Treating Non-Retentive Encopresis with Rewarded Scheduled Toilet Visits

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ABSTRACT

We evaluated the effects of rewarded scheduled toilet sits on non-retentive encopretic behavior of an elementary-school student receiving services for serious emotional disturbance. A multidisciplinary team implemented the 8-week intervention using a multiple baseline across settings design. The results showed an increase in sitting on the toilet and a decline in encopretic episodes in both school and home settings. These findings support the use of a behavioral intervention for children with significant behavioral disorders within a classroom setting.

Descriptors: Encopresis, scheduled toilet sits, severe behavior disorders

Encopresis affects between 1.5% and 7.5% of children ages 6 to 12 (Doleys, 1983). According to the *Diagnostic and Statistical Manual for Mental Disorders, Fourth Edition* (DSM-IV; American Psychiatric Association, 2000), children diagnosed with encopresis regularly pass feces in inappropriate places, either intentionally or involuntarily, for at least 3 months, and are at least 4 years of age (chronologically or developmentally). Two types of encopresis have been identified — retentive encopresis (RE) and non-retentive encopresis (NE).

RE has traditionally been characterized as incontinence with constipation (for a review of studies on RE, see McGrath, Mellon, & Murphy, 2000). Constipation is caused by an interaction among physiological functioning and behavioral responses. In brief, increased time between bowel movements, influenced by multiple factors such as diet or reluctance to use the toilet, results in a fecal impaction that leads to potentially painful defecation. As a result, children show toileting resistance that further increases the time between bowel movements, leading to overflow incontinence (Bernard-Bonnin, Haley, Belanger, & Nadeau, 1993). RE has been extensively studied using a wide variety

of interventions. McGrath et al. (2000) reviewed the efficacy of 42 interventions and concluded that successful treatments generally include a combination of medical management (i.e., an initial bowel clean out) and behavioral interventions (e.g., operant conditioning techniques, sitting schedules, and skill building techniques).

In contrast, NE remains poorly understood and has been the subject of few empirical investigations in children (Christophersen & Rapoff, 1992). Children who are diagnosed with NE defecate daily but exhibit encopretic behavior either without a history of continence (primary encopresis) or after having achieved continence previously (secondary encopresis). The majority of research on NE has focused on primary encopresis. This literature suggests that NE may be due to insufficient bowel training, fear-related avoidance of toilets, delivery of tangible or social stimuli contingent on soiling, or complications from irritable bowel syndrome (Kuhn, Marcus, & Pitner, 1999).

Despite the scarcity of research on secondary NE, particularly within pediatric populations, research on other forms of encopresis indicates that a combination of medical and behavioral interventions would be effective (Kuhn et

al., 1999). For example, in several studies on primary NE, treatment consisted of scheduled toilet sits, reinforcement for sitting and/or eliminating in the toilet, daily fiber supplements or laxatives to ensure frequent bowel movements, and prompts to clean up contingent on inappropriate soiling (e.g., Kuhn et al., 1999; Smith, 1996).

However, the generality of these procedures for treating secondary NE in children (i.e., those with a previous history of continence) remains to be established. The efficacy of treatment for children with serious emotional disturbances or significant behavioral problems also should be examined. It may be difficult for teachers and caregivers to implement recommended treatments for NE (e.g., scheduled toilet sittings) with children, who are noncompliant, irritable, and argumentative with adults.

In this study, we examined the therapeutic outcomes of a treatment for secondary NE with a student enrolled in an educational therapeutic classroom. Our goal was to extend the very limited literature on the treatment of NE by testing the effectiveness of established treatment guidelines for a child diagnosed with NE and significant behavioral and emotional problems.

Method

Participants and Settings

The participant, Mark (fictitious name), was a 10-year-old boy who had been diagnosed with bipolar disorder and oppositional defiant disorder. He attended a specialized 4th-grade classroom for students enrolled in an intensive mental health program designed to improve emotional, behavioral, and academic functioning (Vernberg, Roberts, & Nyre, 2002). The classroom, which was intended for students with significant impairments, contained a bathroom and an area for seclusionary time-out. Previous testing indicated Mark had below average intellectual functioning. Mark had a history of infrequent but highly aggressive behavior and nocturnal enuresis. This latter behavior was successfully treated in the year prior to the onset of encopretic behaviors. There was no reported history of encopretic behavior at home or school prior to the present study. The interventionists were program staff (one teacher, two therapists, and two paraprofessionals) and the student's grandmother. Mark lived with his grandparents and two sisters. His grandparents previously had been trained by a therapist to implement behaviorally-based interventions.

As a therapist in the classroom, the first author observed several soiling episodes before the introduction of baseline and intervention assessments. During these unstructured descriptive assessments, Mark was often quiet before soiling episodes and showed appropriate behaviors (e.g., sitting at his desk or playing with peers). He denied having an accident, despite obvious indications such as a foul smell. Subsequently, Mark received significant negative attention immediately after a soiling episode by the classroom teacher. Teaching would be interrupted for the entire class, and he would receive one-on-one attention from staff as well as from other students within the classroom during the clean up process. Mark showed a reluctance to participate with clean up, and he

occasionally required support from multiple staff members before returning to his prior activities. Mark would generally refuse to enter the bathroom when asked by staff.

Following empirically supported treatment guidelines (Kuhn et al., 1999; McGrath et al., 2000), Mark's initial soiling episodes were first evaluated by a physician to determine if constipation was a factor in the soiling behavior. After the physician ruled out retentive encopresis, secondary NE was considered a likely possibility. During treatment, Mark continued to take a fiber supplement, and psychoactive medication (Geodon®, Lamictal®, & Abilify®) was kept at a constant dosage.

Target Behaviors and Measurement Procedure

The two primary target behaviors were soiling of pants and sitting on the toilet at school and home. Soiled pants was defined as the presence of inappropriate soiling in Mark's clothing, identified by either a persistent foul odor or through Mark's self-reports. Sitting on the toilet was defined as entering the bathroom and sitting on the toilet for 2 min without verbal opposition or verbal refusal.

The two paraprofessionals, teacher, co-therapist, and grandmother were trained by the primary therapist (first author) to record Mark's soiling and toilet sitting behaviors. Separate data charts were prepared for school and home (see *BAP* website for illustrations of the data sheets). After each scheduled bathroom visit, the staff or the grandmother marked a large "X" on the data chart if Mark had entered the bathroom and sat on the toilet for 2 min without verbal opposition or verbal refusal. If Mark had soiled since the last bathroom visit, "accident" also was written down in that time period. At both home and school, Mark was allowed to use the bathroom outside of scheduled visits; however, no data were collected regarding the frequency of these additional visits. Interobserver agreement was evaluated during 23.5% of the toilets sits scheduled in the

afternoon by having both the teacher and a therapist collect data at school. Agreement was calculated by dividing the number of agreements (toilet sits and soiling) by the sum of agreements plus disagreements multiplied by 100%. Percentage of agreement was 100% for both soiling and toilet sits.

Intervention

The effects of an intervention consisting of scheduled toilet sits and rewarded scheduled toilet visits were evaluated across home and school settings using a multiple baseline design. During baseline, the teacher, paraprofessionals, co-therapist, and grandmother were instructed to observe the frequency of toilet sits and soiling episodes. Mark was not prompted to use the bathroom. Following accidents, he was given a complete change of clothes and baby wipes and told to clean his bottom until the wipes were clean. He was then instructed to place his soiled clothes in a bag and place the wipes in a separate trash bag. After 3 weeks of baseline data collection, the intervention was implemented at school, while the grandmother was instructed to continue the baseline conditions at home. After the fifth week, the grandmother implemented the intervention at home.

The intervention included a daily schedule of toilet sits combined with tokens provided for appropriate behavior during the visits. Specifically, Mark was prompted to visit the bathroom at the time listed on his schedule each day. The schedule at school was designed to coincide with Mark's activities within the program, with seven visits per day, except for Wednesday (an early release day during which there were six visits). Visits occurred at approximately one-hour intervals, beginning at 8:30 AM. At home, Mark was scheduled to use the restroom three times per day all week based on home routines, mealtimes, and activities. This resulted in a sitting schedule that first began upon entering the home after school (4:00 PM), after dinner (6:00 PM), and before bedtime routines began (8:00 PM). Tokens

consisted of laminated pieces of paper called “Gotcha-Bucks” that were designed to look like money and could be used to “shop” for items in the program “store.” Mark received one token immediately following each successfully completed scheduled toilet sit. Tokens were stored in an envelope that Mark kept at his desk. At the end of each day, Mark and staff counted and recorded the daily total of earned tokens on a log sheet called a point sheet. The point sheet was a standardized form used in the classroom which depicted the time at school in 5-min blocks, as well as by activity (e.g., educational lesson and lunch). Each point sheet included individualized target behaviors for a child that was monitored by staff. All earned tokens were then returned to staff. Shopping occurred once per week on Wednesdays. The store contained a variety of toys and games (see Table 1 for the reinforcer menu). The prices ranged from 5 to 100 gotcha bucks so that Mark could either buy a small prize with one day’s worth of tokens or the accumulation of several days’ worth of tokens. Contingent on accidents, the same clean up procedures used in baseline were implemented, and he did not receive a token for sitting appropriately on the toilet during the next scheduled visit.

Following the 7th week of intervention, the criterion for earning a token was changed from sitting on the toilet to producing a bowel movement. This program modification was made

Item	Price (Number of “Gotcha-Bucks”)
1. pencils / stickers	5
2. bubbles	15
3. small toy cars/action figures	25
4. stuffed animals	25
5. board games/puzzles	50
6. portable electronic video games	100

Table 1: Rewards Menu Utilized During Shopping

Figure 1. Total occurrences of soiled pants and scheduled toilet visits per week.

after Mark had substantially increased the frequency of toilet sits compared to baseline levels but was still occasionally soiling his pants. Tokens were provided to Mark based on visual inspection of feces in the toilet by staff members. Throughout the study, the other students in the classroom were allowed to use the bathroom when necessary.

Treatment Integrity

Measurement of treatment integrity was limited to observations of the recording sheet, in which blank cells suggested that staff did not successfully complete a scheduled sitting with the participant (either because Mark was noncompliant or because staff did not prompt him to visit the bathroom). Interviews with staff indicated that blank cells were not simply the result of completed sittings without proper recording on the form; in fact, the recording form was posted directly outside of the bathroom next to the door. A mean of 44% (range, 32% to 53%) of the scheduled bathroom visits at school were marked as successfully completed. Higher levels of treatment

integrity may have occurred at home, as a mean of 83.3% (range, 80% to 87%) of the scheduled bathroom visits at home were marked as successfully completed. Staff were not asked to record when they prompted a visit or when tokens were dispensed, although tokens were summed at the end of the day and recorded in a log sheet. Shopping was recorded in a “balance book.” This participant shopped every week during the intervention, although specific data on total tokens earned and type of toys purchased were not recorded.

Results

Figure 1 shows the number of times per week Mark soiled his pants and visited the bathroom appropriately. The number of times Mark soiled his pants at school decreased from a mean of 7 times per week during baseline to a mean of 3 times per week during the intervention. The frequency of toilet sits in school increased from a mean of 4 times per week during baseline to a mean of 15 times per week during the intervention. At home, Mark’s frequency of soiling decreased from a mean of 4 times per

week to a mean of 1 time per week only after the intervention was implemented by his grandmother. Likewise, Mark's toilet sits increased from a mean of 5 times per week during baseline to a mean of 12 times per week during the intervention. When tokens were provided contingent on bowel movements only, he had a single accident that week at school and none were reported from the home. Mark also maintained a high frequency of scheduled toilet sitting compared to baseline levels

Conclusions and Guidelines for Best Practice

We demonstrated that scheduling and rewarding toilet sits were effective in reducing the number of encopretic episodes and increasing the use of the bathroom for a child with secondary NE who exhibited severe behavior disorders. These findings provide preliminary support for the use of procedures that have been shown to be effective in treating other forms of encopresis and that have been recommended for the treatment of NE (Kuhn et al., 1999). Results also suggest that these procedures may be effective for children whose behavior is generally difficult to manage. Although our methodology prevented a direct assessment of behavioral processes, the observed increase in toilet sits was suggestive of a reinforcement process. This increase, in turn, may have reduced the frequency of soiling incidences in combination with the response cost component (token loss) for soiling during the previous interval.

Despite these positive outcomes, the study has a number of limitations. First, the encopretic behavior was not eliminated. Problems with treatment integrity may have impacted the effectiveness of the intervention. As noted earlier, only 44% of the scheduled toilet sits at school were successfully completed. These low levels of adherence may have been due to several factors, including the failure of staff to prompt all of the toilet sits (e.g., to avoid Mark's oppositional behavior), inadequate time to complete the large number of toilet

visits per day, or Mark's noncompliance to staff requests to sit on the toilet. Incentives for treatment implementation may need to be incorporated into the intervention plan to enhance follow-through and positive outcomes.

As a second limitation, it is important to note that staff did not prompt Mark to use the bathroom in baseline. Therefore, we cannot determine which treatment component (i.e., staff prompts, reinforcement for toileting sitting, or a combination) was responsible for the increase in toilet sits. We also cannot determine if the reduction in soiling incidences was due to the increase in toilet sits (overall number or scheduling of them), the loss of tokens for accidents, or a combination of the two. The optimal number of daily scheduled visits remains to be established in further research.

The outcome for soiling may have been improved by rewarding bowel movements (BM's) in the toilet rather than just toilet sits. The contingency was modified at both school and home following the 7th week of the intervention, after which he had a single soiling episode at school and no soiling at home. The reward for producing BM's in the toilet appeared to strengthen the intervention. However, at the same time, treatment fidelity increased at school to 73.5% of scheduled visits from a previous high of 53.4% following feedback on implementation levels during previous weeks. Thus, a compelling test of the altered intervention could not be demonstrated.

We had considered rewarding the production of BM's in the toilet from the very beginning of the intervention. However, we were concerned that his observed reluctance to follow commands to enter the bathroom and sit on the toilet would greatly limit his opportunity to receive rewards for voiding on the toilet. An approach that involves first rewarding toilet sits, followed by BM's in the toilet once sitting has increased, may be ideal for children who demonstrate significant oppositional behavior. However, some children may

benefit from beginning with a treatment that targets the production of BM's in the toilet. Additional investigations are needed to explore the impact of such differences in treatment.

Other limitations should also be considered when evaluating our results. For instance, a functional analysis of soiling behavior was not conducted to identify the consequences that maintained the behavior. Although informal observations in the classroom suggested attention from adults and peers may have contributed to the maintenance of soiling episodes, other factors may have influenced this behavior. Our intervention also did not include systematic fading or long-term follow up, which are important components of intervention. Although staff and family members reported that Mark no longer had soiling episodes within a month following the conclusion of our formal evaluation, we are unable to report if he maintained this level of success and what variables may have contributed to his outcome after data collection ended.

The present study provides initial evidence that an effective behavioral intervention for NE can be implemented with children who have severe psychiatric disorders using a school-based program and caregivers at home. However, no data were collected on the frequency and intensity of Marks' behavioral disruptions before, during, and after treatment concluded. As such, the potential impact of these behaviors on the outcomes for Mark cannot be determined. The extent to which this intervention would be effective with other children who engage in severe behavior disorders should be examined in further research.

The present study, notwithstanding the methodological limitations, extends a very limited evidence base by providing important preliminary evidence of treatment effectiveness for secondary NE using rewarded scheduled toilet visits. Clearly more rigorous, prospective research will need to be further conducted in order to better understand the limitations and key components of

success. Based on our experiences, the following guidelines are recommended for practitioners:

- Consider making the rewards contingent on bowel movements as well as toilet sitting. Children who have minimal opposition to toilet sits may benefit from initially targeting the production of bowel movements during sits.
- Conduct a formal functional assessment of NE prior to treatment and share the results with all staff members. Such communication may help staff adherence to treatment protocols if they have a better understanding of the factors that are maintaining the behavior.
- Provide frequent feedback to staff about performance to ensure continued high treatment integrity.
- Our participant was often non-compliant and oppositional when prompted to sit. Similar interventions should include staff training on how to give clear directions as well as practice in dealing with noncompliance in a consistent manner to increase treatment effectiveness.

- Environments that utilize multiple staff members may benefit from having a primary person conduct the treatment. This may increase the consistency in implementation. Our staff included a paraprofessional with extensive experience in working with our participant. This individual prompted a majority of the toilet sits and, thus, may have increased overall treatment integrity.

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