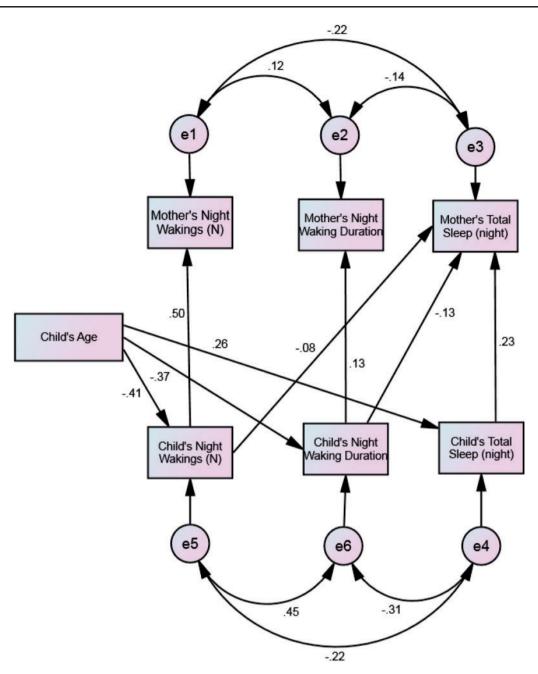
Figure 2. The links between mother and child sleep patterns: Structural equation model with standardized estimates. All estimates are significant at $p < .001$.

with concerns about their or their child's sleep may have been more likely to participate, and these may be mothers who are more aware of or are more attuned to their child's sleep. For example, it is unlikely that mothers who do not care for their child at night participated in this study. Furthermore, maternal report of child sleep may have been biased as a function of their own sleep. Finally, as always, the reliance on self-report has inherent limitations and more objective measures of sleep are always warranted. Future studies should use more objective measures of both child and maternal sleep, such as actigraphy, to obtain more accurate assessment of sleep and reduce bias of maternal report.

Overall, this study is the first study to investigate the strong relationships among sleep patterns and sleep disturbances in mothers and their children, and these relationships are similar cross-culturally. As expected, given that older children typically experience

fewer sleep disturbances and are more independent, associations are stronger in families with younger children, with associations diminishing during the preschool period. Our study findings demonstrated that night wakings are also the strongest determinant of maternal sleep, both sleep fragmentation and total nighttime sleep. A recent experimental study demonstrated the adverse impact of one night of induced night wakings on mood and attention regulation (Kahn, Fridenson, Lerer, Bar-Haim, & Sadeh, 2014). Thus, the impact of chronic sleep fragmentation, as experienced by many parents, on psychological well-being and functioning should be considered as a major family risk factor. These results indicate that assessment of sleep of all family member is important, especially within the pediatric setting. Furthermore, these results signify a need to identify and intervene with sleep issues early to prevent the potential spiral effects of child sleep affecting maternal sleep, which can result in an

Table IV. Regression Analyses: Child's Sleep Variables Predicting Maternal Daytime Functioning

Dependent variable	Predictor (child sleep)	B	t
Effect on maternal sleep	Intercept	2.41	19.41*
	Number of night wakings	.26	29.34*
	Duration of night wakings	.0032	10.90*
	Sleep onset latency	.0057	8.72*
	Total nocturnal sleep time	−.046	−5.23*
	Waketime	−.014	−.135
	Bedtime	.0088	.93
Effect on maternal daytime functioning	Intercept	2.04	17.82*
	Number of night wakings	.19	23.05*
	Duration of night wakings	.0027	10.12*
	Sleep onset latency	.0043	7.12*
	Total nocturnal sleep time	−.040	−4.90*
	Bedtime	.031	3.51
	Waketime	−.032	−3.32

*$p < .001$.

increased risk for maternal stress and depression and eventually possible negative impacts on child development (Dorheim et al., 2009; Goyal, Gay, & Lee, 2009). Studies clearly indicate that behavioral interventions are efficacious, especially preventative educational programs, in improving both child sleep as well as parental sleep and functioning (e.g., Meltzer & Mindell, 2014; Mindell et al., 2006).

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Conflicts of interest: None declared.

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