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# Infant Behavior and Development



## Infant sleep, parental sleep and parenting stress in families of mothers on maternity leave and in families of working mothers

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### ABSTRACT

The purpose of the present study was to investigate the links between infants' sleep and their parents' sleep and to assess the links between infant/parent sleep and parenting stress. Furthermore, we explored whether the links between sleep and parenting stress are moderated by maternal leave status. Participants were 50 families with an infant between the ages of 4–5 months. Half of the mothers were on maternity leave while the others returned to work. Parents completed daily sleep logs about infants' and their own sleep for 4 consecutive nights. Each parent also completed the Parenting Stress Index. Infant sleep was associated with sleep of both mothers and fathers, but the correlations with maternal sleep were stronger. Parental perceptions of their infant's sleep as problematic were associated with higher parenting stress. Poorer infant and maternal sleep patterns were associated with parenting stress only in families with mothers on maternity leave, probably because these mothers need to provide intensive caregiving "around the clock" without sufficient opportunities to rest.

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### 1. Introduction

During the first months of life, most infants wake up regularly during the night and many of these night-waking require parental intervention (Mindell & Owens, 2003). Many parents consider their child's sleep as problematic at ages as young as 2–4 months (Armstrong, Quinn, & Dadds, 1994) with approximately 15% of parents of 3-months-old infants reporting their infants' sleep as problematic (Thome & Skuladottir, 2005a). Parents may find infant night-wakings to be troublesome because of the direct influence on their own sleep. Indeed, previous studies found parents' sleep patterns to be related to their children's sleep patterns at different ages (Boergers, Hart, Owens, Streisand, & Spirito, 2007; Meltzer & Mindell, 2007) and especially during infancy (Gay, Lee, & Lee, 2004).

Interestingly, though sleep of many parents is dramatically curtailed during the first postpartum months (Chang, Pien, Duntley, & Macones, 2010; Gay et al., 2004; Hunter, Rychnovsky, & Yount, 2009; Swain, O'Hara, Starr, & Gorman, 1997), only a few studies have examined the links between parental sleep loss and parental functioning during this period of child development. Studies conducted in this field have focused mainly on the links between infant/mother sleep and maternal postnatal depression. These studies have demonstrated that infant sleep problems and maternal sleep loss in the postpartum period are significantly associated with higher levels of depressive symptoms (Chang et al., 2010; Dørheim, Bondevik, Eberhard-Gran, & Bjorvatn, 2009; Goyal, Gay, & Lee, 2009). Another important domain of parental functioning is parenting stress. Elevated stress associated with the demands of parenting has been found to be related to many negative parenting characteristics, such as low levels of parental warmth and reciprocity, and use of harsh discipline (Haskett, Ahern,

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Ward, & Allaire, 2006). Though hardly explored in relation to infant/parent sleep, a few studies found that children's sleep problems were associated with parental stress and overload (Eckerberg, 2004; Meltzer & Mindell, 2007). For example, Eckerberg (2004) reported improvement in parenting stress following an infant sleep intervention. In the present study, we were interested in further exploring whether disturbed infant and parent sleep would be associated with higher levels of parenting stress.

Though the role of fathers in infant caregiving is expanding (Coleman & Garfield, 2004; Yeung, Sandberg, Davis-Kean, & Hofferth, 2001) most of the research on infant sleep and parenting has focused on mothers. Nevertheless, sleep loss in the postpartum period is relevant for both parents, as both could be awakened by infants' signals during the night. A few studies have found infants' sleep to be related to fathers' sleep (Gay et al., 2004) and to fathers' psychological functioning (Loutzenhiser & Sevigny, 2008). Fathers whose infants slept for shorter periods reported higher levels of distress (Thome & Skuladottir, 2005a), and fathers have also been found to report fatigue, depressive symptoms and distress similar to those of mothers when their children had a sleep problem requiring a sleep intervention (Thome & Skuladottir, 2005b). Moreover, fathers have shown comparable decreases in depressive symptoms following interventions for infant sleep problems (Durand & Mindell, 1990; Thome & Skuladottir, 2005b).

An important factor influencing the possibility of parents, and especially mothers, to compensate for sleep loss, is the length of maternity leave. In Israel, where this study was conducted, mothers are entitled to 14 weeks of paid postpartum leave, from which up to 8 weeks can be taken by the father. After the initial 14 weeks, mothers may extend their unpaid leave up to 6 months postpartum without losing their job (Israel National Social Security website, retrieved April 2010). Studies focusing on the link between the length of maternity leave and maternal well being found that mothers are likely to benefit from a longer maternity leave (McGovern et al., 1997; Staehelin, Berteau, & Stutz, 2007) with each additional day decreasing the severity of postnatal depression (Dagher, 2007). Because mothers on leave probably have more opportunities to make up for loss of sleep when the infant naps, we were interested in examining whether the links between infant/parent sleep and parenting stress would differ as a function of mothers' maternity leave status.

### 1.1. Aims and hypotheses

In the present study, we aimed at investigating the links between infants' sleep and their parents' sleep and parenting stress. We hypothesized that: (1) both parents' sleep would be related to their infant's sleep but that the links with maternal sleep would be stronger; (2) more disturbed infant/parent sleep and higher negative parental perceptions of the quality of infant's sleep would be related to more parenting stress. We chose to focus on infants 4–5 months old because at this time part of the mothers are still on maternity leave and others have returned to work, making it possible to examine the role of maternal leave status as a moderator of the links between infant/parent sleep and parenting stress.

## 2. Material and methods

### 2.1. Subjects

Fifty couples with infants aged 4–5 months participated in the study. The sample included 25 families with mothers on maternity leave and 25 families with mothers who had returned to work. Parents were recruited via Internet advertising (38%), advertising in playgrounds and near child-supply stores (32%), through personal contacts (24%), and through a local child care clinic (6%). Parents and infants characteristics are presented in Table 1. Parents were eligible to participate if their child was between 4 and 5 months of age, parents were co-habiting, and the child was born in a singleton birth.

### 2.2. Procedure

The study was approved by the University ethics committee, and by a Hospital Helsinki committee. All families were visited at home by a research assistant. After both parents signed an informed consent, mothers and fathers were asked to complete the study questionnaires separately at home during the sleep assessment period. Parents were asked to complete a background questionnaire, as well as an individual self-report questionnaire assessing parenting stress. In addition, parents completed a daily sleep log for 4 consecutive nights including questions about the infant's sleep and about their own sleep. Questionnaires were posted back by mail or collected in a second home-visit. Parents received a small gift (about 10\$ value) for their participation.

### 2.3. Measures

#### 2.3.1. Background questionnaire

This questionnaire included questions regarding the number and age of the children in the family, the number of rooms in the house, parents' age, education, current employment/leave status, and whether or not parents took time off work after the birth and, if so, for how long. The questionnaire also asked about pregnancy, delivery and infant development

**Table 1**  
Parent and infant characteristics.

	Mothers	Fathers
Age (y)		
Mean (SD)	29.5 (4.19)	32.3 (4.4)
Range	22–39	23–47
Education (years)		
Mean (SD)	15.83 (2.02)	15.44 (2.73)
Parental leave status		
Currently on leave (%)	50	6
Length of leave after childbirth (%)		
No leave	2	76
≤14 weeks	30	16
>14 weeks	68	8
	Infants	
Age (months)		
Mean (SD)	4.78 (0.58)	
Range	3.78–6.18	
Gestation age		
Mean (SD)	40 (1)	
Range	37–42	
First born child (%)	78	
Current breastfeeding practices (%)		
Exclusive Breastfeeding	44.9	
Breast and bottle Feeding	30.6	
Exclusive Bottle feeding	24.5	

(i.e. pregnancy or delivery complications, infant birth weight, present weight and length, feeding methods, medical or developmental problems such as allergy and breathing difficulties).

### 2.3.2. Sleep assessment

Infant and parent sleep was assessed by sleep logs for 4 consecutive 24-h periods. The infant's sleep log has been developed for clinical and developmental research to assess infant sleep from parental perspective (Sadeh, 1996; Sadeh, Lavie, & Scher, 1994). Sleep log measures (especially sleep schedule parameters) have been found to be highly correlated with other objective sleep assessment tools (i.e. actigraphy; Sadeh, 2004). Parents were instructed to report any infant night waking of which they were aware and its length. The derived measures were averaged over the 4 nights and included (a) number of infants' night-wakings between sleep onset time and wake-time, (b) infants' amount of nocturnal wakefulness between sleep onset time and wake-time, (c) infants' amount of day-time sleep, (d) both fathers' and mothers' number of night-wakings between their sleep onset time and wake-time, (e) both fathers' and mothers' amount of nocturnal wakefulness and (f) both fathers' and mothers' amount of day-time sleep.

### 2.3.3. Perception of the infants' sleep as problematic

Parents answered a single question asking them to rate the extent to which they consider their child's sleep as problematic on a 5-point Likert type scale ranging from (1) "it is not problematic at all" to (5) "very severe problem".

### 2.3.4. Parenting Stress Index (PSI; Abidin, 1986)

The Parenting Stress Index is a widely used questionnaire measuring stress in the parent–child dyad. In the present study, we used the Hebrew version for three of the child domain subscales (Acceptability, Demandingness, and Child Reinforces Parent) and three of the parent domain subscales (Attachment, Restriction of Role, Relationship with Spouse). Parents were asked to rate each item on a five-point Likert type scale ranging from (1) "strongly disagree" to (5) "strongly agree". The ratings were summed to create a total score for the child domain items, and a total score for the parent domain items, in which higher scores reflected perception of more stress by the parent. Cronbach's  $\alpha$  for the child domain score and parent domain score were .81 and .78 respectively for the fathers and .77 and .71 for the mothers.

## 3. Results

### 3.1. Descriptive statistics and preliminary analyses

Descriptive statistics (means and SD) of sleep related variables are presented in Table 2.

Before testing our main hypotheses, we explored whether the number of children in the family and infant feeding method would be associated with the sleep and parenting stress variables as significant links between these variables have previously been reported (Saisto, Salmela-Aro, Nurmi, & Halmesmaki, 2008; Tikotzky, De Marcas, et al., 2010). Using a series of independent sample *t*-tests, we compared families which had only an infant to families with other children on the

**Table 2**  
Means and standard deviations of sleep variables.

	Mean	SD
Infant's number of night-waking	2.65	1.44
Infant's duration of night-time wakefulness (min)	39.44	29.82
Infant's duration of day-time sleep (min)	165.02	69.20
Father's number of night-waking	1.24	1.00
Father's duration of night-time wakefulness (min)	10.60	15.72
Father's duration of day-time sleep (min)	15.32	22.79
Mother's number of night-wakings	2.88	1.43
Mother's duration of night-time wakefulness (min)	37.02	29.81
Mother's duration of day-time sleep (min)	21.49	27.56
Fathers' ratings of their infants' sleep as a problem	1.94	1.04
Mothers' ratings of their infants' sleep as a problem	1.80	.93

**Table 3**  
Correlations between fathers', mothers' and infants' sleep measures.

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
1. Infant's number of night-wakings										
2. Infant's duration of night-time wakefulness	.60**									
3. Infant's duration of day-time sleep	-.18	-.02								
4. Father's number of night-time wakings	.42**	.42**	-.11							
5. Father's duration of night-time wakefulness	.32*	.74**	.06	.57**						
6. Father's duration of day-time sleep	-.26	-.28	.02	-.22	-.21					
7. Mother's number of night-time wakings	.82**	.59**	-.25	.4**	.29*	-.26				
8. Mother's duration of night-time wakefulness	.57**	.86**	.05	.3*	.62**	-.23	.7**			
9. Mother's duration of day-time sleep	.13	-.08	.11	-.05	-.11	.49**	.08	-.04		
10. Fathers' ratings of infants' sleep as a problem	0.36*	0.25	-.021	0.18	0.16	-.015	0.41*	0.25	0.22	
11. Mothers' ratings of infants' sleep as a problem	0.42*	0.3*	-.034*	0.1	0.28*	-.024	0.35*	0.28*	-.004	0.46**

\*  $p < .05$ .

\*\*  $p < .01$ .

different sleep and stress variables. No significant differences were found between the groups on any of these variables. A similar comparison using a series of independent sample *t*-tests, was conducted to examine the differences between families with infants who were exclusively breastfed and families with infants receiving either exclusive formula or a combination between formula and breast feeding. No significant differences were found between the two groups on any of the sleep and stress variables.

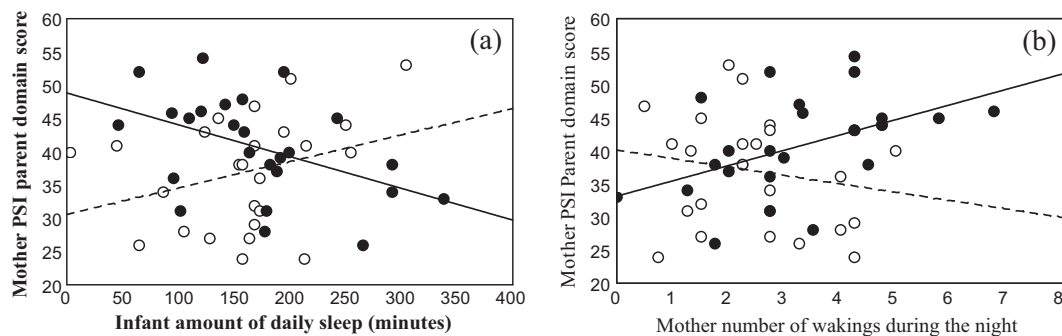
### 3.2. Associations between infant and parental sleep

To test our first hypothesis, we correlated infants' sleep measures with both mothers' and fathers' sleep measures. The results are presented in Table 3. Infants' number of night-waking was significantly and positively correlated with mothers' number of night-wakings as well as with fathers' number of night-wakings. Infants' duration of wakefulness during the night was also significantly correlated with wakefulness during the night of both mothers and fathers.

Using paired sample *t*-tests, a significant difference was found between infants' and fathers' number of night time waking,  $t_{(49)} = 7.282, p < .0001$ , infants' and father's amount of night time wakefulness,  $t_{(49)} = 9.668, p < .0001$ , but there was no significant difference between mothers and infants on these two measures.

In addition, we correlated both mothers' and fathers' perception of their children's sleep quality to their actual sleep measures. Mothers' ratings of their infant's sleep as problematic were significantly correlated with the infants sleep measures: positively with the number of night-wakings and duration of wakefulness, and negatively with the amount of the infant's day-time sleep. Fathers' ratings of the infant sleep as problematic were significantly and positively correlated only with infants' number of night-wakings.

Following this, we divided the sample into 2 groups: infants without any reported sleep problems and infants whose sleep was perceived as problematic at any level. Using a series of independent sample *t*-tests we tested the differences between these two groups on infants' sleep log measures. When divided according to maternal perception of problematic sleep, significant differences were found for all three sleep variables: infants perceived as having problematic sleep woke up more times at night [ $t_{(47)} = 2.994, p < .005$ ], were awake for a longer duration during the night [ $t_{(47)} = 2.436, p < .02$ ] and had shorter day-time sleep [ $t_{(47)} = 2.128, p < .04$ ]. When divided into groups according to their fathers' perception of problematic sleep, a significant difference was found only for the number of night-waking [ $t_{(48)} = 2.681, p < .02$ ].



**Fig. 1.** Relationship between infants' sleep measures and mothers parenting stress measures, separated according to mothers' leave status. ● – Mothers on maternity leave; ○ – mothers who had returned to work.

### 3.3. Associations between sleep measures and parenting stress

To test our second hypothesis, mothers' and fathers' scores on the Parenting Stress Index subscales were correlated separately with both infants' sleep measures and the parents' own sleep measures. None of the mothers' scales scores were significantly correlated with either of the infants' sleep measures or the mothers' own sleep measures. Fathers' scale scores were also generally not correlated with infants' or fathers' own sleep measures, except for a significant association between the fathers' stress in the child domain and the infants' number of night-wakings ( $r = .35, p < .05$ ).

Significant associations were found between both parents' stress measures and their *perceptions* of their infants' sleep as a problem (Table 3); higher ratings of the infant's sleep as a problem were positively related to each parents' PSI child domain score and PSI parent domain score.

### 3.4. Maternity leave, sleep and parenting stress

A main aim of our study was to assess the moderating role of maternal leave status on the link between infant/parent sleep and parental stress measures. First, we examined whether infants' or parents' sleep differed between families with mothers on leave and mothers who had returned to work, and whether the gaps between fathers and mothers on these measures differed between groups. Infant and parents' sleep measures were compared between the two groups using a series of independent sample *t*-tests. No significant differences were found in any of the sleep measures between the two groups. Afterwards, a repeated measures ANOVA was conducted with parent as the within subject measure, and group (leave or return-to-work) as the between subject variable. For the number of wakings, there was a main effect for parent, with mothers wakings more times than fathers in both groups ( $F_{(1,48)} = 79.02, p < .0001$ ), and there was an interaction effect ( $F_{(1,48)} = 7.02, p < .05$ ) in which the difference between mothers and fathers was greater in the group of mothers on leave. For the duration of wakefulness, there was a main effect for parent ( $F_{(1,48)} = 65.51, p < .0001$ ) with mothers being awake at night for a longer duration than fathers in both groups, but there was no interaction effect with the group.

Concerning the parent's stress scales, there was no significant difference between mothers in the two groups on any of the measures. However, fathers' stress scales were rated significantly higher in the group of mothers on leave (PSI child domain: fathers in group of mothers on leave:  $M = 28.4$ , fathers in group of working mothers:  $M = 21.6, t_{(48)} = 4.02, p < .0001$ ; PSI parent domain: fathers in group of mothers on leave:  $M = 38.4$ , fathers in group of working mothers:  $M = 32.9, t_{(48)} = 2.38, p < .05$ ).

To test the moderating role of maternal leave status, we examined whether the associations between sleep and parenting stress would differ between families with mothers on leave and families with working mothers. We correlated infants' sleep measures and parenting stress measures as well as the parents' own sleep measures and parenting stress measures separately for the two groups, and compared the correlations using Fisher's transformation for significant differences between the groups. The group-separated correlations between infants' sleep measures and parents' stress measures are described in Table 4. For the group of mothers on leave, a higher score on the PSI parent domain was associated with longer duration of infant wakefulness during the night and with shorter infant day-time sleep (see Fig. 1). In addition, in the group of mothers on leave, fathers' higher PSI child domain score was associated with a higher number of infant night-waking and lower amount of infant day-time sleep. Significant differences between families of mothers on leave and working mothers were found for the correlation between mothers' PSI parent domain score and infants' amount of daily sleep ( $z = 2.73, p < .01$ ), so that there was no significant associations between the measures for the group of mothers who returned to work but a significant negative relationship was found for the group of mothers on leave. Concerning the parent sleep measures, significant associations were found for the group of mothers on leave, between the number of maternal night-wakings and their scores on the PSI parent domain. Higher stress scores were associated with more night-wakings (see Fig. 1). These associations were not significant for the group of mothers who had returned to work ( $z = -2.33, p < .05$  for the differences between the groups regarding the correlation between mothers' PSI parent domain score and mothers' number of night-wakings).

**Table 4**

Correlations between parenting stress measures and infants' and parents' sleep measures, separated according to mothers' leave status.

			PSI parent domain	PSI child domain
Infants' number of night waking	Mothers	Returned to work	−0.04	−0.15
		On leave	0.28	−0.06
	Fathers	Returned to work	−0.10	−0.04
		On leave	0.05	0.42*
Infants' duration of wakefulness during the night	Mothers	Returned to work	0.04	−0.21
		On leave	0.48*	0.14
	Fathers	Returned to work	−0.33	−0.08
		On leave	−0.02	0.19
Infants' amount of daily sleep	Mothers	Returned to work	0.32	0.04
		On leave	−0.46*	−0.28
	Fathers	Returned to work	−0.01	−0.09
		On leave	−0.35	−0.44*
Parents' number of night waking	Mothers	Returned to work	−0.19	−0.32
		On leave	0.47*	0.13
	Fathers	Returned to work	0.18	0.13
		On leave	−0.28	0.14
Parents' duration of wakefulness during the night	Mothers	Returned to work	0.04	−0.23
		On leave	0.38	−0.04
	Fathers	Returned to work	−0.22	−0.09
		On leave	0.01	0.30
Parents' amount of daily sleep	Mothers	Returned to work	0.12	−0.08
		On leave	−0.05	−0.09
	Fathers	Returned to work	−0.08	−0.01
		On leave	−0.15	0.24

\*  $p < .05$ .

#### 4. Discussion

The present study focused on assessing the links between infants' sleep, their parents' sleep and parenting stress. The novelty of this study was in the examination of both mothers' and fathers' sleep and in the investigation of the moderating role of maternal status of maternity leave on the links between infant/parent sleep and parenting stress.

As expected, both mothers' and fathers' sleep patterns were related to their infant sleep patterns. These associations were, however, stronger for mothers. Mothers in general awoke more times during the night than fathers and were awake for longer periods. These differences may reflect the existing differences between parents in parenting roles, with mothers generally being more dominant in overall and nighttime caregiving, at least at these young ages (Feldman, 2000; Han & Waldfogel, 2003; Tikotzky, Sadeh, & Glickman-Gavrieli, 2010).

We expected to find a relationship between infants/parents sleep patterns and parenting stress. However, no such relations were found for sleep patterns assessed by the sleep diaries for the whole sample. Nevertheless, we did find that parental *perceptions* regarding the quality of their infants' sleep were associated with parenting stress. Mothers and fathers who rated their infants' sleep as more problematic were more likely to report higher levels of parenting stress. These findings suggest that the way parents perceive and experience their child's sleep may contribute to their levels of parenting stress. However, because of the correlational nature of our study, it is impossible to infer about the direction of these links. Therefore, the opposite direction whereby parents who experience more stress in their parenting role are also more likely to perceive their infant sleep as stressful and problematic, is plausible as well. Our findings are comparable to the results of other studies, which demonstrated that parents who rated their child's sleep as less problematic suffered lower stress levels, reported higher perceived control over the child's sleep and behavior, and had less negative reactions to stress (Robinson & Richdale, 2004; Wiggs & Stores, 1999).

One of the main aims of the study was to examine the interplay between maternal leave status, sleep, and parenting stress. We hypothesized that being on maternity leave would be associated with more opportunities for mothers to nap, since leave from work allegedly enables making up for lost sleep during the day, a privilege not available for mothers who go back to work. Interestingly our findings failed to show any differences between working mothers and mothers on leave on any of their own sleep measures, including differences in the amount of day-time sleep. The gaps found between mothers and fathers on the number of night-wakings and duration of wakefulness during the night, were slightly smaller in the group of working mothers compared to mothers still on leave. These findings suggest that overall, mothers stay in the role of the dominant caregiver at night regardless of their leave status.

Whereas for the overall sample there were no significant associations between sleep patterns and parenting stress, we did find significant relations between these variables in the group of mothers on maternity leave, suggesting that maternal leave status serves as a moderating factor regarding these links. In the group of mothers on leave, higher parenting stress was associated with more maternal night-wakings, with longer duration of infant wakefulness during the night, and with

shorter infant day-time sleep. These findings suggest that having to care for the infant constantly under circumstances of fragmented sleep at night and limited possibilities to rest during the day (because of short infant naps), may be experienced as stressful for mothers who stay on leave. This may be different for mothers who go back to work, because their schedule and breaks are naturally not influenced by the napping time of their infant. It is important to note that there were no differences between mothers in the two groups in their average levels of parenting stress, and that the differences were in the associations between sleep and parenting stress. Therefore, the findings do not imply that mothers who stay on leave experience more parenting stress, but that their level of stress is related to their sleep disturbances and possibilities to rest from intensive caregiving, in comparison with mothers who go back to work.

Our findings also indicated that in the group of families with mothers on leave, fathers' higher parenting stress score (child domain) was associated with a higher number of infant night-waking and lower amount of day-time sleep. These findings are intriguing and may be related to the fact that the levels of parenting stress were higher for fathers in the group of mothers on leave. Why was paternal stress higher in the group of mothers on leave? One possible explanation is that having sole responsibility for prolonged breadwinning increased the fathers' overall level of stress including parenting stress. However, future research is in need to replicate these unexpected findings.

The current study has several limitations that should be taken into account. One limitation is related to the measurement of sleep, which relied exclusively on self and parents' report. Future studies should include objective measures of infant and parent sleep (such as actigraphy) in order to address response bias problems. An additional limitation of the study includes the specificity of our sample, which consisted of highly educated middle to high income families. These characteristics may limit the generalizability of the findings. Moreover, we did not assess and controlled for maternal depression which might influence maternal and infant sleep patterns as well as parenting stress. Despite the limitations, this study yielded interesting and novel findings especially regarding the role of maternity leave in the link between sleep and parenting stress during the postpartum period. Future studies are needed to replicate these findings and explore the mechanisms underlying these links. For example, it would be important to examine whether the links between mother/infant sleep disturbances and parenting stress characterize mothers who were not working before the infant was born. For mothers who did work before, it would be important to assess whether these links are influenced by factors such as their levels of satisfaction or frustration from being on extended leave, the importance they attribute to their career and whether their working place is secured.

## 5. Conclusions and clinical implications

Though parental sleep is considerably reduced during the first six postpartum months (Gay et al., 2004; Hunter et al., 2009; Swain et al., 1997), only a few studies have examined the links between parental sleep loss and parental functioning during this critical period of child development. Findings from one study demonstrated that poorer maternal sleep was associated with maternal perceptions of higher negative affectivity in their 6 months old infants (Tikotzky, Chambers, Gaylor, & Manber, 2010). Consistent with this line, our findings suggest that the combination of maternal fragmented sleep and the need to take constant care of the infant during the day (among mothers who stay on maternity leave) is associated with higher stress related to the parenting role. The main issue here is probably not just one of sleep or rest but the opportunity to rest from infant care "around the clock". Therefore, the findings highlight the importance of addressing infant and mother sleep disturbances not only in the framework of clinical sleep interventions, but in the broader context of the mothers' daily routine and the pressures associated with full-time child care.

In addition, our findings underscore the importance of addressing parents' perceptions of their infant sleep (Tikotzky & Sadeh, 2009), as it seems that parental sleep-related perceptions are an important factor that may contribute to the experience of parenting stress. Indeed, studies have found that education on child-development modified parents' perception of the sleep problem as being less troublesome through increased understanding of reasons for the behavior (Thome & Skuladottir, 2005b), and increased parental understanding of a child's behavior has been pointed out as a criterion of success with interventions for infant sleep problems (Daws, 1989; Skuladottir & Thome, 2003).

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