Brief Report: A “Storybook” Ending to Children’s Bedtime Problems—The Use of a Rewarding Social Story to Reduce Bedtime Resistance and Frequent Night Waking

Raymond V. Burke,1 PhD, Brett R. Kuhn,2 PhD, and Jane L. Peterson,3 MS
1Girls and Boys Town, Nebraska, and University of Nebraska, Lincoln; 2Munroe-Meyer Institute, University of Nebraska Medical Center; and 3Behave’n Day Center

Objective To evaluate the efficacy and acceptability of a social story with tangible rewards to reduce children’s disruptive bedtime behavior and frequent night waking. Method Four children (ages 2 to 7), with clinically significant disruptive bedtime behavior, received the intervention, which consisted of a social story (The Sleep Fairy) that sets forth (a) parental expectations for appropriate bedtime behavior and (b) rewards for meeting those expectations. Results Parent sleep diaries indicated that children had a 78% average decrease in frequency of disruptive bedtime behaviors from baseline to intervention, with another 7% decrease at 3-month follow-up. Night wakings, a problem for 2 children during baseline, were not a problem during intervention and follow-up. Parents reported improved daytime behavior for 3 of the 4 children. Parents gave the intervention high acceptability ratings and maintained a high level of treatment fidelity. Conclusions Use of a social story helped parents implement a multicomponent intervention using a familiar bedtime routine, thereby increasing the likelihood that implementation and effects occurred. The book format makes this intervention widely available to parents and professionals, with minimal costs and inconvenience.

Key words bedtime; behavior; children; reinforcement; sleep; sleep disorders; social story.

For many parents, the task of putting a young child to bed is met with great reluctance. Pediatric sleep disturbance in the form of bedtime difficulties and frequent night awakenings affects about 25% of all children between the ages of 1 and 5 (Armstrong, Quinn, & Dadds, 1994). Poor sleep consistently is among the most common concerns presented in clinical settings for children (Arndorfer, Allen, & Aljazireh, 1999; Keren, Feldman, & Tyano, 2001; Lavigne et al., 1999; Mindell, Moline, Zendell, Brown, & Fry, 1994). Recent evidence indicates that a good night’s sleep plays a critical role in early brain development, learning, and memory consolidation (Frank, Issa, & Stryker, 2001; Stickgold, James, & Hobson, 2000), whereas disrupted sleep has been linked to behavior problems and poor emotional regulation (Dahl, 1996; Sadeh, Gruber, & Raviv, 2002).

For years, the most widely recommended treatment for bedtime tantrums and night waking has been extinction, or one of its variants (Christopherson, & Mortsweet, 2001; Ferber, 1985; Owens, Palermo, & Rosen, 2002; Spock, 1978). Extinction and graduated extinction form two of the three well-established effective interventions in the field (Kuhn & Elliott, 2003). Extinction has been criticized heavily by many consumers, resulting in poor acceptability (Kuhn, Elliott, Lund, & Pfeifer, 2003). The use of extinction often results in an initial increase in crying or tantrum...
behavior, which many parents find difficult to tolerate. If parents react by deviating from the prescribed procedure, their treatment efforts may fail. Extinction has also been criticized on the grounds that it fails to teach and reinforce appropriate child replacement behaviors (Milan, Mitchell, Berger, & Pierson, 1981).

The purpose of the current study is to evaluate the efficacy and acceptability of a rewarding social story to reduce children’s disruptive bedtime behavior and night wakings. Social stories typically describe social situations, relevant cues, and desired responses to a given situation (Gray & Garand, 1993). While used successfully as a teaching tool for children with autism (e.g., Thiemann & Goldstein, 2001), social stories present an untapped potential for typically developing children with persistent behavior problems. Our social story consists of a children’s storybook that tells the tale of the “Sleep Fairy,” who leaves a small tangible reward under children’s pillows when they demonstrate clearly described appropriate bedtime and nighttime behaviors.

We hypothesized that the introduction of a social story to convey clear bedtime expectations, with the presentation of a reward for appropriate bedtime behavior, would result in (1) a reduction in disruptive bedtime behavior and night waking, (2) a reduction in sleep onset time, (3) an increase in sleep duration, (4) a decrease in children’s problem behavior during waking hours, and (5) high levels of treatment acceptability and fidelity.

Method
Participants
Participation in the study was made available to children between 2 and 7 years of age who met relatively stringent selection criteria (previously established by Mindell & Durand, 1993):

1. Medical etiologies were not believed to contribute to the sleep disturbance.
2. For a minimum of three nights per week, the child resisted going to bed, fell asleep in a location other than his or her bed, or required parental intervention or presence to return to sleep.
3. The parents indicated to the clinician a desire for the child to fall asleep independently and sleep in his or her own bed throughout the night.
4. The sleep problems had been occurring for a minimum duration of 4 weeks.

Agreeing to participate in the study were the parents of four respective children who were referred by physicians to a sleep clinic in a centrally located Midwestern city and who met the selection criteria. During the intake process, parents of one participant noted that the referred child’s sibling also met the selection criteria and was included in the study, for a total of five participants. Four of the children and their parents completed the study. Parents of the fifth child were unwilling to complete data collection and withdrew from the study. They were offered standard clinical care at the sleep clinic.

The participants included a 5-year-old Caucasian male (Jeff); a 7-year-old Hispanic male (Hector); and two sibling Caucasian females, age 7 (Michele) and age 2 (Susan; all names are fictitious). All but one child (Susan) participated in behavioral health services throughout the study. Parents of all 4 children described a lengthy history of disruptive bedtime behaviors. For example, Jeff’s parents reported that his bedtime problems included severe tantrums, hitting and kicking parents and siblings, destruction of property (e.g., beating the wall, breaking a window, urinating on floor), and frequent episodes of leaving the bedroom after being put to bed for the night. Hector’s sleep history was remarkable for frequent night waking and difficulty initiating and maintaining sleep without parental presence. According to Michele and Susan’s mother, the girls’ behavior problems included fighting with each other, refusing to get ready for bed, arguing, crying and screaming once in bed, and waking and entering their parents’ bed during the night.

Procedure
A university institutional review board approved the study. During the intake interview, parents completed consent forms and received a photocopy of the book The Sleep Fairy (Peterson & Peterson, 2003) but received no stipend for participation.

A single-subject design was chosen, because this is an initial evaluation of a previously untested intervention (Drotar, La Greca, Lemanek, & Kazak, 1995). The initial intent was to use an ABAB withdrawal experimental design (Kazdin, 1998); however, the first participant’s parents were reluctant to complete the withdrawal phase, expressing concerns that they did not wish to revert to baseline conditions (i.e., stop reading the book at bedtime) after their child experienced success with the intervention. As a result, the authors
decided to use a multiple-baseline design across participants (Kazdin, 1998) for the next 3 children. Follow-up data were collected at 3 months after the conclusion of the treatment condition.

**Intervention**

Parents were asked to read *The Sleep Fairy* (Peterson & Peterson, 2003) at the conclusion of the child's nightly bedtime routine. The book, which includes colorful illustrations and 14 pages of text, involves a social story about two children who overcome their bedtime problems and learn how to get ready for bed and how to stay in bed without difficulty. A poem embedded in the story specifies appropriate bedtime behaviors and describes how the Sleep Fairy will leave a treat (a positive reward) for children who follow bedtime routines and fall asleep without problems.

> And if you're very still and quiet, and if you stay in bed,  
> [The Sleep Fairy] lifts your pillow to place a gift Beneath your head.  
> But she only leaves a present if you stay in bed all night.  
> So don't yell or cry or leave your bed. Don't pout 
> or whine or fight. (p. 15)

Two introductory pages provide parents with brief instructions on how to:

1. set clear bedtime expectations;
2. use reinforcement contingent on children's appropriate bedtime behavior—for example, “When your children stay in bed and are sleeping peacefully, place a small prize, treat, or charm under their pillow"; and
3. select reinforcers that are simple and safe for children—for example, “such as a bookmark, sticker, hair ribbon, or small plastic dinosaur.”

When parents identified night waking as a targeted problem during the initial interview, they were asked to place the reward under the child’s pillow in the morning, before the child awoke. The introduction instructs parents to continue reading *The Sleep Fairy* until the child demonstrates success for 2 weeks. At that point, it instructs them on how to transition to intermittent use of the book.

**Measures**

*Sleep diaries.* Sleep diaries are the most widely used measure of sleep in clinical settings. They have reasonable validity, high internal consistency, and good agreement with videotapes and actigraph measures of children’s sleep (Corkum, Tannock, Moldofsky, Hogg-Johnson, & Humphries, 2001; Mindell & Durand, 1993). In this study, parents used a bedtime data form to structure their sleep diary entries, track the time of bedtime events, and record the frequency of disruptive bedtime behaviors during bedtime preparation and from the time the child was put to bed (i.e., night wakings). *Disruptive bedtime behaviors* included, but were not limited to, stalling, noncompliance, vocal protests, calling out for the parent, crying, screaming, tantrums, complaining, demanding, and aggression. *Night waking* was operationally defined as any time the child aroused a parent and required him or her to do something to settle the child (Adair, Zuckerman, Bauchner, Philipp, & Levenson, 1992). *Sleep onset* was defined as the time from when the child was in bed with lights out until the time a parent observed the child asleep. Data collected by parents were used as dependent measures of the combined total number of observed disruptive bedtime behavior problems (DBB); the number of night wakings (NW); sleep onset time (SOT); and total sleep time (TST).

**Reliability.** Consistent with prior studies (e.g., Durand & Mindell, 1999), an author called parents and reminded them to complete the reliability check sheet on 28% of randomly selected dates across baseline and intervention phases. Two methods were used to check reliability. For two of the families, the parent who did not manage the bedtime routine was asked to record reliability data on a separate bedtime data form, without collaborating with the other parent. In the third family, a second parent was not available for data collection; therefore, the third author called the mother on randomly selected mornings and asked her to report DBB and NW frequency for the prior night. These telephone reports were later compared formally with the parent’s completed bedtime data form (Durand & Mindell, 1999).

Data for DBB and NW events were considered reliable if parents’ frequency counts varied by no more than one point—or, for the parent collecting the data by herself, if the difference between reported and recorded frequencies varied by no more than one point. SOT and TST data were considered reliable if they varied by no more than 15 min. Reliability was computed by summing each of the total number of possible disruptive events or minutes and the total number of disruptive events or minutes reported during the reliability check, dividing the latter number by the former and multiplying by 100.
Interrater agreement between Jeff’s parents was 91% for disruptive behaviors and 100% for sleep onset and sleep duration. Telephone reliability data for Hector matched the parent-recorded bedtime data forms on 100% of the occasions. Interrater agreement was 92% for Michele and Susan’s parents (i.e., agreement occurred on 11 of 12 selected nights).

**Treatment fidelity.** During treatment phases, parents recorded the time at which they read *The Sleep Fairy*. Records indicated that the intervention was implemented on 26 of 27 (96%) treatment dates with Jeff, all 36 nights with Hector, 19 of 20 (95%) nights with Michele, and 14 of 15 (93%) nights with Susan.

**Child Behavior Checklist (CBCL).** The CBCL (Achenbach, 1991) is a widely used, standardized measure of behavioral–emotional problems in children. Parents indicate the extent to which each item describes their child’s behavior within the past 2 months (for 2- to 3-year-olds) or 6 months (for 4- to 18-year-olds). The CBCL yields a Total Problem T score and two broadband factors: an Internalizing scale (e.g., social withdrawal, depression) and an Externalizing scale (e.g., aggression, delinquent behaviors). The Sleep Problems subscale on the 2- to 3-year-old version has been shown to be sensitive to treatment effects (Reid, Walter, & O’Leary, 1999). For purposes of this study, the CBCL’s Internalizing and Externalizing composite T scores and Total T scores were used. The Sleep Problems subscale of the 2- to 3-year-old version was used for the one child (Susan) who fell within this age range.

**Treatment acceptability.** The Treatment Evaluation Inventory-Short Form (TEI-SF; Kelley, Heffer, Gresham, & Elliott, 1989), a shortened and simplified version of the Treatment Evaluation Inventory (TEI; Kazdin, 1980), was used to assess parental judgments of treatment acceptability and perceived efficacy. This widely used instrument consists of nine items scored on a 5-point scale (1 = strongly disagree; 5 = strongly agree). Total scores ranged from 9 to 45, with higher scores indicating greater acceptance of the treatment. The TEI-SF has been shown to be an internally consistent and valid instrument that effectively discriminates between alternative treatments (Kelley et al.; Miller & Kelley, 1992).

**Results**

**Problems Across Bedtime Preparation and Sleep Periods**

Results show that introduction of *The Sleep Fairy* social story produced rapid and sustained reductions in the frequency of the children’s targeted disruptive bedtime behaviors (DBB; Jeff, Michele, and Susan; see Figure 1) and night wakings (NW; Hector and Michele; see Figure 2). These improvements were maintained at 3-month follow-up.

During the intervention, Jeff’s mean number of DBB dropped substantially, from 20.3 per night (SD = 16.2) to 1.0 per night (SD = 2.0). At 3-month follow-up, the frequency increased slightly, to 3.8 (SD = 3.5). Jeff’s total DBB jumped to 23 during an unplanned withdrawal, clearly exceeding the mean DBB during the treatment phase. While the DBB rate did not reach the frequency seen during the planned reversal (M = 3.6).
the rate was still more than five times the observed rate of DBB during the intervention phases ($M = .67$).

Michele and Susan’s mother reported a combined average of 35 DBB during baseline ($M = 17.4$ and 17.6, respectively). During the intervention, the mean DBB was .71 and 1.2 per night for Michele and Susan, respectively—a 96% and 93% reduction (Figure 1). At 3-month follow-up, the DBB rate dropped to an average of .3 events per night for each child. Susan, who averaged slightly less than one NW during baseline, had no NW during intervention and follow-up conditions (Figure 2).

Although The Sleep Fairy instructions encourage parents to have the “Sleep Fairy” leave a reward when targeted behaviors occur from the bedtime routine through morning, Hector’s mother independently chose to target only a single criteria (i.e., night waking) during the intervention phase, which explains the less noticeable effect on total DBB (Figure 1). However, her chosen criteria, night waking (NW), reduced from 2.4 events per night during baseline to .5 per night during treatment with no NW occurring at 3-month follow-up. The duration of NW improved from 28 min during baseline to less than 4 min during treatment. This reduction in NW appeared to have a positive concurrent effect on the frequency of DBB. Hector averaged 21.0 problems per night during baseline, 9.0 problems per night during intervention (a reduction of 57%), and 3.6 problems per night at 3-month follow-up (Figure 1).

Sleep Onset
Sleep onset improved consistently for Jeff, from an average of 56 min, during baseline and withdrawal phases; to 32 min, across treatment phases; and 29 min, at 3-month follow-up. Sleep onset improved substantially for Hector, Michele, and Susan ($M = 50$ min during baseline; $M = 29$ min during intervention) before reverting to near baseline levels ($M = 48$) at follow-up.

Total Sleep Time
The Sleep Fairy appeared to produce varying effects on the children’s total sleep time (TST). For example, Jeff’s TST did not improve immediately, but by the 3-month follow-up, he was sleeping an average of 16 min more each night (average TST of 601 min). Hector showed steady increases in TST, with an average increase of 23 min per night by follow-up. TST for Michele and Susan did not change a great deal. However, their TSTs were within the normal developmental range (Weissbluth et al., 1981) at pretreatment, so we did not expect an increase for these children.

Child Behavior Checklist
Results from the CBCL indicated that the Total Problem scores were in the clinical range for all 4 children at baseline. At posttreatment, scores were in the normal range for Jeff and Susan, were improved for Michele, and were unchanged for Hector. For Susan, the Sleep Problems subscale on the 2- to 3-year-old version of the CBCL improved from the clinical range ($T = 68$) at pretreatment to the normal range ($T = 57$) at posttreatment.

Treatment Acceptability
Parents rated The Sleep Fairy to be a highly acceptable intervention for their children’s sleep problems, as indicated by the parents’ TEI-SF total scores of 44, 33, 44, and 40, out of a possible 45 points (Kelley et al., 1989).

Discussion
The use of a social story that specifies and reinforces appropriate bedtime and nighttime behavior produced a substantial reduction in disruptive bedtime behavior (DBB) and night waking (NW) for the 4 children in this study. Results were consistent and robust across participants and compared favorably with interventions that parents deemed effective but less acceptable (see Kuhn & Weidinger, 2000). Positive effects of the social story were maintained at 3-month follow-up, when parents were using the story and rewards intermittently.

Although many studies in the pediatric sleep literature have targeted bedtime behavior, the current study is unique because it reports intervention effects on relevant sleep variables—including a standardized sleep scale, sleep onset time, total sleep time, and frequency of night waking—while also monitoring daytime behavior, treatment acceptability, and fidelity by parents. Unlike many pediatric sleep studies, our study did not exclude children with daytime behavior problems; in fact, all 4 participants displayed clinically significant daytime behavior problems upon entry. Results on the CBCL indicate that The Sleep Fairy had a positive effect on daytime behavior problems for 3 of the 4 participants.

Effects of The Sleep Fairy on sleep onset and total sleep time varied across children. The most noticeable improvement occurred with Jeff, whose sleep onset was reduced by almost half. Increases in TST from baseline to posttreatment were evident most with Jeff (an average increase of 16 min per night) and Hector (an average increase of 23 min per night). Despite the variable effects

---

The Sleep Fairy
Although many studies in the pediatric sleep literature have targeted bedtime behavior, the current study is unique because it reports intervention effects on relevant sleep variables—including a standardized sleep scale, sleep onset time, total sleep time, and frequency of night waking—while also monitoring daytime behavior, treatment acceptability, and fidelity by parents. Unlike many pediatric sleep studies, our study did not exclude children with daytime behavior problems; in fact, all 4 participants displayed clinically significant daytime behavior problems upon entry. Results on the CBCL indicate that The Sleep Fairy had a positive effect on daytime behavior problems for 3 of the 4 participants.

Effects of The Sleep Fairy on sleep onset and total sleep time varied across children. The most noticeable improvement occurred with Jeff, whose sleep onset was reduced by almost half. Increases in TST from baseline to posttreatment were evident most with Jeff (an average increase of 16 min per night) and Hector (an average increase of 23 min per night). Despite the variable effects
on sleep time, parents reported maintenance of treatment effects with children's DBB and NW.

An important but often overlooked aspect in treatment outcome research has been the acceptability and fidelity of the intervention (Kazdin, 1998). This has been the Achilles' heel for interventions designed to address children's sleep problems. For example, Kuhn and Weidinger's (2000) review of pharmaco logical and behavioral interventions for sleep disturbances suggests that, despite the proven efficacy of behavioral treatments, parents are unwilling to follow through with many of these interventions, hence jeopardizing treatment effectiveness. Reid, Walter, and O'Leary (1999) mentioned that nearly 20% of the parents who participated in a comparison of graduated or standard ignoring interventions dropped out of the study because they were unwilling to allow their young children to cry without attending. In contrast, behavioral diaries from parents who used The Sleep Fairy reported no adverse effects with implementation (e.g., extinction burst). They rated the Sleep Fairy intervention to be a highly acceptable approach to their children's sleep disturbances and implemented the treatment with a high degree of fidelity. The average acceptability (TEI-SF) score of 40.3 compares quite favorably to parental ratings for positive fidelity. The average acceptability (TEI-SF) score of 40.3 compares quite favorably to parental ratings for positive fidelity. The average acceptability (TEI-SF) score of 40.3 compares quite favorably to parental ratings for positive fidelity. The average acceptability (TEI-SF) score of 40.3 compares quite favorably to parental ratings for positive fidelity. The average acceptability (TEI-SF) score of 40.3 compares quite favorably to parental ratings for positive fidelity. The average acceptability (TEI-SF) score of 40.3 compares quite favorably to parental ratings for positive fidelity.

In summary, use of a social story helped parents to effectively address child disruptive bedtime behavior and night waking via a simple and acceptable intervention. The book format, which is parents' preferred source of assistance for children with sleep problems (Johnson, 1991), makes this intervention widely available to the public, with minimal cost and inconvenience. For professionals, The Sleep Fairy provides an addition to their tool kit of effective interventions for pediatric sleep disturbance.

**Acknowledgments**

The authors thank Holly Filcheck and Ron Thompson for their critiques of earlier drafts of this paper, the editor and reviewers for their thoughtful recommendations, and the parents and children who participated in the study.

**References**


