Brief Report: Evaluating the Bedtime Pass Program for Child Resistance to Bedtime—A Randomized, Controlled Trial

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Objective To evaluate the Bedtime Pass Program (BPP), an extinction-based procedure for treating bedtime resistance in typically developing children. Methods A randomized, controlled trial in which nineteen 3- to 6-year-old children demonstrating bedtime resistance were randomly assigned to a Bedtime Pass or Monitoring Control group. The experimental condition involved parent monitoring plus the Bedtime Pass: a card exchangeable for one parental visit or excused departure from the room after bedtime, with parents ignoring subsequent bids for attention. Results Children in the Bedtime Pass condition left their rooms and called and cried out significantly less frequently than controls. They demonstrated significant reductions in the time required to quiet each night. Treatment effects were maintained at 3-month follow-up. Parents reported high levels of satisfaction and treatment acceptability. Conclusions BPP is a noncomplex, socially acceptable, effective treatment for bedtime resistance. It retains the powerful effects of extinction-based procedures without the “extinction burst.”

Key words bedtime resistance; behavioral pediatrics; extinction; sleep disorders in children; social validity.

Bedtime resistance, manifested by children crying, calling out, or leaving their rooms after bedtime, is one of the most frequent presenting complaints in primary care pediatrics (Blum & Carey, 1996). Among the methods often prescribed, the most effective, in terms of sheer reductive potency, involve variations on a procedure known as extinction (Blum & Carey, 1996; Edwards & Christophersen, 1994; Ferber, 1985; Meltzer & Mindell, 2004; Mindell, 1999). Technically, extinction involves discontinuing the reinforcing consequences for a targeted behavior. The reductive effects of extinction have been well documented across a wide range of behaviors (Miltenberger, 2001). Equally well documented is an accompanying phenomenon involving an abrupt, temporary increase in the behaviors placed on extinction and a surge in emotional behavior or an “extinction burst” (Miltenberger, 2001). Extinction for bedtime resistance involves requiring children to go to bed and stay in bed and minimizing parental attention thereafter. A bedtime “extinction burst” can involve periods of prolonged and intense crying (Blum & Carey, 1996; Ferber, 1985). Not surprisingly, such behavior can be emotionally distressing for parents and difficult to ignore. Moreover, it is often counterintuitive to parents that ignoring this behavior could result in its cessation. Consequently, although extinction alone can substantially reduce bedtime resistance, it is less socially acceptable than other treatment approaches and less likely to be used with full compliance (Ferber, 1985; Friman et al., 1999; Rickert & Johnson, 1988).

To maintain the potent behavior change properties of extinction and increase the likelihood of parent adherence, modifications have been tested. The most notable example involves the graduated extinction procedure popularized by Richard Ferber and documented as effective by various sleep researchers (Adams & Rickert, 1989; Blum & Carey, 1996; Edwards & Christophersen,
explore the generality of the BPP, this study conducted a randomized clinical trial with 19 bedtime-resistant children and systematically measured parental appraisals. A recent modification, however, has produced complete cessation of bedtime resistance in two studies (Freeman, in press; Friman et al., 1999). One study assessed acceptance and found it to be higher than extinction alone and cosleeping (Friman et al.). The procedure, called the Bedtime Pass Program (BPP), involves (a) requiring children get into bed, (b) providing them with a card exchangeable for one “free” trip out of the room or one parent visit to satisfy an acceptable request (e.g., drink and hug), (c) surrender of the pass after its use, and (d) extinction thereafter. To explore the generality of the BPP, this study conducted a randomized clinical trial with 19 bedtime-resistant children and systematically measured parental appraisals.

Methods
Participants
Participants were 19, typically developing, 3- to 6-year-old children (11 girls and 8 boys) and their primary caregivers. This age range was determined based on the lower limits established in previous studies (Freeman, in press; Friman et al., 1999). Bedtime resistance was defined as crying, calling out, or leaving the room after bedtime at least three nights per week. Developmental delay was ruled out via parent report of grade-level functioning. Underlying sleep disruptors, such as obstructive sleep apnea, were ruled out via the administration of the 24-Hour Sleep History Questionnaire (SHQ; Garcia & Wills, 2000) and an unremarkable physician’s visit within the last year. The SHQ consists of a series of face-valid items assessing neurodevelopmental contributions to sleep disruption. To assess validity, SHQ and diary card items evaluating trips out of the room were compared with 78% agreement. Primary caregivers were predominately Caucasian (70%) and included mostly biological parents (79%). The mean age of mothers was 34 years. Of those reporting socioeconomic data (approximately 60% of the sample), 36% of families made over $50,000 annually, and 47% of mothers had at least some college education. Families were either married or cohabitating at the time of participation. We calculated that a sample size of 19 children was sufficient to identify a large effect size with a power of 80% and 5% risk of type error (Keppel, 1991). Twenty-one families indicated interest in the study. Two children were excluded at intake based on age criteria, resulting in a final sample of 19 children. Children were randomly assigned, via a computer-generated sequence, to the BPP (n = 9) or a Monitoring Control group (n = 10). Participants randomized to the control group were offered the BPP intervention at the conclusion of the study. Groups did not differ significantly at baseline in terms of gender, age, parent education, or income. Groups were similar on all dependent variables: leaving the room ($F = .01, P = Ns$), crying and calling out ($F = 2.07, P = Ns$), and time to quiet ($F = .61, P = Ns$).

Procedures
This protocol was approved by the University of Nevada, Reno institutional review board. Participants were recruited from pediatrician’s offices, daycare centers, and in response to media. Eligible families were identified via an initial telephone screening and a subsequent intake conducted by a trained research assistant. At baseline, family ethnicity, total income, parent age, educational level, marital status, and relationship to the child were gathered via self-report. A baseline-monitoring phase took place in the first seven nights for all families. Randomization and the intervention phase occurred during nights 8–16. A detailed timeline of the intervention and evaluation procedures is shown in Fig. 1. At intake, parents were provided with diary cards, an audiotape recorder, and instructions on data collection. Diary card data included planned and actual bedtime, time to quiet, and the number of times the child left the room each night. Crying and calling out data were extracted using an interval coding system in which coders identified frequencies of audible, parent-directed vocalizations. Data were coded by three trained undergraduates in psychology (mean percentage agreement = 93%) who were unaware of the participants’ treatment condition. To assess the effects of treatment, only data from the last 4 days of the posttest phase were included in the overall analysis. Restricting the analysis of treatment effects to these days allowed participating families to familiarize themselves with the intervention immediately after its introduction, provided a more stable estimate of treatment effects, and yielded a better representation of the overall treatment response. Restricting the analysis to these data also limited the possibility of spurious impressions about improvements occurring during the follow-up condition. To assess whether treatment led to an extinction burst, data from the first 5 days of the posttest phase were compared with baseline data for all outcome variables.
During a 30-min training visit, parents were taught the procedures of the BPP: (a) put the child into bed, (b) provide a card exchangeable for one “free” trip out of the room or one parent visit to satisfy an acceptable request (e.g., drink and hug), (c) surrender the pass, and (d) ignore all subsequent bids for attention. In response to unacceptable requests (e.g., staying up), parents were instructed to restate the previously determined acceptable requests and encourage the child to choose among these options. At posttest, parents completed the Treatment Evaluation Inventory (TEI) (Kelley, Heffer, Gresham, & Elliot, 1989), an 8-item questionnaire measuring the degree to which participants perceive a treatment as acceptable.

Repeated measures analyses of variance (ANOVA) using the statistical package SPSS (Version 11.0; SPSS, Chicago, IL) were conducted to examine changes with experimental condition \((n = 2)\) as a between-subjects variable and time \((n = 2)\) as a within-subjects factor. Effect sizes for all hypothesized interactions are reported as partial eta squared \((\eta_p^2)\). In the presence of a significant time \(\times\) group interaction, repeated measures ANOVAs were used to evaluate change over time within group. Both parent report and audiotape data were analyzed. Missing values were approximately evenly distributed across groups.

**Results**

**Changes in Bedtime-Resistant Behaviors**

**Leaving the Room**
As evidenced by parent report, children in the monitoring condition left the room at equivalent rates during baseline \((M = 1.9, SD = 2.1)\) and posttest \((M = 2.1, SD = 0.38)\). Children in the BPP demonstrated a reduction from baseline \((M = 1.6, SD = 0.38)\) to near-zero rates (i.e., a value < 0.5 when averaged) at posttest \((M = 0.2, SD = 0.2)\). Use of the pass was not counted in these values. Children were invited to use their pass once, and thus, pass use was not considered a clinical event. During posttest, children used the pass an average of 2 times \((M = 2.0, SD = 1.6)\). Pass use ceased altogether by follow-up \((M = 0)\). Repeated measures analyses demonstrated a significant group \(\times\) time interaction with children in the BPP leaving the room significantly less often over time than controls \((F = 13.8, P < .01, \eta_p^2 = .34)\). For the experimental group, results were maintained at follow-up \((M = 0.4, SD = 0.9; F = 0.52, P < .05)\).

**Crying and Calling Out**
As evidenced by audiotape data, children in both groups cried and called out less frequently and for shorter periods of time at posttest. Repeated measures analyses revealed a significant group \(\times\) time interaction with children in the BPP crying and calling out less often than controls \((M = 2.4, SD = 2.9)\) to posttest \((M = 0.6, SD = 0.5)\) than controls \((M = 4.7, SD = 3.9; M = 3.0, SD = 2.0; F(1, 18) = 8.38, P \leq .01, \eta_p^2 = .34)\). For children in the experimental group, these results were maintained at follow-up \((M = 0.1, SD = 0.2; F(1, 14) = 1.90, P < .05)\).

**Time to Quiet**
As indicated by parent report data, children in the control condition showed no differences in time to quiet from pretest to posttest (approximately 40 min). Children in
the BPP demonstrated significant reductions in time to quiet from baseline ($M = 43$ min, $SD = 13.7$) to posttest ($M = 25$ min, $SD = 5.2$). A significant group $\times$ time interaction was found with children in the BPP requiring significantly less time to quiet after bedtime than controls ($F = 11.1, P < .01, \eta^2_g = .40$) from baseline ($M = 35$ min, $SD = 24.5$) to posttest ($M = 45$ min, $SD = 5.5$). For the BPP group, results were maintained at follow-up ($M = 0.1$ min, $SD = 7.5$; $F = 15.74, P < .01$).

**Extinction Burst**

Comparisons of baseline data with data from the first 5 days posttreatment indicated a significant reduction in the three primary dependent variables: time to quiet ($M = 28$ min, $SD = 21.2$; $F = 8.08, P < .05$), calling and crying out ($M = 1.8$ calls, $SD = 2.5$; $F = 6.22, P < .05$), and leaving the room ($M = 0.9$, $SD = 0.6$; $F = 12.2, P < .01$).

**Clinical Significance**

Clinical significance was examined by comparing the percentage of children in each group who were leaving the room at near-zero rates at baseline, posttest, and follow-up. At baseline, 0 children met this criterion. At posttest, 93% of children in the BPP achieved the treatment goal of near-zero departures. This was significantly greater than the 44% of children in the control condition who met this goal ($X^2 = 7.89; P < .01$). Results were maintained at follow-up with 83% of children in the BPP maintaining treatment goals.

**Treatment Evaluation**

Parents indicated a high degree of satisfaction ($M = 34.1$, $SD = 2.5$; total = 40) by endorsing statements regarding the acceptability and effectiveness of the BPP. Parents (100%) reported that they did not believe their child experienced discomfort as a result of this treatment and reported that they did not experience discomfort as a result of the procedures (92%).

**Discussion**

These results replicate and extend those obtained with the BPP in its inaugural case studies (Freeman, in press; Friman et al., 1999). Extensions include the use of a randomized clinical trial, audio recordings to supplement parental monitoring, measurement of a clinically significant behavior—“time to quiet,” the TEI instead of an ad hoc measure of acceptability (Friman et al.), and follow-up evaluations. In summary, children in the BPP left their rooms significantly less often and took significantly less time to quiet after bedtime than controls. Treatment effects persisted at 3-month follow-up, and parents rated the program as highly acceptable.

Parent response to the BPP is particularly notable because it is an extinction-based procedure, as it involves discontinuing the reinforcing consequences for a targeted behavior. Although such procedures are effective for treatment of bedtime resistance, they are often judged impractical or unacceptable by parents (Blampied & France, 1993; Blum & Carey, 1996; Edwards & Christoffersen, 1994; Friman et al., 1999; Thiedke, 2001). Such judgments often lead to treatment noncompliance (Rapoff, 1999) and leave the resistance intact, the child at risk for chronic bedtime problems, and the family at risk for multiple, unhealthful outcomes (Gelman & King, 2001; Kataria et al., 1987; Paavonen et al., 2002). Using the TEI, a comprehensive and widely used measure of treatment acceptability, this study showed high levels of treatment acceptance. Although treatment acceptance does not guarantee treatment compliance, it does substantially heighten its probability (Rapoff, 1999).

This study did not evaluate parents' rationale for rating the BPP an acceptable intervention. There are two plausible possibilities to measure in future research. The first involves the apparent reductive effect the pass has on the extinction bursts that typically accompany the use of extinction for bedtime resistance (Blum & Carey, 1996; Freeman, in press; Friman et al., 1999; Miltenberger, 2001). The second is that the BPP provides children with a parent-sanctioned, exercisable option after going to bed. The result may be a potential increase in the children's sense of control and acceptance of the bedtime process. This, in turn, may increase treatment acceptance.

These results should be considered in light of some limitations. For example, combined findings suggest the ages of 3 and 10 years as the age limits of the effectiveness of the BPP. Although the extinction component would indeed affect both younger and older children, younger children may lack the cognitive capacity to understand the pass component, whereas older children may find it unacceptable. This remains a topic for future research. Another limitation involves the lack of a true control condition. Treatment effects may have been found because of increased parental attention. Future studies should include an equal attention control group. Given the small sample size and demographics of our sample, the generalizability of the BPP to families representing diverse backgrounds and lower socioeconomic status is unknown. This study also did not establish the function of bedtime resistance. The BPP may be ineffective when bedtime resistance is not attention maintained.
Although designed for primary care, the BPP has only been evaluated in psychological settings. Extensive clinical experience indicates that when supplemented by a descriptive handout, it can be prescribed in just a few minutes and could be delivered in primary care, and thus, its utility in primary care warrants future research. These limitations notwithstanding, this study adds to evidence suggesting that the BPP is acceptable and effective first line of defense against bedtime resistance in young children.

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