THE ROLE OF THE FATHER IN CHILD SLEEP DISTURBANCE: CHILD, PARENT, AND PARENT–CHILD RELATIONSHIP

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ABSTRACT: The majority of studies on child sleep problems focus primarily on mothers, neglecting paternal influences. Guided by the transactional framework, we explored how child temperament, paternal and maternal stress, and the parent–child interactions differ between families having children with sleep disturbances and a selected comparison group. The role of paternal involvement in child caregiving as a moderator of these differences was assessed. The sample consisted of 51 children (1–3 years old) and their mothers and fathers. Data were collected during home visits, when mothers and fathers completed questionnaires and were interviewed. In addition, mother–child and father–child interactions were videotaped. Results indicate that compared to the comparison group, fathers rated children with sleep disturbances as fussier, both their mothers and fathers experienced higher levels of stress, and reported using more bedtime interactions that interfere with child’s sleep–wake self-regulation. In addition, their fathers were less sensitive during father–child interaction and less involved in child caregiving. Finally, paternal involvement moderated the group differences seen in maternal stress, suggesting that high paternal involvement acted as a buffer to protect parents of children with sleep disturbances from experiencing parental stress. The important role of fathers in families having children with sleep disturbances is discussed.

RESUMEN: La mayoría de estudios sobre problemas de dormir del niño se enfocan sobre todo en las madres, sin prestar atención a influencias paternas. Guiados por el marco de trabajo transaccional, exploramos cómo el temperamento del niño, el estrés paterno y materno, y las interacciones entre progenitor y niño difieren entre familias que tienen niños con trastornos de dormir y un grupo de comparación selecto. Se evaluó el papel de la participación paterna en la prestación de cuidado al niño como moderador de estas diferencias. El grupo muestra estaba compuesto de 51 niños (1–3 años de edad), sus mamás y papás. La información se recogió durante visitas a casa, cuando las mamás y papás completaron cuestionarios y se les entrevistó. Adicionalmente, las interacciones entre madre e hijo y entre papá e hijo fueron grabadas en video. Los resultados indican que los papás, frente al grupo de comparación, evaluaron a sus niños con trastornos de dormir como más quisquillosos; tanto las mamás como papás experimentaron niveles más altos de estrés y reportaron haber hecho uso de más interacciones durante el tiempo de dormir que interfirieron con la autorregulación del niño. Además, sus papás fueron menos sensibles durante la interacción papá-niño y participaron menos en el cuidado del niño. Finalmente, la participación paterna temperó las diferencias de grupo observadas en el estrés materno, lo que sugiere que una alta participación paterna actuó como una defensa que protege a los progenitores de niños con trastornos de dormir para que no experimenten estrés de crianza. Se discute el importante papel de los papás en familias que tienen niños con trastornos de dormir.


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Father's Role in Child Sleep Disturbance

The present study focused on the role of fathers in child sleep disturbances, a topic that has been neglected in child sleep studies. Early childhood sleeping problems are perceived as a major family stressor (Sadeh, Tiktzky, & Scher, 2010; Wake et al., 2006), putting both child and parents at risk for more parent-child difficulties (Bordeleau, Bernier, & Carrier, 2012; Morrell & Steele, 2003). Guided by the transactional model (Sadeh & Anders, 1993; Sadeh et al., 2010; Sameroff, 2010), we examined how the child’s temperament, parental and maternal stress, and the parent-child relationship vary between families who have children with sleep disturbances and matched comparison families. As child sleep disturbance relates to not only the children but also their parents, it cannot be fully understood without including fathers. Using a clinical group of children who have sleep disturbances and a matched...
comparison group, the current study aimed to investigate similarities and differences in the children, the parents, and the dyadic characteristics of these two groups. These analyses may reveal important information on the variables that characterize families having children with sleeping disturbances.

TRANSACTIONAL FRAMEWORK FOR SLEEPING PROBLEMS IN CHILDHOOD

The development of sleep–wake regulation is widely known as an important milestone of early development (Anders, 1994). It evolves rapidly during the first year of life, and by 12 months of age, most infants no longer physiologically require nighttime feeding, and sleep periods at night consolidate (Henderson, France, Owens, & Blampied, 2010). Although all infants continue to awaken for short times during the night, the most children develop a capacity to self-sooth and transition back into sleep and do not require parental assistance. Failure to develop self-regulation of wake to sleep transitions may lead to sleep problems (Acebo et al., 2005; Goodlin-Jones, Burnham, Gaylor, & Anders, 2001).

Sleep problems, such as sleep-onset difficulties and night waking, are a major concern in early development. Estimates of the prevalence of sleep problems in young children range from 20 to 30% (Petit, Touchette, Tremblay, Boivin, & Montplaisir, 2007; Sadeh, Mindell, Luedtke, & Wiegand, 2009; Scher et al., 1995; Wake et al., 2006). Previous studies have found that children’s sleep problems may negatively affect children’s health and development, not only directly by damaging the quality of sleep (Sadeh, Lavie, Scher, Tirosh, & Epstein, 1991) and related cognitive (Randazzo, Muehlbach, Schweitzer, & Walsh, 1998) and behavioral processes (Lam, Hiscock, & Wake, 2003) but also indirectly through the negative influence on the parents’ sleep and, in turn, on the parent–child relationship (Bordeleau et al., 2012; Morrell & Steele, 2003). Furthermore, sleep problems may pose a serious challenge to parental well-being and appear to be a family stressor (Lam et al., 2003; Sadeh & Anders, 1993; Zuckerman, Stevenson, & Bailey, 1987). In fact, sleep–wake regulation operates within an ecological framework that combines the physical space and the psychosocial environment of the child (Sadeh & Anders, 1993; Sadeh et al., 2010; Scher, 2001a). Therefore, child sleep problems cannot be understood in isolation; rather, it is important to explore sleep within the family context (Sadeh & Anders, 1993; Sadeh et al., 2010). The majority of studies on the family context of child sleeping problems have focused primarily on mothers, neglecting fathers and their role (cf. Bordeleau et al., 2012; Sadeh et al., 2010; Tikotzky, Sadeh, & Glickman-Gavrieli, 2011). This lack of data is especially salient because most of the interactions fathers have with their children occur in the evening and at night, after their return home from work (Keener, Zeanah, & Anders, 1988), suggesting that sleep–wake regulation at night also may be related to paternal characteristics and to the father–child relationship.

In the current study, the transactional model of infant sleep–wake regulation (Sadeh & Anders, 1993; Sadeh et al., 2010) was used as a framework for investigation. According to this model and its development (see Sadeh et al., 2010), variables in the child, the parent, and the parent–child relationships’ contexts are related to infants’ sleep difficulties. In their development of this model, Sadeh et al. (2010) highlighted the importance of parental behaviors, cognitions, and emotions in infant sleep, emphasizing the need to observe parental emotional availability and the quality of the parent–child relationship when studying infant sleep. Accordingly, the current study explores child sleep disturbance using not only the child’s own characteristics but also variables from the parental and the parent–child interactive contexts.

At the child contextual level, child temperament has been the most frequently studied factor associated with sleep problems. Most studies conducted to date have found a link between sleep problems and temperament in infants whose mothers rated them as more temperamentally difficult, and who have poorer rhythmicity and lower sensory thresholds (Hayes, Parker, Sallinen, & Davare, 2001; Schaefer, 1990; Scher, 2001b). A clinical comparative study also has found that mothers rated toddlers who wake at night as having lower sensory thresholds and being less adaptive, as compared to a control group (Sadeh, Lavie, & Scher, 1994). Most of these findings were based solely on mothers’ reports of children’s temperament, with relatively few studies including fathers’ reports. The study conducted by Keener et al. (1988) was one of the few that included paternal reports. They found that fathers’ ratings of children’s temperament correlated with more infant sleep variables than did the mothers’ ratings. This finding highlights the need to include paternal reports of children’s temperament when studying children’s sleep problems (Keener et al., 1988).

At the parental contextual level, parental stress was repeatedly found to be a main variable related to parental functioning (Deater-Deckard, 1996), especially in the context of an unsettled child and the extreme fatigue that parents may experience (Wake et al., 2006). Sadeh et al. (1994) found that mothers with sleep-disturbed children reported higher levels of parental stress than did a comparison group. Furthermore, a prospective cohort study found that sleep problems during a child’s first and second years had a lasting impact on mother’s parental stress (Wake et al., 2006). Not much is known regarding the link between paternal stress and children’s sleep difficulties. Recently, it was reported that fathers and mothers who rated their 4- to 5-month-old infants’ sleep as more problematic were more likely to report higher levels of parenting stress (Sinai & Tikotzky, 2012).

Third, at the parent–child contextual level, extensive literature has suggested that child sleep problems are related to parental bedtime interaction (Adair, Bauchner, Philipp, Levenson, & Zuckerman, 1991; Anders, 1994; Burnham, Goodlin-Jones, Gaylor, & Anders, 2002; Sadeh et al., 2009). For example, Morrell and Cortina-Borja (2002) revealed that greater use of “active physical comforting” strategies (e.g., cuddling in arm or walks in the house) and lesser use of strategies that “encourage autonomy” (e.g., leaving to cry or listening to music) were associated with child sleeping problems. It seems that parental active bedtime interaction has a negative effect on the development of self-regulation of
sleep–wake cycles (Morrell & Steele, 2003). Furthermore, research has suggested that parent–child interaction not only at bedtime also is related to children’s sleep (e.g., Wiefel et al., 2005). When comparing groups of severely sleep-disturbed children (12–36 months old) with matched controls, Minde, Faucon, and Falkner (1994) found that mothers of children with sleep disturbances were less reciprocal during feeding than were mothers in a control group. However, research focusing on father–child interaction and children’s sleep problems has been very sparse. The limited research available has found that observed mother–child and father–child free-play interactions with their children (6 weeks–3 years 10 months) having sleep problems were less sensitive than were those involving children without sleep problems (Wiefel et al., 2005). Therefore, child sleep problems may be related to parent–child interaction (Bordeleau et al., 2012). Routine daily interactions such as feeding provide an excellent context for observing interpersonal relationships and emotional communication within the dyad.

Parental involvement in childrearing activities as well as the time spent with the child are important aspects of the parent–child relationship, especially when investigating fathers (Lamb & Tamis-Lemonda, 2004). Although researchers investigating fathering and paternal influence on child development have long understood the importance of assessing paternal involvement (Aviram, Atzaba-Poria, Pike, Meiri, & Yerushalmi, 2014; Sarkadi, Kristiansson, Oberklaid, & Bremberg, 2008), we found only one study that has examined the links between paternal involvement in child caregiving and children’s sleep. It was found that higher levels of paternal involvement in infant care, when infants were 1-month-old, predicted less infant night-waking at 6 months (Tikotzky et al., 2011). Moreover, research has suggested that paternal involvement may have a positive effect not only on child outcomes but also on parental well-being and family atmosphere. For example, paternal involvement in household and child-caregiving responsibilities was found to be one of the central buffers against maternal distress during the transition to parenthood (Feldman, 2000). To our knowledge, no study has examined the links between paternal involvement and family characteristics by comparing fathers of children with sleep disturbances and matched fathers from a comparison group.

CURRENT STUDY

Based on the transactional model of sleep disturbances (Sadeh & Anders, 1993; Sadeh et al., 2010), the current study proposes a conceptual model (see Figure 1) for examining differences in three contextual levels: child, parent, and parent–child interactive contexts during bedtime, feeding, and daytime caring interaction, in families with children who have sleep disturbances and a selected comparison group. Although some of these differences have been examined previously, those studies mostly have examined mothers, and there has been no comprehensive study using multiple variables such as paternal own perceptions. Furthermore, most studies have investigated children with clinical sleep disturbances without having a comparison group.

Two hypotheses were postulated. First, we hypothesized that in families with children who have sleep disturbances, children would have fussier temperament; mothers and fathers would express higher levels of parental stress and report having more parental bedtime interactions characterized by interference with the child’s self-regulation of sleep–wake cycles; mother–child and father–child interactions during feeding would be less positive; and fathers would be less involved in child caregiving than those in the comparison group.

Second, we hypothesized that paternal involvement in child caregiving would act as a buffer, moderating the group differences for all study variables. Specifically, variables in the three contextual levels will be more negative in families having children with sleep disturbances only when coupled with low paternal involvement in child caregiving.

METHOD

Sample

Fifty-one children 1- to 3-years-old (53% boys; M = 1.93, SD = .76) and their mothers (M = 31.08, SD = 4.62) and fathers (M = 33.61, SD = 5.31) participated in the study. All participating children were singletons, from two-parent, Hebrew-speaking families living in the Southern region of Israel. The sample included a majority of urban and suburban families (92%) and a minority of families living in rural (4%) and collective communities (i.e., kibbutz; 4%). Children with developmental delays and premature babies were excluded from the sample. Two groups were studied: The sleep-disturbance group included 26 children with sleep disturbance (42% girls; M = 1.82, SD = .76), and a selected comparison group included 25 children without sleep problems (52% girls; M = 2.16, SD = .73). Recruitment was conducted using a screening questionnaire distributed through the sleep laboratory at the local hospital, well-baby clinics, and mainstream daycare centers. The screening questionnaire was based on Richman’s (1981) criteria of severe sleep problems, defined as a child who awakens three or more times per night, 5 to 7 nights per week. The inclusion criteria included the absence of known organic causes for the sleep disturbances. Children were selected for the comparison group if their parents reported that they had no night-waking disturbances during the previous 2 months. All children in the comparison group were matched to children in the sleep-disturbance group for age, gender, birth order, and maternal education. As can be seen in Table 1, no significant differences were found between the groups in terms of the matching variables. Furthermore, no group differences were found in the demographic data, except for maternal and paternal age, which were found to be significantly higher in the sleep-disturbance group than those in the comparison group (see Table 1).

Procedure

The study was approved by the Helsinki Ethics Committee of Soroka Medical Center. All eligible families were contacted, and
Figure 1. A conceptual transactional model of child sleep disturbance: Child, mother, father and mother–child, father–child relationships (Adapted from Sadeh et al., 2010).

TABLE 1. Demographics by Groups

<table>
<thead>
<tr>
<th></th>
<th>Sleep-Disturbed Group (n = 26)</th>
<th>Comparison Group (n = 25)</th>
<th>Group Differences</th>
</tr>
</thead>
<tbody>
<tr>
<td>Child’s Age (years)</td>
<td>$M$ (SD)</td>
<td>1.82 (0.76)</td>
<td>2.16 (0.73)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$t(49) = 1.63, n.s.$</td>
<td></td>
</tr>
<tr>
<td>Child’s Week of Birth</td>
<td>$M$ (SD)</td>
<td>41.64 (9.77)</td>
<td>39.74 (1.07)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$t(47) = -0.95, n.s.$</td>
<td></td>
</tr>
<tr>
<td>Child’s Order in Family</td>
<td>1st</td>
<td>35%</td>
<td>48%</td>
</tr>
<tr>
<td></td>
<td>2nd</td>
<td>35%</td>
<td>36%</td>
</tr>
<tr>
<td></td>
<td>3rd</td>
<td>19%</td>
<td>12%</td>
</tr>
<tr>
<td></td>
<td>4th</td>
<td>11%</td>
<td>4%</td>
</tr>
<tr>
<td>Child’s Sex</td>
<td>Male</td>
<td>58%</td>
<td>48%</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>42%</td>
<td>52%</td>
</tr>
<tr>
<td>Mother’s Age</td>
<td>$M$ (SD)</td>
<td>32.34 (5.48)</td>
<td>29.82 (3.19)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$t(48) = -1.99, p = .05$</td>
<td></td>
</tr>
<tr>
<td>Mother’s Education</td>
<td>0–8 Years</td>
<td>4%</td>
<td>0%</td>
</tr>
<tr>
<td></td>
<td>8–12 Years</td>
<td>36%</td>
<td>48%</td>
</tr>
<tr>
<td></td>
<td>Nonacademic Above High School</td>
<td>20%</td>
<td>8%</td>
</tr>
<tr>
<td></td>
<td>Academic</td>
<td>40%</td>
<td>44%</td>
</tr>
<tr>
<td>Mother’s Place of Birth</td>
<td>Israel</td>
<td>92%</td>
<td>92%</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>8%</td>
<td>8%</td>
</tr>
<tr>
<td>Father’s Age</td>
<td>$M$ (SD)</td>
<td>35.55 (6.20)</td>
<td>31.58 (3.20)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$t(49) = -2.86, p &lt; .01$</td>
<td></td>
</tr>
<tr>
<td>Father’s Education</td>
<td>0–8 years</td>
<td>4%</td>
<td>0%</td>
</tr>
<tr>
<td></td>
<td>8–12 years</td>
<td>30%</td>
<td>50%</td>
</tr>
<tr>
<td></td>
<td>Nonacademic Above High School</td>
<td>9%</td>
<td>17%</td>
</tr>
<tr>
<td></td>
<td>Academic</td>
<td>57%</td>
<td>33%</td>
</tr>
<tr>
<td>Father’s Place of Birth</td>
<td>Israel</td>
<td>81%</td>
<td>92%</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>19%</td>
<td>8%</td>
</tr>
</tbody>
</table>

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families who agreed to participate in the study were visited at home by two researchers. Fathers and mothers completed questionnaire booklets assessing their child’s temperament and parenting stress. They also were interviewed about the extent of their involvement in child-caregiving tasks. Furthermore, the mothers completed a questionnaire describing parent–child bedtime interaction. Finally, mother–child and father–child feeding interactions were filmed, in which the parent fed the child for the amount of time required (12 min, on average). Due to technical problems, data on the parent–child interactions could not be coded for 6 mother–child dyads (3 mothers from the sleep-disturbance group) and 7 father–child dyads (2 fathers from the sleep-disturbance group). These dyads did not differ from the study dyads in any of the matching or demographic data.

Measures

Child temperament. Mothers and fathers completed the Fussy-Difficult scale of the Infant Characteristics Questionnaire (Bates, Freedlund, & Louwman, 1979), which is a parental-report questionnaire about the frequency of various child behaviors on a Likert-type scale of 1 (very little) to 7 (a lot). A higher score reflects higher levels of fussy-difficult child’s temperament. The reliability of the questionnaire, which contains 14 items (e.g., “How much does your child cry and fuss in general?”), was found to be high for both mothers ($\alpha = .79$) and fathers ($\alpha = .77$).

Parental stress. Mothers and fathers completed the short version of the Parenting Stress Index (PSI; Abidin, 1995). The PSI is a self-report questionnaire used to measure facets of stress in the parent–child system and to identify dysfunctional parenting (Abidin, 1995). On a scale from 1 (strongly disagree) to 5 (strongly agree), a higher score reflects a higher level of parenting stress. We used two scales: parental stress due to Acceptance of the Child (six items, e.g., “My child does a few things which bother me a great deal,” $\alpha = .56$ and $\alpha = .51$, for mothers and fathers, respectively); and parental stress due to Restrictions imposed by the Parental Role (seven items, e.g., “I feel trapped by my responsibilities as a parent,” $\alpha = .84$ and $\alpha = .61$, for mothers and fathers, respectively).

Parental bedtime interaction. Parental bedtime interactions during the settling process and throughout the night were rated by mothers using a questionnaire adjusted from the Sleep Habits Questionnaire (Seifer, Sameroff, Dickstein, Hayden, & Schiller, 1996), a measure of child and parental behaviors relating to child sleep. Scoring in the current research focused on comforting strategies with different levels of parental involvement, at bedtime and during night awakening. The 17 items were scored on a 5-point weekly scale, ranging from “never” (0 nights), “rarely” (1 night), “sometimes” (2–3 nights), “often” (4–5 nights), or “almost always” (6–7 nights). A higher score reflected increased use of strategies that interfere with the development of child self-soothing in sleep–wake cycles (e.g., cosleeping, breastfeeding), and reduced use of strategies that encourage it (e.g., child falls asleep in the crib by him/herself, self-soothing during the night). Any sleep behavior that was atypical or related to a period of illness was not scored. Reliability of this questionnaire was found to be high ($\alpha = .76$).

Parent–child feeding interaction. Parent–child feeding interactions were rated using the Emotional Availability Scales (Birznieks, Robinson, & Emde, 1998) that measure the quality of the parent–child dyadic relationship. Each scale evaluates their relationship as a reciprocal process that cannot be determined by the behavior of either one of the partners (Birznieks, 2000). For the current study, we used the Parental Sensitivity scale, which rates parents on a scale of 1 (highly insensitive) to 9 (highly sensitive). The scale assesses a parent’s responsiveness to the child in terms of its appropriateness, awareness of time, creativity, the quality and appropriateness of parental affect, and parental negotiation of conflictual situations. Three trained research assistants, who did not participate in the data collection and who were blinded regarding information about the families, coded the videotapes. For coding purposes, 20% of the videotapes were randomly selected and rated by all three trained coders. Interclass coefficients were calculated for the Parental Sensitivity scale, revealing excellent interrater reliability ($r = .90$).

Parental involvement. Fathers and mothers were interviewed using a subscale of the “Who Does What?” Scale (Cowan & Cowan, 1988, 1990) that assesses parental involvement in child-caregiving tasks such as feeding, dressing, and arranging for their care. Parents rated 24 items (e.g., “deciding what our child should or should not eat”) from 1 to 9, for “how it is now,” with 1 indicating that the mother does it all, 9 indicating that the father does it all, and 5 indicating that the parents share the task about equally. The reliability of this questionnaire was found to be high for mothers ($\alpha = .88$) and for fathers ($\alpha = .87$).

Statistical Analysis

The first hypothesis assuming group differences in all study variables was tested using t-test analyses. Next, to test the second hypothesis proposing that the differences described earlier, between the sleep disturbances and the comparison groups, differed for families having high versus low paternal involvement, hierarchical regression models were conducted. First, the independent variable (child’s group belonging) and the moderator variable (paternal involvement) were centered (i.e., deviation scores were formed, as outlined in Jaccard, Turkewitz, & Wan, 1990), and an interaction variable consisting of the combination of the centered scores was computed. Second, the regression model was tested, where the child’s group belonging and paternal involvement were entered in the first step, and the interaction variable, Child’s Group Belonging × Paternal Involvement, included in the second step. Moderation was evident when the interaction variable significantly predicted variance in the outcome variables. These analyses were conducted separately for mothers and fathers. Next, to interpret the nature of the significant interactions, we divided the sample into “low
**TABLE 2.** Correlations Between Maternal and Paternal Variables in the Entire Sample

<table>
<thead>
<tr>
<th>Variables</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Fussy Temperament</td>
<td>.37*</td>
<td>.05</td>
<td>.09</td>
<td>.30</td>
<td>.32</td>
<td>.21</td>
</tr>
<tr>
<td>2. Parental Stress (child acceptance)</td>
<td>.32*</td>
<td>.30</td>
<td>.16</td>
<td>.16</td>
<td>.12</td>
<td>.11</td>
</tr>
<tr>
<td>3. Parental Stress (role restriction)</td>
<td>.36*</td>
<td>.29</td>
<td>.16</td>
<td>.16</td>
<td>.12</td>
<td>.12</td>
</tr>
<tr>
<td>4. Parental Bedtime Interaction</td>
<td>.33*</td>
<td>.33</td>
<td>.12</td>
<td>.27</td>
<td>.21</td>
<td>.12</td>
</tr>
<tr>
<td>5. Parental Sensitivity</td>
<td>.33*</td>
<td>.33</td>
<td>.12</td>
<td>.27</td>
<td>.12</td>
<td>.12</td>
</tr>
<tr>
<td>6. Paternal Involvement</td>
<td>.35*</td>
<td>.29</td>
<td>.16</td>
<td>.16</td>
<td>.12</td>
<td>.12</td>
</tr>
</tbody>
</table>

*Note.* Values above the diagonal represent correlations among Paternal variables whereas those below the diagonal represent correlations among maternal variables. Values on the diagonal (in bold) represent correlations between paternal and maternal variables. Parental bedtime interaction was rated by mothers only.

*p < .05. **p < .01.

**RESULTS**

**Preliminary Analyses**

Before testing the research hypotheses, Pearson correlations between maternal and paternal reports were calculated for all study variables. As can be seen in Table 2, maternal report of child temperament was found to be moderately correlated to paternal report (r = .37). Maternal and paternal stress due to restrictions imposed by the parental role were moderately correlated (r = .32), and maternal and paternal sensitivity during feeding were moderately correlated (r = .41).

In addition, intercorrelations among study variables were examined separately for mothers and for fathers (see Table 2). For mothers, maternal stress regarding role restriction was positively correlated to maternal stress regarding child acceptance (r = .33) and to children’s fussy temperament (r = .33), and negatively associated with paternal involvement in child caregiving (r = −.42). For fathers, children’s fussy temperament was positively correlated to paternal stress regarding child acceptance (r = .29), and negatively correlated to paternal sensitivity during feeding (r = −.31) and to paternal involvement in child caregiving (r = −.36).

**Group Differences**

To test the first hypothesis regarding mean-group differences, independent samples t-tests were conducted. As can be seen in Table 3, group differences were uncovered at all three contextual levels. Specifically, children with sleep disturbances were rated as fussier (nearing significance) by their fathers than were children in the comparison group. In addition, both mothers and fathers in the sleep-disturbance group reported having more stress than did their counterparts in the comparison group. Specifically, maternal stress regarding role restriction and paternal stress regarding difficulties accepting the child were found to be higher in the sleep-disturbance group than they were in the comparison group. Moreover, in the parent–child interactive context, parents in the sleep-disturbance group practiced more bedtime interactions that interfere with sleep–wake regulation than did parents at the comparison group, and fathers showed less sensitivity during feeding interaction than did fathers in the comparison group. Finally, both mothers and fathers in the sleep-disturbance group reported less paternal involvement in child caregiving than did those in the comparison group.

**Moderation by Paternal Involvement**

Hierarchical regression analyses were conducted to test the moderation hypothesis, proposing that the differences seen between the groups in study variables varied according to paternal level of involvement in caregiving. As can be seen in Table 4, paternal involvement, as perceived by mothers, acted as a moderator in the link between child’s sleep disturbances and maternal stress (regarding role restriction). In addition, the interaction term of child’s sleep disturbances and paternal involvement in child caregiving, as perceived by fathers, neared significance in predicting paternal stress (regarding child acceptance; Table 5). In contrast, paternal involvement was not a significant moderator in the link between child’s sleep disturbances and parental bedtime interaction or maternal or paternal sensitivity during feeding.

Next, to further examine the nature of these interactions, we divided the sample into “low paternal involvement” and “high paternal involvement” groups using a median split. We then examined the mean stress scores by paternal involvement and group belonging. The pattern was clear: Maternal and paternal stress were more pronounced for parents having children with sleep problems only when coupled with low levels of paternal involvement. When fathers were highly involved, maternal and paternal levels of stress were not higher than the stress reported by mothers and fathers in the comparison group (see Figures 2 and 3).

**DISCUSSION**

Research linking paternal characteristics to children’s sleep is still in its infancy, leaving a substantial portion of most children’s caregiving environment unexamined (Erath & Tu, 2011; Sadeh et al., 2010). In the current study, we aimed to contribute to this growing field of knowledge by studying a clinical and a selected comparison sample, including fathers, and examining how child’s temperament, parents’ stress, and parent–child relationship vary in families having children with sleep disturbances and in families from a comparison group, as well as examining how paternal involvement can compensate for risk factors seen in the sleep-disturbance group. Supporting the transactional model of child’s sleep (Sadeh & Anders, 1993; Sadeh et al., 2010), we showed that the child, the parents, and the parent–child interaction were all related to sleep.
TABLE 3. Means and SDs, t Values, and Effect Sizes of Study Variables, by Group

<table>
<thead>
<tr>
<th>Sleep-Disturbance Group</th>
<th>Comparison Group</th>
<th>t</th>
<th>Effect Size</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M (SD)</td>
<td>M (SD)</td>
<td></td>
</tr>
<tr>
<td>Fussy Temperament–Maternal Report</td>
<td>−4.74 (.91)</td>
<td>−4.98 (.64)</td>
<td>t(49) = −1.09, n.s.</td>
</tr>
<tr>
<td>Fussy Temperament–Paternal Report</td>
<td>−4.55 (.73)</td>
<td>−4.83 (.67)</td>
<td>t(48) = −1.40, p &lt; .1</td>
</tr>
<tr>
<td>Maternal Stress (child acceptance)</td>
<td>1.64 (.52)</td>
<td>1.44 (.44)</td>
<td>t(48) = −1.39, p &lt; .1</td>
</tr>
<tr>
<td>Maternal Stress (role restriction)</td>
<td>2.97 (.94)</td>
<td>2.53 (.84)</td>
<td>t(49) = −1.74, p &lt; .05</td>
</tr>
<tr>
<td>Paternal Stress (child acceptance)</td>
<td>1.84 (.51)</td>
<td>1.56 (.42)</td>
<td>t(48) = −2.16, p &lt; .05</td>
</tr>
<tr>
<td>Paternal Stress (role restriction)</td>
<td>2.46 (.67)</td>
<td>2.54 (.54)</td>
<td>t(48) = .46, n.s.</td>
</tr>
<tr>
<td>Parental Bedtime Interaction</td>
<td>1.64 (.85)</td>
<td>.76 (.67)</td>
<td>t(49) = −4.05, p &lt; .001</td>
</tr>
<tr>
<td>Maternal Sensitivity During Feeding Interaction</td>
<td>7.07 (1.26)</td>
<td>7.05 (1.62)</td>
<td>t(43) = .48, n.s.</td>
</tr>
<tr>
<td>Paternal Sensitivity During Feeding Interaction</td>
<td>6.28 (1.72)</td>
<td>7.13 (1.30)</td>
<td>t(42) = −1.81, p &lt; .05</td>
</tr>
<tr>
<td>Paternal Involvement in Child Caregiving–Maternal Report</td>
<td>3.11 (1.16)</td>
<td>3.92 (.81)</td>
<td>t(49) = 2.86, p &lt; .01</td>
</tr>
<tr>
<td>Paternal Involvement in Child Caregiving–Paternal Report</td>
<td>3.48 (1.05)</td>
<td>4.07 (.84)</td>
<td>t(49) = 2.16, p &lt; .05</td>
</tr>
</tbody>
</table>

Note. One-tailed significance levels.

TABLE 4. Hierarchical Regression Results for Testing Paternal Involvement in Child Caregiving as Moderator of the Link Between Child’s Sleep Disturbances and Maternal-Reported Variables

<table>
<thead>
<tr>
<th>Step</th>
<th>Variable</th>
<th>β</th>
<th>R²</th>
<th>F</th>
<th>β</th>
<th>R²</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Group</td>
<td>.77</td>
<td>.22</td>
<td>F(2, 48) = 6.80**</td>
<td>.53***</td>
<td>.26</td>
<td>F(2, 48) = 8.3***</td>
</tr>
<tr>
<td></td>
<td>Paternal Involvement</td>
<td>−.44**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Group</td>
<td>.11</td>
<td>.26</td>
<td>F(1, 47) = 2.55†</td>
<td>.52***</td>
<td>.26</td>
<td>F(1, 47) = .24, n.s.</td>
</tr>
<tr>
<td></td>
<td>Paternal Involvement</td>
<td>−.36**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Group × Paternal Involvement</td>
<td>−.21†</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. Analysis remains similar when controlling for parental age.
†p < .10. *p < .05. **p < .01. ***p < .001 (one-tailed significance levels).

TABLE 5. Hierarchical Regression Results for Testing Paternal Involvement in Child Caregiving as Moderator of the Link Between Child’s Sleep Disturbances and Paternal Related Variables

<table>
<thead>
<tr>
<th>Step</th>
<th>Variable</th>
<th>β</th>
<th>R²</th>
<th>F</th>
<th>β</th>
<th>R²</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Group</td>
<td>.275*</td>
<td>.09</td>
<td>F(2, 47) = 2.43*</td>
<td>−.19</td>
<td>.13</td>
<td>F(2, 41) = 2.93*</td>
</tr>
<tr>
<td></td>
<td>Paternal Involvement</td>
<td>−.08</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Group</td>
<td>.29*</td>
<td>.14</td>
<td>F(1, 46) = 2.23†</td>
<td>−.21†</td>
<td>.14</td>
<td>F(1, 40) = .77, n.s.</td>
</tr>
<tr>
<td></td>
<td>Paternal Involvement</td>
<td>−.04</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Group × Paternal Involvement</td>
<td>−.21†</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. Analysis remains similar when controlling for parental age.
†p < .10. *p < .05. **p < .01. ***p < .001 (one-tailed significance levels).

disturbances, as proposed in our conceptual model (see Figure 1). Furthermore, the role of fathers in families with children having sleep disturbances was investigated and is discussed next.

Differences Between Families With and Without Children With Sleep Disturbances

The first hypothesis, regarding group differences at the different contextual levels, was partially confirmed. At the child level, differences nearing significance were found in child temperament. Specifically, using paternal, but not maternal, reports of child’s temperament, we found that children with sleep disturbances were rated as fussier than were those in the comparison group. These results support previous findings indicating a link between night signaling and difficult temperament when fathers reported, but a lesser link when reported by mothers (Keener et al., 1988). One possible explanation for this difference is that daily father–child interactions occur mostly in the evening and at night, so paternal ratings of child temperament might be based on a time that is generally considered more challenging, especially for children with sleep disturbances (Keener et al., 1988). In many families, however, mothers spend more time with their children...
during the day, resulting in more diverse observations of the child’s behaviors. The more negative temperament reported by fathers in the sleep-disturbance group, even if biased due to time of their interactions with their children, may itself be a risk factor, putting the father–child interaction at risk for more relationship difficulties. Direct observation of child’s temperament is required to better understand whether children with disturbed sleep have a more difficult temperament than do children with no sleep difficulties.

The examination of the parental context revealed that fathers as well as mothers in the sleep-disturbance group reported having elevated levels of stress related to the parenting role than did parents in the comparison group. These findings extend previous research indicating that child sleep problems are not only related to maternal stress (Sadeh et al., 1994) but also to paternal stress. It seems that both fathers and mothers in the sleep-disturbance group experienced more stress as compared to parents of children who sleep throughout the night. Parents reported elevated levels of stress
related to their parental role as well as to their child acceptance. This may reflect their feelings of increased burdens and demands put upon them as parents by their child’s challenging behaviors. Two main explanations may be suggested. First, it is possible that the links between parental stress and child’s sleep disturbance are mediated by parents’ own sleep problems. Specifically, children’s difficulty sleeping may affect the parents’ own sleep at night (Karraker, 2008), creating chronic sleep disturbances, extreme fatigue, and physical and mental exhaustion that might in turn increase parental stress. This idea is supported by previous findings indicating that sleep deprivation causes a negative influence on mood and cognition (e.g., Pilcher & Huffcutt, 1996). Alternatively, it is possible that parental characteristics and psychosocial problems, such as paternal stress, might influence the child’s behavior and his or her sleep patterns (Thunstrom, 1999). For instance, it might be that parental stress affects parents’ abilities to respond consistently and appropriately to a child waking at night (Karraker, 2008), which might in turn exacerbate the child’s sleep disturbances. These results join our previous findings indicating that fathers are part of the family and do influence the family system and are influenced by it (Atzaba-Poria et al., 2010; Gueron-Sela, Atzaba-Poria, Barak-Levy, Meiri, & Yerushalmi, 2011). In the current study, we showed that fathers experienced stress no less than did mothers when their child had sleep disturbances; therefore, this subject merits more investigation in studies examining child sleep disturbances. Note that we found that mothers and fathers in the sleep-disturbance group were older than were parents in the comparison group. Our results remained similar when controlling for parents’ age. However, this finding supports previous research indicating that more infants’ sleep disturbances were reported by older mothers (Pollock, 1994; Thomas & Foreman, 2005). One possible explanation is that it is not parental age, per se, that is related to children’s sleep. Parental age is related to the number of children in the family, and this in turn is related to child’s sleep. Further examination needs to be conducted to uncover the links between parental age, number of children in the family, and child’s sleep disturbances.

At the contextual level of parent–child interaction, parental bedtime interactions, including greater use of active physical comforting strategies, were found in the sleep-disturbance group than for those found in the comparison group. This finding replicates previous findings suggesting that sleep disturbances are related to parental bedtime behavior (Burnham et al., 2002; Morrell & Cortina-Borja, 2002; Morrell & Steele, 2003; Sadeh et al., 2009) and provides further support for the transactional model (Sameroff & Fiese, 2000) in sleep disturbances. One possible explanation is that parental bedtime interactions such as cosleeping, feeding, and/or holding the child might impair the development of a child’s self-regulation of sleep–wake cycles and determine child sleep (Morrell & Steele, 2003). Alternatively, it may be that children who have sleep difficulties require higher levels of parental involvement at bedtime and during the course of the night (Sadeh et al., 2010). However, no causal link can be determined from the current correlational data.

Furthermore, examination of parental emotional availability beyond bedtime revealed that fathers in the sleep-disturbance group were less sensitive to their children during feeding interaction than were fathers in the comparison group. These results may suggest that less positive father–child interaction was not limited to the sleeping arena. This supports the notion that the quality of parent–child relations, beyond bedtime interactions, can have a significant regulating function on child sleep (Anders, 1994; Erath & Tu, 2011) and that parent–child transactions around bedtime and during the night develop within a wider interpersonal context, including daytime caring tasks (Scher, 2001a) such as feeding. Furthermore, this finding could be an indication of the stressed relationships that fathers may have with children who have sleep disturbances. These interactions are expanded to other situations, thereby reflecting the idea that sleep disturbances may put the father–child relationship at risk. Accordingly, the focus for understanding child sleep difficulties should center on the stressed relationship that might have begun around sleep, but could well spill over to other situations. Note that although a direction of the effects is being proposed, this is only a suggestion because the data are cross-sectional. Alternate directions of influence are probable. Overall, it seems that fathers and their children can get caught in destructive cycles of interaction (Patterson, Reid, & Dishion, 1992). As for mothers, no group differences were revealed for maternal sensitivity during feeding. One possible explanation is that mothers who are more sensitive about meeting the child’s needs during feeding may be more tolerant of night waking (Tikotzky et al., 2011). On the other hand, the father–child relationship may be less programmed on the evolutionary level (Parke & Beitel, 1988) and might therefore change in stressful conditions like child sleep disturbances. This might be influenced by fathers’ tendency to interpret sleep disturbances as a child being excessively demanding (Sadeh, Flint-Ofir, Tirosh, & Tikotzky, 2007).

Taken together, we found that parents in the comparison group responded less frequently to their children’s signals of distress at night, but were more consistent and attuned to their children’s needs during a daytime interaction. These findings support extensive research indicating that a parental lower level of involvement at night is a positive behavior that enhances children’s ability to develop independent sleeping (e.g., Higley & Dozier, 2009). Thus, parents who can see their children’s needs during the day and behave appropriately (i.e., high in sensitivity) also see their children’s needs at nighttime interactions (i.e., to develop independent sleeping) and thus consciously keep themselves away at night.

Finally, overall, fathers of children with sleep disturbances were less involved in child caregiving than were fathers in the comparison group. However, note that an unbalanced division of child-caregiving tasks was not limited to the sleep-disturbance group. Supporting previous research on parental role division, we found that fathers in both groups were less involved than were the mothers (Pleck & Masciadrelli, 2004). Still, these differences were larger in the sleep-disturbance group. These findings extend previous research indicating that mothers are more involved than are fathers when raising children with physical disabilities (Kazak,
1986) and when children have a feeding disorder (Atzaba-Poria et al., 2010), indicating that this pattern of results seems to apply also in families where a child has a sleep disturbance. Furthermore, these results expand recent findings demonstrating that higher levels of paternal involvement in the care of 6-month-old infants were related to fewer infant night-wakings (Tikotzky, Sadeh, & Glickman-Gavriel, 2011, and that these links also are evident later during toddlerhood (1- to 3-year-olds). This age period is of particular interest because some of the most important developments in child sleep (Acebo et al., 2005; Sadeh et al., 2009) and increases in paternal engagement in caregiving (National Institute of Child Health & Human Development, Early Child Care Research Network, 2000) occur during this time. There are several possible explanations for the link between lower levels of paternal involvement and child’s sleep disturbance. On one hand, it may be that paternal involvement influences child’s sleep through fathers’ tendency to use a higher degree of a limit-setting approach that encourages children to self-regulate during the night (Sadeh et al., 2007). Thus, higher paternal involvement can help fathers set limits around bedtime and thereby reduce night-waking. On the other hand, it may be that child’s sleep disturbance influences the father to be less involved in child caregiving, through the negative impact of a child’s sleeping disturbances on the family atmosphere. Negative family atmosphere might restrict fathers’ intention and willingness to share child-caregiving tasks with their spouses. These suggestions require further investigation.

The Moderating Role of Paternal Involvement

The second hypothesis proposing a moderation effect for paternal involvement was partially confirmed. We found that in families having a child with sleep disturbances, mothers reported higher levels of stress than did mothers in the comparison group, but only when coupled with low paternal involvement in child caregiving. The same moderation effect, although somewhat weaker and only approaching significance, was revealed for fathers. These results support previous findings suggesting that high paternal involvement may act as a buffer to reduce maternal distress during stressful conditions (Feldman, 2000) and suggests, although with caution, that it also may reduce paternal distress.

The moderation effects revealed may be explained by the family system theory (Minuchin, 1985), indicating that the mother–child and father–child dyads are interwoven and that all members of the mother–father–child triad mutually shape one another’s emotions and behaviors (Minuchin, 1985).

On one hand, high paternal involvement may relate to a better emotional climate of the family (Bonney, Kelley, & Levant, 1999; Villing & Belsky, 1991) and thus provide a better source of emotional and instrumental support for the mothers (Cummings, Goake-Morey, & Raymond, 2004), which can be linked to reduced maternal stress. Furthermore, more involved fathers often spend more time with their children during the day and thus are likely to experience more diverse interactions with their children, including less challenging interactions, than are fathers who see their children mostly during bedtime and at night. This may relate to reduced levels of paternal overall stress related to the child. On the other hand, it is proposed that fathers, who experience higher levels of stress due to difficulties in acceptance of the child, might choose to be less involved in child caregiving when faced with stressful and challenging conditions such as child sleep disturbances. However, it also is possible that mothers play the role of “gate-keeper” and inhibit paternal involvement in child caregiving (Schoppe-Sullivan, Brown, Cannon, Mangelsdorf, & Sokolowski, 2008), especially when faced with children with development challenges (Lillie, 1993; Pelchat, Lefebvre, & Perreault, 2003). However, these interpretations are only suggestive and should be used with caution because the results only approached significance.

Regarding the moderation effects, note that variables in the models are always interchangeable statistically (e.g., Atzaba-Poria, Deater-Deckard, & Bell, 2014; Shannon, Beauchaine, Brenner, Neuhaus, & Gatzke-Kopp, 2007). The current study focused on the father’s role. Considering this conceptual focus, we explored only paternal involvement as a moderator. However, it also may be that parental stress moderated the links between paternal involvement and sleep disturbances. For example, it may be that in a stressful condition such as having children with sleep disturbances, parental stress may relate to lower paternal involvement in child caregiving. Thus, it may be that both variables operate simultaneously as moderators.

Overall, our findings revealed a novel and strong relationship between paternal involvement in child caregiving and child sleep disturbance. These findings highlight the need to explore whether paternal involvement has a unique role in the context of a stressful condition such as having a sleep-disturbed child.

Limitations and Future Directions

Some limitations should be considered when examining our results. First, from a transactional perspective, child sleep and the way it is perceived in families can be shaped by factors in multiple contexts (Sadeh & Anders, 1993; Sadeh et al., 2010). Future studies exploring other contexts, including other proximal (e.g., disagreements about childrearing), and distal (e.g., marital relationship and social differences) contextual factors, might lead to a more comprehensive understanding of child sleep disturbances. One important factor related to parenting practices regarding child sleep is cultural differences (Mindell, Sadeh, Kohyama, & How, 2010) such as family place of residence or childrearing environment. Most of the families in the current study lived in urban areas, with a minority of families living in rural and collective communities (i.e., kibbutz). Moreover, this study was conducted in a specific culture, the Israeli culture, and thus the interpretation of the data and the generalization of the findings should be considered with caution. Replicating these findings with a more diverse population may indicate whether the results in the current study can be generalized to other cultures or countries.

An additional limitation refers to the way the sleep-disturbance group was ascertained. To assess for sleep disturbances,
parents completed a screening questionnaire based on Richman’s (1981) criteria. Although research has suggested that parental report is essential when studying a child’s sleep (Morrell, 1999; Sadeh, 2004), this method is subjective and thus may be influenced by parental characteristics and by the parent–child relationship, and thus may not be accurate. Replicating this study using both subjective and objective measures of sleep may provide more accurate information. Furthermore, to reduce paternal burden and increase their participation, only mothers reported on the bedtime interaction. Future studies should include fathers’ reports as well. Finally, the present study found a strong relationship between child sleep disturbances and various factors in three contextual levels: child, parent, and child–parent relationship. However, the study’s ability to reach conclusions about the nature of causality is limited due to its cross-sectional design. Research using longitudinal designs is needed to better understand the mechanism underlying the relationship between paternal involvement and child sleep disturbances, as part of a multilevel system.

**Clinical Implications**

The present study focused on sleep disturbances, a main cause of concern for parents. Our data suggest that child sleep disturbance in early childhood is related not only to mothers and their children but also to the fathers. Therefore, a number of clinical implications can be drawn with respect to both assessment and treatment of child sleep disturbances. In line with our findings, the assessment of sleeping disturbance must include both parents’ emotional distress as well as the parent–child bedtime and daytime interactions, and the levels of paternal involvement in child caregiving. Moreover, it is possible that child’s sleep disturbances affect parental sleep and thereby create elevated levels of parental stress and lower ability for parental sensitivity. This means that there could be several possible ports of entry (Stern, 1995) for intervention. First, clinicians need to work with parents on ways to improve children’s sleep, such as by reducing parental interactions that interfere with the child’s self-regulation at bedtime and during the night to increase the child’s sleep autonomy (Mindell, 1999; Sadeh, 2005). Second, interventions may focus on reducing parental stress and developing ways to manage stress even when a child has sleep disturbances. Finally, the moderation effect of paternal involvement in child caregiving highlights the need to encourage fathers to participate more in child-caregiving activities. Specifically, clinicians should evaluate the degree of fathers’ involvement and the quality of the father–child relationship during daytime interaction, and assist both parents in increasing paternal involvement as well as enhancing the father–child relationship. These various ways have the potential to result in better child and parental sleep.

**REFERENCES**


