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Assessing the Effectiveness of a Bedtime Behavioral Intervention for Military Children with a
Deployed Parent

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ABSTRACT

While there are advantages and disadvantages to the lifestyle of a military family, challenges often include frequent moves, stressful military work environments, and deployments of the active duty member to dangerous war zones. Military children often display an array of internalizing and externalizing problems, with one common problem being disrupted sleep. The purpose of the current study was to evaluate the use of current technology to minimize problematic sleep behaviors affecting young children with a recently deployed parent. The intervention required parents to show their child a previously recorded DVD of the deployed parent reading a children's book prior to the child's bedtime. Sleep diary data were collected for two children who had been previously identified as having significant bedtime resistant behavior. A nonconcurrent, multiple-baselines across participants research design was used to evaluate data with two data collection phases for both participants. Analyses revealed considerable reductions in the number of bedtime resistant behaviors post-intervention and large effect sizes were yielded for the intervention phases for both participants. Implications for clinical practice are discussed.

KEY WORDS: Military Families, Sleep Interventions, Bedtime Resistance, Sleep Disorders

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Review of the Literature

Currently the United States has 1.4 million active duty service members worldwide with the majority serving within the United States (Department of Defense (DoD), August 31, 2013). Military deployments affect not only the military personnel, but their family members as well. For example, Lincoln and Sweeten (2011) state that approximately 55% of active duty military members who have experienced deployment are married, while over 40% of these troops have at least one child who is under age 5. Several well-designed studies have looked at different characteristics and variables of the military child to determine contributing factors to behavior problems while a parent is deployed (Chandra et al., 2010; Chartrand & Siegel, 2007; Flake, Davis, & Johnson, 2009). For example, Flake and colleagues (2009) investigated factors such as parental stress, use of available military support and resources, and parental education in relation to the psychological health of a military child. The authors found that approximately one-third of all children in the study were considered to be at-risk for psychological difficulties during parental deployment with almost 40% of children experiencing some type of internalizing behaviors consistent with anxiety or depression (Flake et al., 2009). Other studies have found similar increased rates of problem behaviors in children of deployed parents as well (Hardaway, 2004; Kelley, 1994).

The relationship between persistent internalizing disorders such as depression and sleep problems has been the focus of several studies in recent years. While there are many unanswered questions regarding the bidirectional relationship between depression and sleep problems, (for a review, see Ivanenko, McLaughlin Crabtree, & Gozal, 2005) the most commonly reported bedtime resistant behaviors that young children exhibit are refusing to go to bed, calling out to parents from bed, leaving bed, difficulty falling asleep, and frequent waking. To address these problems, behavioral interventions have been widely studied as a solution to bedtime resistance in young

children. A recent review of the research on this topic revealed several types of interventions that are effective at reducing bedtime behavior problems (Mindell, 1999). The earliest of these studies focused on the behavioral method of extinction (requiring the parent to ignore the child's cries in most instances), but these studies were not well-received by parents due to the amount of stress placed on parents during the extinction period. Studies that compared extinction methods and positive routines found that both interventions were equally effective but positive routines were preferred by parents (Mindell, 1999).

Given the inherent vulnerability of military children for psychological and sleep problems, some programs have been created to improve communication between deployed military members and their families (Chartrand & Siegel, 2007). Related to this, the United States military has recently agreed upon policies which allow military bases and its members to take part in social media sites such as Facebook, Twitter, or Myspace (Dao, 2010, February 26). For families who cannot access video chat programs, there are other options available for children who would like to communicate with the deployed parents. Talk, Listen, Connect is a series of DVDs and online activities created by Sesame Street to help young children ages 2-5 cope with deployments (Sesame Street Family Connections, 2010). The video series explains the process of deployment and the changes that will take place while the military parent is gone in kid-friendly terms that are fun and interactive. A similar deployment intervention titled With You All the Way is designed for children ages 6-10 offers support for school-aged children facing a parental deployment (The Trevor Romain Foundation, 2010). With You All the Way is an animated DVD, which chronicles two characters on a school trip who both have deployed parents. This DVD also offers advice and testimony on dealing with deployment from other military families and children. The deployment kit comes with a stuffed animal, writing journal, and several postcards to help young children express their emotions throughout the deployment. Unfortunately, however, there is currently no research on the effectiveness of either of these programs.

Another recently developed and potentially promising program to allow deployed parents to keep in touch with their families in a unique way is the United Through Reading program. This program makes a video recording of service members reading a book to their child (United Through Reading, 2010). The parent is given suggestions and can choose from four different categories of books ranging from illustrated books for babies to chapter novels meant for teenagers. The parent is recorded reading the book and showing the child the pictures within the book. The DVD recording is sent home, and is meant to help the child and deployed parent cope with their separation. Anecdotal feedback from participants in the United Through Reading program has found that the program not only benefits the children but is also psychologically beneficial to the deployed parent (United Through Reading, 2010). Again, however, there is no published research on the effectiveness of this program.

The Current Study

Military deployment affects thousands of families each year with many children experiencing difficulties with adjustment to new routines as well as symptoms of depression and anxiety related to their parent's temporary absence. Young children may not be able to fully comprehend the deployment but it is apparent that they experience difficulties adjusting to the many changes that take place after their parent leaves. According to Pincus, House, Christenson, and Alder (2004), children ages 1 to 12 years old are at-risk for experiencing negative sleep behaviors throughout their parent's deployment. When reviewing bedtime resistance interventions, research shows that making changes to the family's normal bedtime routines is both effective and well-tolerated by parents (Mindell, 1999). By using a positive experience, such as incorporating reading stories into regular bedtime routines, families may experience a decrease in disruptive behavior from their young children as they adjust to the absence of their deployed parent.

Programs such as United Through Reading appear to be a good resource for families experiencing deployment but there is currently no research that examines how the program affects military children. The United Through Reading video could easily be incorporated into a child's

bedtime routine even if the routine did not include reading prior to deployment. United Through Reading strongly encourages participants to record videos before their deployment occurs, as locations and volunteers at overseas locations are limited. Unfortunately, scheduling these recordings prior to deployment may be difficult as not all military bases are equipped with official United Through Reading recording centers. Therefore, the current study adapted the procedures of this program to serve as an intervention for young children experiencing disruptive bedtime behaviors implemented after parental deployment. The current study fills a critical gap in the literature as the use of a video-recording of the deployed parent reading books for the specific purpose of addressing negative bedtime behaviors has not yet been studied for a military population. Therefore, it was hypothesized that the intervention of incorporating videos of the deployed parent reading to their children would lead to a decrease in bedtime resistance behaviors.

Methods

Participants

Families from communities surrounding an air force base in the Midwest were recruited through the base Enlisted Spouses Club. In order for these families to be selected to participate in the intervention, they had to have at least one parent currently deployed overseas and that parent had to be scheduled to be deployed throughout the entirety of the intervention, which was approximately 2 months. Families who had a co-sleeping routine with their children were not allowed to participate. Of the population living on this air force base from 2005-2009, nearly 25% of the residents were 9-year-old or younger (United States Census Bureau, 2011). Over 85% of the base population ages 3-years and older were enrolled in school with the vast majority attending public school (U.S. Census Bureau, 2011). When examining the race and ethnicity of the air force base, 11% were African American, 1% were Asian, 1% were Native American, 83% were White, and nearly 4% claimed other or claimed more than one race (U.S. Census Bureau, 2011). Families were screened for participation using the Children's Sleep Habits Questionnaire (CSHQ; Owens, Spirito, McGuinn, & Nobile, 2000). Families were considered for inclusion in the study if any of the Bedtime Resistance scale items were

marked by the parent as problematic. One bicultural family and one Caucasian family were screened for the current study and both families were selected for inclusion based on the previously described criteria. The families were only allowed to identify one target child for the intervention and the child had to be between the ages of 18-months and 7-years-old. The children included were an 18-month-old female (“Jane”) and a 4-year-old male (“John”). Jane was an only child living with her mother, while her father had been deployed for one month at the time that baseline data was collected. John lived with his mother and his 5-year-old brother while his father had been deployed for 3 months at the time that baseline data was collected.

Design

A nonconcurrent, multiple-baseline across participants research design was used to evaluate data. There were two phases to data collection for both participants. Phase 1 was a baseline phase, in which the at-home parent collected data on sleep behaviors using a sleep diary but did not change their child’s typical bedtime routines. During Phase 2, the at-home parent was provided with videos of the deployed parent reading to the target child and was required to incorporate a video each night into their child’s typical bedtime routine. The at-home parents were required to show a different video each night for the first three nights of Phase 2 but then the target children were allowed to request which video to view for the remainder of the intervention.

The timing for the initiation of Phase 2 was dependent on the Phase 1 baseline data. The data had to be collected for a minimum of three nights and had to be stable or increasing, not decreasing, in order for the intervention to begin. Jane’s at-home parent collected Phase 1 baseline data for five nights while John’s at-home parent collected Phase 1 baseline data for eight nights. The nonconcurrent, multiple-baselines across participants design allowed for a single intervention phase without having to reverse back to the baseline phase.

Measures

Children’s Sleep Habits Questionnaire. The CSHQ (Owens, et al., 2000) consists of 45-

items related to the sleep habits and behaviors of children. It is a parent-report measure that yields scores in the areas of Bedtime Resistance, Sleep Onset Delay, Sleep Duration, Sleep Anxiety, Night Wakings, Parasomnias, Sleep Disordered Breathing, and Daytime Sleepiness. Parents are able to rate the behaviors as occurring “Rarely”, “Sometimes”, or “Usually”, with “Rarely” meaning the behavior occurs 0-1 times per week, “Sometimes” meaning 2-4 times per week, and “Usually” meaning more than 5 times per week. The parent also indicated if each behavior was a problem by marking “Yes”, “No”, or “N/A”. A study on the reliability and validity of this questionnaire revealed internal consistency ranging from 0.36 on the Parasomnias scale to 0.70 on the Bedtime Resistance scale (Owens, et al., 2000). Test-retest reliability ranged from 0.40 on the Sleep Duration scale to 0.79 on the Sleep Anxiety scale (Owens et al., 2000). For the purposes of this study, only items from the Bedtime Resistance subscale were examined. These items are, “Goes to bed at same time”, “Falls asleep in own bed”, “Falls asleep in other’s bed”, “Needs parent in room to sleep”, “Struggles at bedtime”, and “Afraid of sleeping alone”. Families were considered for inclusion in this study if any of the Bedtime Resistance items were marked as problematic.

Dependent Variable. Families completed sleep diaries each night during baseline and intervention phases. Parents were required to record bedtime resistance behaviors that occur each evening. These behaviors included crying out for parents and leaving bed to seek out a parent. The mothers of both participants recorded the frequency of these behaviors as well as the time in which the child was put to bed with lights out, the times in which the child awoke during the night, and finally the time that the child woke for the day. The researcher telephoned the mothers of both participants at the end of each week to receive a report of the data from each parent. At the end of the intervention period, the researcher met with each parent individually to collect the paper-pencil data and validated this data against the previously reported data. Total bedtime resistance behavior was calculated by adding the number of times that a child called out to a parent or sibling and the number of times the child left the bed each night.

Procedures

Approval was obtained from the university's Institutional Review Board prior to the beginning of the study. After the approval was obtained, written informed consent was obtained from the parent for each participant prior to the start of the intervention.

Remote Bedtime Story Intervention. The deployed parent was recorded during a scheduled video-chat session with the researcher while reading three different children's books. The families were provided with hard copies of each book that was recorded. The researcher then transferred the recordings to a DVD for each participating family. The at-home parent then showed the video as a part of the child's typical bedtime routine. During the first three days of the intervention, the families viewed a different book each day. After the child had viewed each video, the child was able to request which video and book to read each night for the remainder of the intervention. The researcher requested each at-home parent make no other changes to their child's typical bedtime routine beyond showing the recommended video.

Results

The results from this study indicate that incorporating videos of a deployed parent reading to their child was an effective means of decreasing bedtime resistance behaviors (see Figure 1). Jane's total number of bedtime resistance behaviors decreased from a mean of 9.60 bedtime resistance behaviors per night during baseline ($SD = 4.16$) to a mean of 2.67 bedtime resistance behaviors in the intervention phase ($SD = 1.63$). Effect size was estimated by calculating Cohen's d and percentage of non-overlapping data (PND), which is most appropriate given the nature of the design and dependent variable (Campbell, 2004). To calculate these statistics, the intervention phase was compared to the baseline phase. The effect size for the intervention phase was Cohen's $d = -1.67$ and $PND = 87.50\%$. Anecdotally, Jane's mother reported that Jane appeared to be teething and not feeling well on night 8 where a higher number of bedtime resistance behaviors was observed (crying out multiple times during the night).

John's total number of bedtime resistance behaviors decreased from a mean of 7.13 bedtime resistance behaviors per night during baseline ($SD = 2.42$) to a mean of 2.00 bedtime resistance behaviors in the intervention phase ($SD = 2.86$). The effect size for the intervention phase was Cohen's $d = -2.12$ and $PND = 92.30\%$. John's mother reported that during one night of the intervention phase (night 17) the family received multiple phone calls from family members due to a family emergency and John left the bed several times that night.

Discussion

The results of the current study reveal that using videos of a deployed parent reading bedtime stories to their child as a part of the child's typical bedtime routine is an effective way of decreasing bedtime resistance behaviors. Despite one outlier per case study, the overall effect of the videos was significant. In both cases, the parents of the child participating in the intervention informally reported positive feedback regarding the videos. Anecdotal evidence regarding parent satisfaction indicated that they enjoyed the intervention and viewing the videos as much as their children. Jane's mother reported that Jane requested to watch the videos each night and that it was a positive experience. Jane's mother also informally reported that she experienced a decline in her own stress each night due to Jane's decline in bedtime resistance behaviors. Both families reported that they planned to continue watching the videos as a part of their bedtime routines after the study was complete. Although watching TV before bedtime is usually viewed as a maladaptive bedtime routine (American Academy of Pediatrics, n.d.), the virtual interaction with the child's deployed parent appears to be of enough benefit that it may be recommended as an intervention for children already exhibiting bedtime resistant behaviors.

While this intervention is similar to the United Through Reading program due to the fact that both provide families with video- recordings of the deployed parent reading stories to their children, the current intervention has several advantages. One of these advantages is that this intervention allows parents to record videos after they have already left for deployment. Scheduling recordings through United Through Reading before a deployment occurs can be difficult as the services are only

available at each military base for a limited number of days each month. By using a video-based chat program, families can utilize the intervention any time during the deployment, as needed. Another advantage of the current intervention is that the selection of books available to read is not limited. Families can use any of their favorite books to record for the intervention. Scripts of each book were emailed to the deployed military member so that they could read the books aloud to their child, while the child at home followed along with a hard copy of the book.

The results from the current study were similar to those found in other bedtime resistance intervention studies. For example, the studies using positive bedtime routines reviewed by Mindell (1999) were found to be effective by adding calming activities that the children enjoyed to their bedtime routine. These studies (Mindell, 1999) added multiple calming activities in order to intervene with bedtime resistance behaviors while the current study added only the video to the participants' bedtime routines. Although only the video was added to their routines, the intervention was effective at reducing their problematic bedtime behaviors. While the number of bedtime intervention studies are limited, the current study may be the first to investigate this type of intervention with children of deployed parents. While the results of the current study do not provide direct evidence for the effectiveness of the United Through Reading program, these results could be considered indirect evidence for the effectiveness of that program given the similarities between the current intervention and United Through Reading. As stated previously, however, the current intervention has several advantages over the United Through Reading program, the most salient of which is the added convenience of implementation if the parent is already deployed and not near a recording site.

There were some limitations to this study that were observed. The first limitation is that no follow-up data were collected to determine if the effects of the intervention continued over a greater period of time. Future research in this area should examine the long-term effects of using these videos throughout a military deployment. Yet another limitation would be that only bedtime resistance behaviors were examined to determine treatment effectiveness. Decreases in time of sleep onset, as

well as increases in length of time spent asleep throughout the night, could have been examined but were not reported as areas of concern for the participants in this study. Another variable that could yield interesting results would be the effects that the intervention has on stress as well as sleep behaviors of the at-home parent. It is possible that by decreasing bedtime resistance behaviors in children that the parent may also experience secondary benefits of decreases in stress as well as increases in the amount of time slept and quality of sleep.

Not using a standardized measure of treatment acceptability would also be a limitation to this study and it would be beneficial for future research. Both at-home parents informally reported positive results and feedback for the intervention but a standardized assessment across participants would be a more reliable measure for future studies in this area. Another limitation is that the study did not look at treatment fidelity. The participants were required to view each of the three videos, one per night, on the first three nights of the intervention. Then the participants were allowed to choose which video to watch for the remainder of the intervention. No direct observations or formal treatment fidelity measures were employed to ensure that the intervention was implemented as intended.

Overall, the current study revealed that using videos of a deployed parent reading to their child during a military deployment was an effective way to reduce bedtime resistance behaviors in young children. The specific behaviors addressed were children's calling out to a parent or sibling and leaving bed after bedtime, but any number of bedtime resistance behaviors could be examined in future research studies. This study was designed to be easy for military families to implement as well as allow the military children to experience a positive connection with their deployed parent. This is a unique study with a specialized population that should be investigated further in order to expand the research literature on bedtime interventions for military children.

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Figure 1. Total Bedtime Resistance Behaviors

