

PRIMARY ENCOPRESIS: EVALUATION AND TREATMENT

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Cathartic and behavioral treatment procedures for eliminating diurnal and nocturnal primary encopresis were investigated using a multiple-baseline design across four children. The dependent and independent variables measured were appropriate bowel movements, soiling accidents, independent toiletings, and cathartic use. Over 177 reliability observations (home visits) were conducted. For two of the children, treatment with cathartics and child-time remedied their soiling accidents and increased their independent toiletings in 8 to 11 weeks. While the cathartics and child-time increased the rate of appropriate bowel movements, they did not eliminate the soiling accidents with the other two children. Independent toiletings for these two children were achieved after 32 to 39 weeks of treatment when punishment procedures (positive practice, time-out, and hourly toilet sits) were incorporated and the suppositories were faded systematically.

DESCRIPTORS: constipation, encopresis, fecal incontinence

Nonorganic encopresis generally has been defined as the voluntary or involuntary passage of feces that results in the soiling of clothes (Wright, 1973). Encopretic children have been divided into two major groups: primary and secondary. The American Psychiatric Association (1980) defines nonorganic encopresis as:

... primary if it occurs after the child has reached the age of four and has not been preceded by fecal continence for at least one year and secondary if it has been preceded by a period of fecal continence for at least one year. (p. 81).

A review of the literature on treating primary encopresis presents different treatment methods for eliminating primary encopresis with or without

constipation and with or without toilet refusal. Toilet training procedures (Azrin & Foxx, 1974; Foxx & Azrin, 1973) have been employed to treat children who were neither constipated nor toilet refusers. Butler (1977) treated a 5-year-old encopretic boy with dry pants checks, simple correction, positive practice, and social and/or edible reinforcers. Continence for this child was achieved in 6 weeks, and maintained at 6-months follow-up. Crowley and Armstrong (1977) eliminated incontinence with three boys, ages 5, 7, and 12, using simple correction, weekly contracts, restitutional overcorrection, and positive practice. All subjects achieved continence in 4 to 8 weeks with continence being maintained at 18-months follow-up.

Constipation has been recognized as a primary cause of encopresis (Levine, 1982). Levine (1975) reported that 79% of his encopretic pediatric patients were constipated. Treatment procedures for eliminating primary encopresis with constipation have included increased toiletings, cathartics or mineral oil to soften stools, reinforcement for appropriate toiletings, and punishment for incontinence. Three studies are representative of the cathartic/behavioral treatment procedures used with primary encopretic children with constipation. Bach and Moylan (1975) provided a 6-year-old boy with 25 cents for each appropriate bowel movement. Although this reward decreased the boy's soiling accidents, incontinence continued until he also re-

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ceived 5 cents for each appropriate bowel attempt. Continence for this child was achieved in 17 weeks with no reported incontinence at 2-years follow-up. Blechman (1979) provided tangible rewards (e.g., money, toys), simple correction, and mineral oil to successfully eliminate primary encopresis with constipation in a 6-year-old girl and a 7-year-old boy. Continence for these two children was achieved between 9 and 17 weeks, with no recurrent accidents reported at 18-months follow-up. Wright (1975) successfully treated three primary encopretic children with a comprehensive cathartic program (Wright & Walker, 1976). This program included an initial evacuation of the colon; a daily program of suppositories and enemas, which were faded after 2 weeks without soiling; parental delivery of reinforcing stimuli for each noncathartic elimination and for each soil-free day; and parent-determined punishment after each soiling episode. Group data were reported for both the primary and secondary encopretic subjects. These results indicated that continence was obtained in 10 to 38 weeks, with an average of 17 weeks, with one child relapsing at 6-months follow-up.

Doleys and Arnold (1975) and Ashkenazi (1975) reported on remediation of toilet refusal with primary encopretic children with constipation. For all subjects, the toilet refusal was eliminated prior to treating the child's incontinence. Doleys and Arnold (1975) used a child model and reinforced successive approximations to toilet sitting with an 8-year-old mentally retarded boy. The child learned to sit on the toilet after 1 day of clinic treatment. Using a similar method, Ashkenazi (1975) treated five children, ages 4 to 7, by having the parents provide reinforcing stimuli (i.e., toys and candy) for successful approximations to toilet sitting. All children were trained in the home, with appropriate toilet sitting achieved in 5 days or less.

The literature on encopresis lacks convincing research designs. All studies reviewed used A-B designs except for Blechman (1979), who used a multiple-baseline design. All of the published reports have relied on parent reports for their data; none included reliability data for either the dependent or independent variables. The dependent vari-

ables of investigation have been appropriate bowel movements and/or soiling accidents. Studies involving cathartic treatment have not included data on the number of suppositories used, or on when the child began independent toileting without a cathartic. Also, we could not locate any published data on the treatment of primary nocturnal encopresis, reportedly a rare phenomenon with a poor prognosis (Levine, 1975). This lack of published data is surprising, given that Levine (1975) noted that as many as 58% of his diurnal encopretic subjects (59 of 102) exhibited "occasional" nocturnal encopresis.

We evaluated cathartic/behavioral treatment procedures for eliminating primary nocturnal and/or diurnal encopresis. A multiple-baseline design across four children was employed with data presented on the number of appropriate bowel movements, soiling accidents, percentage of independent toilettings, and number of cathartics used.

METHOD

Subjects

Three boys with primary diurnal encopresis and one boy with primary diurnal and nocturnal encopresis participated as subjects. Each child was given an appropriate physical examination to rule out organicity and to assess degree of constipation. Children were selected as subjects if they met the American Psychiatric Association's (1980) classification for primary encopresis (i.e., at least 4 years of age with nonorganic encopresis).

Mike, age 5, presented with a history of extremely large and infrequent bowel movements. Rectal and abdominal examination revealed a distended colon with large fecal masses; constipation was noted. Mike reportedly self-initiated appropriate bowel movements.

Dean was a 4-year-old male functioning in the mild range of mental retardation who lived with his mother and grandparents. Even though he would sit on the toilet, he had never eliminated in it. Interview and rectal examination indicated constipation.

Steve, age 4, was reported to have minor acci-

dents throughout the day, with his major bowel movements occurring while asleep at night. Steve's parents required him to sit on the toilet for 15 minutes to 2 hours daily, noting that he never self-initiated appropriate bowel movements. Interview and rectal examination revealed constipation.

Joey, age 4, self-initiated appropriate bowel movements, yet frequently soiled. Constipation was not identified. Joey was reported to be noncompliant to parental requests; therefore, his mother had received prior training in time-out procedures.

Setting

One assessment and one treatment visit were conducted in the clinic or child's home. All other contacts with the therapist were by telephone. Baseline and treatment sessions were conducted in the child's home with the mother (or grandmother in Dean's case) serving as the primary therapist.

Observation System

Response definitions. Three dependent measures and one independent measure were obtained. Child behaviors recorded were number of appropriate bowel movements, number of soiling accidents, and percentage of independent toiletings. *Appropriate bowel movements* were scored whenever the child eliminated any fecal matter, with or without a cathartic, into the toilet. *Soiling accidents* were recorded whenever any fecal stain, streak, or matter was noted on the child's underwear or anywhere (e.g., carpet, bed) other than in a toilet. *Independent toiletings* were scored whenever the child self-initiated an appropriate bowel movement in the toilet without a cathartic. The percentage of independent toiletings was obtained by dividing the total number of appropriate bowel movements without cathartics by the total number of appropriate bowel movements plus soiling accidents. The independent variable, *cathartic use*, referred to the number of suppositories inserted into the child's rectum.

Data collection. Throughout the assessment and treatment phases the parents recorded daily the size and consistency of each appropriate bowel movement and soiling accident, the number of cathartics

inserted, the activity and the duration of child-time, and whether the child's underwear was clean or soiled at four afternoon pants-check times.

Interobserver agreement. Reliability data for soiled and clean underwear were obtained by the parent saving all soiled underwear, along with the first afternoon pants-check underwear, whether clean or soiled. These garments were placed in plastic bags, marked with the date and time, and then sealed in an air-tight plastic container. The first author made a total of 177 home visits with Mike, Dean, and Joey to observe afternoon toiletings, to conduct pants-checks, and to record whether the underwear saved in the plastic container was clean or soiled. No reliability data on appropriate bowel movements were obtained with Steve; however, home visits were conducted to collect reliability data on saved underwear and diapers. Reliability data on independent toiletings are not individually presented because they are the combined score of appropriate bowel movements without suppositories divided by all appropriate bowel movements plus soiling accidents. Reliability data for cathartic use were calculated by dividing the recorded number of suppositories used by the number of suppositories absent from their container. Percentage agreement reliability was calculated by dividing the number of agreements by the number of agreements plus disagreements, and multiplying by 100 (Hartmann, 1977). Percentage agreement reliability for each subject ranged from 82%–100% for 45%–100% of soiling accidents, was 100% for 0%–33% of appropriate bowel movements, and ranged from 98%–100% for 58%–96% of the cathartics inserted.

Experimental Design and Procedures

A multiple-baseline design (Baer, Wolf, & Risley, 1968) across four children was used to evaluate the effectiveness of the treatment conditions. This design allowed for the encopretic behaviors to be measured and to serve as a baseline for comparison with the staggered introduction of the independent variable.

Baseline. Initial evaluation, including physical and social history and rectal examination, was con-

ducted with each participant in the clinic. The parents were instructed to continue treating their child's encopresis as they had been doing previously. According to parent report, no child received a cathartic or laxative during baseline. Additionally, baseline data appeared to reflect the child's encopretic behavior over the previous 6 months.

Cathartics and child-time. Treatment procedures were explained by the therapist to the parent and child in the clinic or home on the day of condition change; all subsequent contact with the therapist was by telephone. The reliability observer was instructed not to discuss or answer parental concerns regarding treatment. To ensure standardization of treatment explanation, each therapist completed a protocol checklist and each parent completed a seven-question quiz to assess parental understanding of treatment procedures. The therapist reviewed any incorrect quiz answers with the parent. One therapist was assigned to Mike, and another therapist followed Dean, Steve, and Joey; neither therapist served as a reliability observer.

Treatment was a replication of procedures reported by Christophersen and Rainey (1977), whose treatment procedures were a modification of those reported by Wright (1975). Treatment procedures for each child consisted of the following:

1. Initial evacuation of the colon was done, using two pediatric enemas on the first day of treatment (prescribed by the examining physician).

2. A morning routine was implemented, which consisted of a 5-minute toilet sit, followed by insertion of an adult glycerin suppository if the child did not defecate at least one-fourth of a cup. A second suppository was used if the child had not eliminated at least one-fourth cup of feces with the first suppository.

3. The child was required to do a 5-minute toilet sit each afternoon.

4. Four afternoon pants-checks were done by the parent at predetermined 1½ hour intervals.

5. After each soiling accident, the parent used simple correction, which required the child to wash his own underwear and bathe quickly.

6. The parent spent 15 minutes engaging in a

child-preferred activity for each appropriate bowel movement.

7. Wiping training, where the parent checked and guided appropriate wiping behavior, was performed.

8. A foot-stool was used if the child's feet did not touch the floor.

9. Dietary recommendations were given to increase bulk and roughage foods, while decreasing dairy and bland food consumption.

The suppositories were faded after the child had 2 consecutive weeks without a soiling accident. The fading was done by eliminating 1 day of suppositories for each week the child did not soil. If soiling occurred, 1 day's suppository use for each soiling episode was added until the child was again receiving suppositories every day or until he had gone 1 week without a soiling accident and the suppositories could again be faded.

Cathartics, child-time, and punishment. The procedures for fading the suppositories were changed and punishment procedures were implemented. The suppositories were no longer reintroduced after each soiling episode. Instead, they were discontinued on a one-per-week basis, regardless of soiling episodes. Soiling accidents were punished by simple correction, 10 positive practice trials, a 5-minute chair time-out, and six required hourly 5-minute toilet sits. If the hourly toilet sits occurred at the end of a day, they were completed at the beginning of the next day.

Follow-up. The treatment program was terminated and the follow-up phase initiated when the child had gone 2 weeks without a cathartic and at least 4 weeks without a soiling accident. The parents were instructed to continue daily toilet sittings, to use suppositories when the child became constipated, and to call the therapist if the child soiled.

RESULTS

Treatment. Dean's and Steve's treatment with cathartics and child-time eliminated their encopresis in 8 and 11 weeks, respectively. In contrast, Mike and Joey continued soiling after 19 and 28 weeks, respectively, with this treatment method.

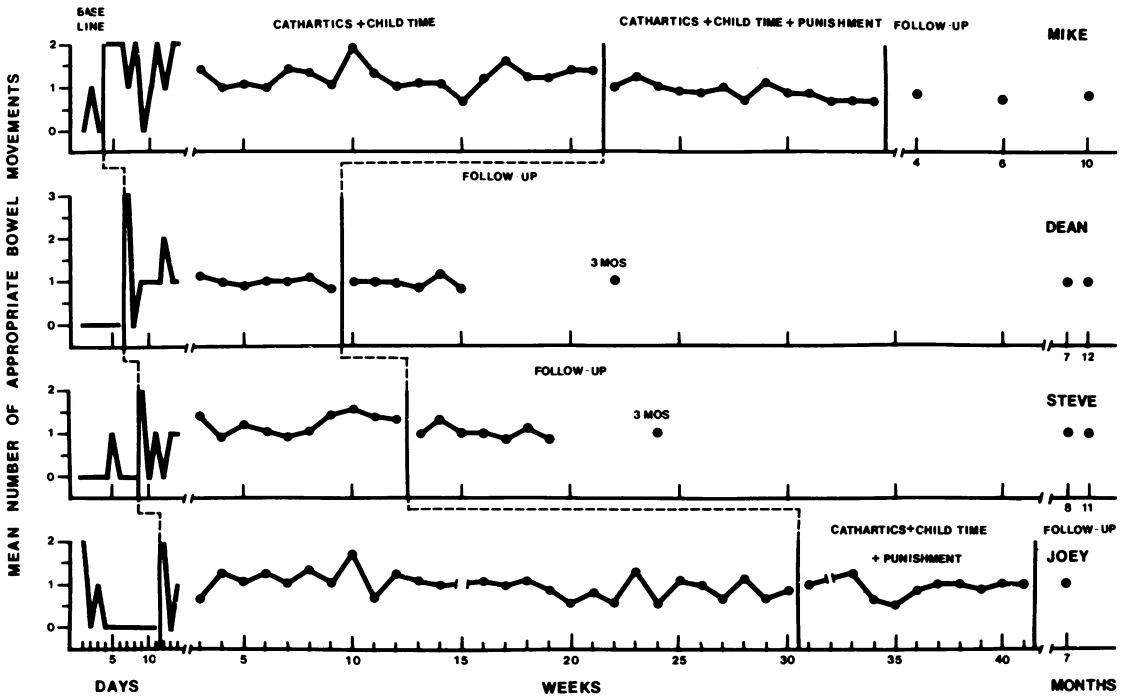


Figure 1. The mean daily number of appropriate bowel movements during baseline and treatment sessions.

For these two boys, punishment (time-out, positive practice, and hourly toilet sits) plus weekly fading of suppositories eliminated their encopresis in an additional 13 and 11 weeks, respectively.

Baseline and treatment data on mean daily appropriate bowel movements for all four children are shown in Figure 1. Mike averaged 0.3 appropriate bowel movements per day during baseline. This increased to 1.3 with cathartics and child-time and decreased slightly to 0.9 with cathartics, child-time, and punishment. Dean did not eliminate in the toilet during baseline. His appropriate eliminations increased to 1.0 bowel movements per day with cathartics and child-time. Steve's mean daily appropriate bowel movements also increased from a baseline average of 0.1 to 1.2 with cathartics and child-time. Similarly, Joey had 0.3 appropriate bowel movements during baseline, which increased to 1.1 bowel movements with cathartics and child-time, and decreased slightly to 0.9 with the incorporation of cathartics, child-time, and punishment.

Figure 2 shows each child's mean number of soiling accidents per day. Mike soiled an average of 0.3 times per day during baseline, which decreased to 0.2 with cathartics and child-time, and to 0.1 with cathartics, child-time, and punishment. Dean soiled an average of 3.5 times per day during baseline and 0.3 times per day with cathartics and child-time. Steve soiled a baseline average of 0.6 times per night and 0.6 times per day. Treatment decreased his average nocturnal soilings to 0.1 and his average diurnal soilings to 0.1. Joey soiled on a daily baseline average of 0.9. His soilings decreased to 0.2 with cathartics and child-time, and decreased again to less than 0.1 with cathartics, child-time, and punishment. Each child was required to go at least 4 weeks without a soiling accident prior to the termination of treatment.

The percentages of daily independent toilettings for each child are shown in Figure 3. Mike had 33% independent toilettings during baseline. This decreased to an average of 16% with cathartics and child-time, and then increased to 53% with ca-

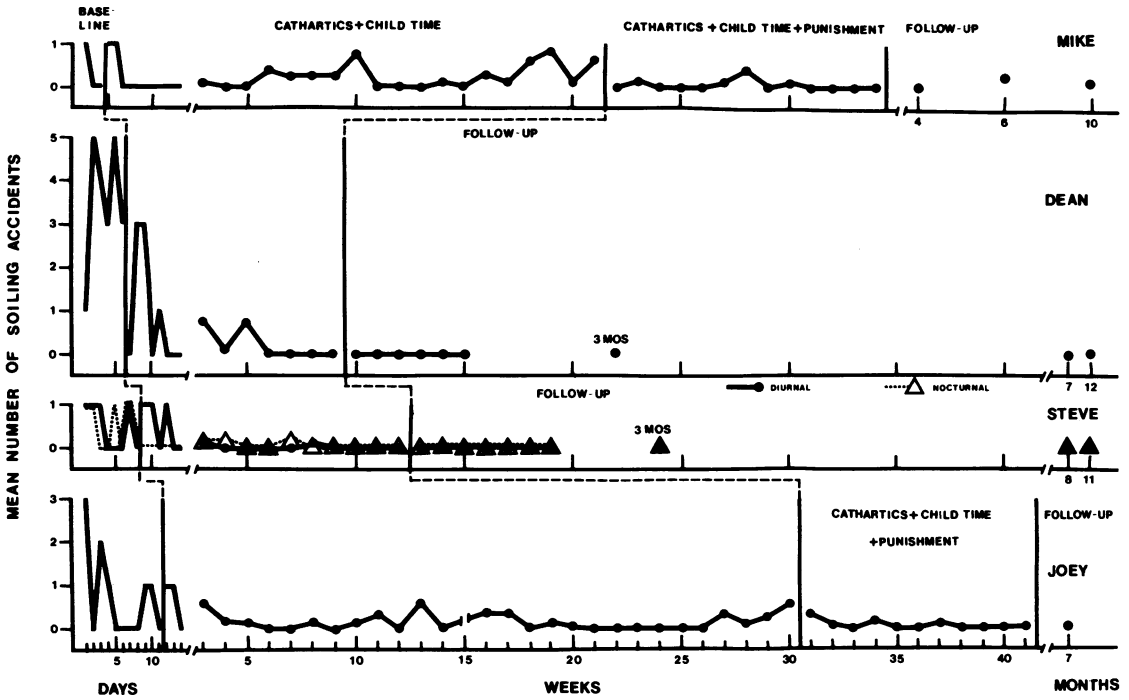


Figure 2. The mean daily number of soiling accidents during baseline and treatment sessions. Steve's data depict both diurnal and nocturnal soiling accidents.

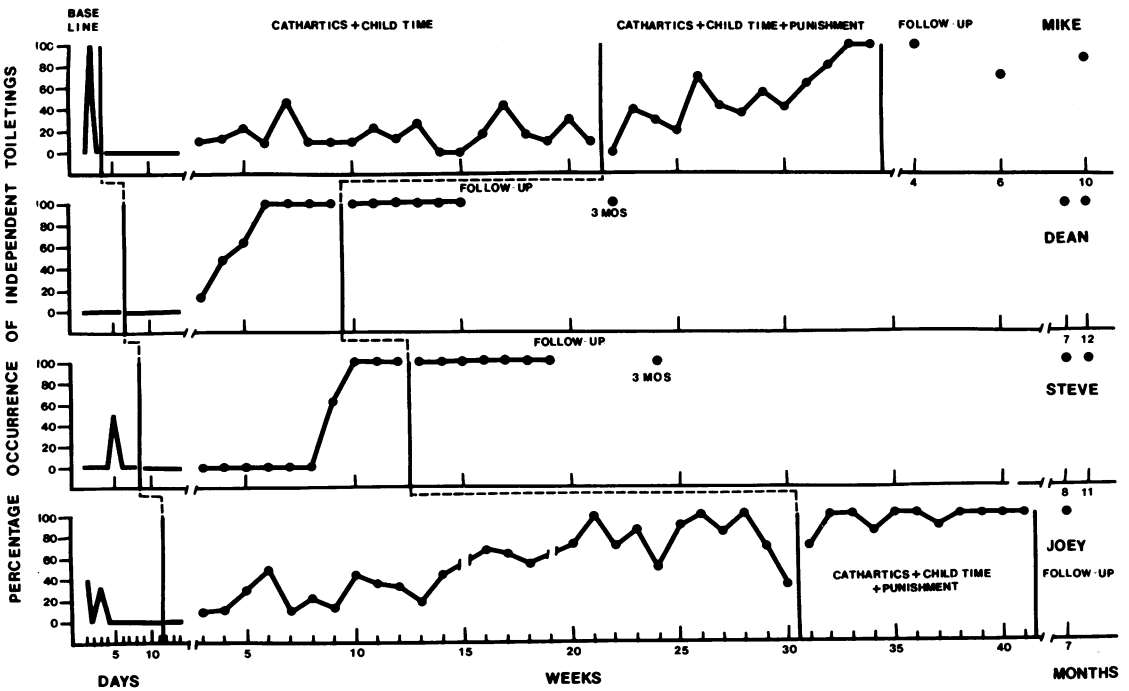


Figure 3. The mean daily percentage occurrence of independent toiletings during baseline and treatment sessions.

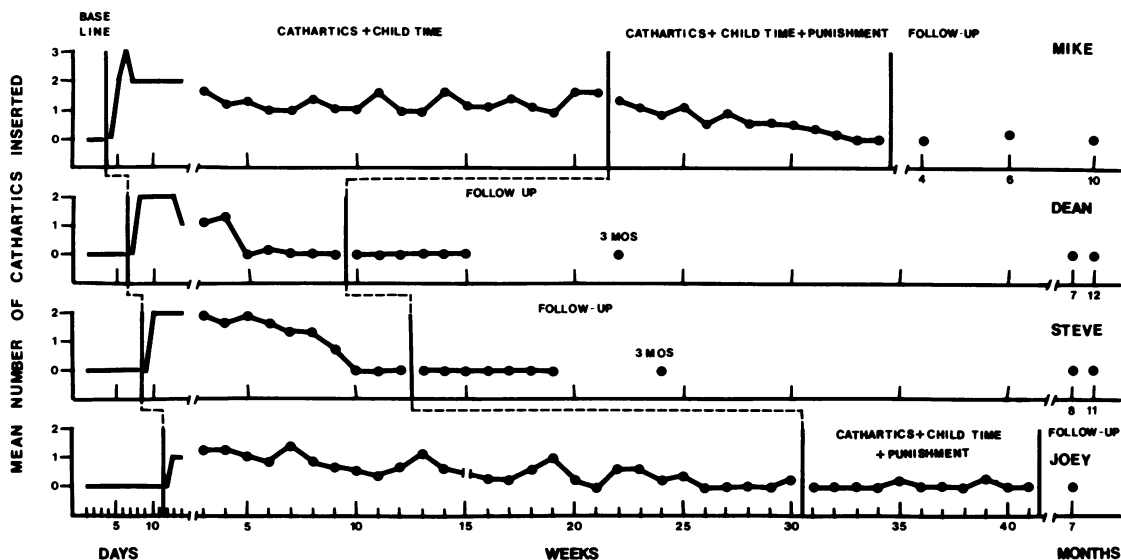


Figure 4. The mean daily number of cathartics used during baseline and treatment sessions.

thartics, child-time, and punishment. Dean had no independent toilettings during baseline. This increased to 70% with cathartics and child-time. Steve's independent toilettings also increased from a baseline of 9% to 33% with cathartics and child-time. Similarly, Joey had 30% independent toilettings during baseline, which increased to 58% with cathartics and child-time, and to 91% with cathartics, child-time, and punishment.

Figure 4 shows the number of cathartics used per day during the assessment and treatment phases. By parent report, no child received a cathartic during baseline. Mike averaged 1.3 cathartics per day during cathartics and child-time, which decreased to 0.7 per day with cathartics, child-time, and punishment. When treated with cathartics and child-time, Dean received an average of 0.4 cathartics per day, whereas Steve averaged 1.1 cathartics per day. Joey averaged 0.6 cathartics per day with cathartics and child-time, with his use decreasing to 0.1 with cathartics, child-time, and punishment. No child received a cathartic during his last 2 weeks of treatment. Not noted on the cathartics graph were the number of enemas used. All children received two enemas on the 1st day of treatment. Additionally, Joey received one and

John received two enemas during the 2nd and 11th weeks of of treatment, respectively.

Follow-up. At the termination of treatment, the parents were requested to continue having their child sit on the toilet two times per day and to use a suppository when the child soiled or had decreased fecal output. All children had at least one soiling accident between the termination of treatment and their final follow-up data point. All children except Mike appeared to maintain their treatment levels of appropriate bowel movements, soiling accidents, and independent toilettings. Mike's mother reported that she had not been using the toilet sits, the suppositories, or the toilet training procedures when Mike soiled. These treatment procedures were reimplemented at the 6-month follow-up point.

DISCUSSION

Treatment with cathartics and child-time eliminated soiling accidents and increased independent toilettings with Dean and Steve in 8 to 11 weeks. The use of suppositories with these two children may have served as a discriminative stimulus for defecation. The suppositories were faded on a

weekly basis, which produced a concomitant increase in independent toiletings. Although cathartics and child-time treatment increased appropriate bowel movements with Mike and Joey, they both continued to soil intermittently, thus preventing the use of the standard cathartic fading schedule. Punishment and weekly cathartic fading were added to Mike's and Joey's treatment protocol after 19 and 28 weeks, respectively, because they continued to have soiling accidents. The punishment procedures of time-out, positive practice, and hourly toilet sits were used because they reflected the most effective encopretic treatment strategies previously reported in the literature (Bach & Moylan, 1975; Butler, 1977; Crowley & Armstrong, 1977). The additional treatment of punishment with cathartic fading established a toilet training program that provided consequences for appropriate and inappropriate toileting behaviors with a cathartic fading schedule similar to Dean's and Steve's program. Independent toiletings with Mike and Joey were achieved after 32 and 39 weeks of treatment, respectively. Their treatment durations were considerably longer than previously reported in the literature; toilet training procedures with encopretic children without constipation have averaged 4 to 8 weeks (Butler, 1977; Crowley & Armstrong, 1977) and procedures with encopretic children with constipation have averaged 17 weeks (Bach & Moylan, 1975; Blechman, 1979; Wright, 1975).

Previous studies have presented parental reports on appropriate bowel movements and soiling accidents (Bach & Moylan, 1975; Blechman, 1979); however, reliable data on cathartic use and independent toiletings have not been reported. These latter two variables appear critical for analyzing the efficacy of a treatment method. For example, Joey's data reflect an increase in appropriate bowel movements with no soiling accidents during weeks 20 to 26. However, data on suppository use and independent toileting indicate that during these weeks his appropriate bowel movements were initiated by suppositories, thus necessitating further treatment intervention beginning with week 31.

Because the primary factor producing and/or maintaining encopresis is constipation (Levine,

1975, 1982), the treatment protocol for all subjects included cathartic procedures to recondition the colon and reinforcement of appropriate toileting behaviors. Although dietary recommendations were provided to all subjects, it was not determined whether the verbal and written instructions provided by the therapist produced changes in the subjects' dietary habits.

Nocturnal encopresis is reportedly a rare phenomenon with poor prognosis (Levine, 1975). No known data have been published on this topic, so Steve received the same treatment as the diurnal encopretics, with both types of his encopresis being eliminated in 11 weeks. Apparently, the suppository usage initiated appropriate diurnal fecal eliminations, which, in turn, decreased stool retention and eliminated the nocturnal encopresis.

Typically, toilet refusal behaviors have been treated prior to treating the child's encopresis (Ashkenazi, 1975; Doleys & Arnold, 1975). In this study, Dean refused to eliminate in the toilet. It appears that the suppositories served to prompt correct toileting behavior by initiating the expulsion of feces within a given period of time after insertion. Therefore, the cathartic and child-time treatment program managed Dean's constipation and toilet refusal behaviors simultaneously, rather than sequentially.

Parental noncompliance with treatment procedures has been suggested as a reason for extended treatments. As Wright (1975) noted, "outcome did seem related to parents' ability to compulsively follow the study regime, because three mothers of the patients who required over 26 weeks were extremely lax and inconsistent" (p. 455). This belief was not supported in this study. Joey's and Mike's mothers consistently used the cathartics, but soiling accidents were not eliminated until punishment and cathartic procedures were added to their treatment protocol.

This research expands upon the primary encopresis literature in several important ways. It presents reliability data on both the dependent and independent variables instead of relying on parental report, and treatments were introduced sequentially in a multiple-baseline design across subjects.

Future research should consider the child's age as a general predictor of a successful outcome, dietary manipulations and compliance for eliminating encopresis with constipation, and development of a toilet training protocol for toddlers that trains appropriate bowel eliminations in addition to appropriate urinations.

REFERENCES

- American Psychiatric Association. (1980). *Diagnostic and statistical manual on mental disorders* (3rd ed.). Washington, DC: Author.
- Ashkenazi, Z. (1975). The treatment of encopresis using a discriminative stimulus and positive reinforcement. *Journal of Behavior Therapy and Experimental Psychiatry*, *6*, 155-157.
- Azrin, N. H., & Foxx, R. M. (1974). *Toilet training in less than a day*. New York: Simon & Schuster.
- Bach, R., & Moylan, J. J. (1975). Parents administered behavior therapy for inappropriate urination and encopresis: A case study. *Journal of Behavior Therapy and Experimental Psychiatry*, *6*, 239-241.
- Baer, D. M., Wolf, M. M., & Risley, T. R. (1968). Some current dimensions of applied behavior analysis. *Journal of Applied Behavior Analysis*, *1*, 91-97.
- Blechman, E. A. (1979). Short- and long-term results of positive home-based treatment of childhood chronic constipation and encopresis. *Child Behavior Therapy*, *1*, 237-247.
- Butler, J. F. (1977). Treatment of encopresis by overcorrection. *Psychological Reports*, *40*, 639-646.
- Christophersen, E. R., & Rainey, S. (1977). Management of encopresis through a pediatric outpatient clinic. *Journal of Pediatric Psychology*, *1*, 38-41.
- Crowley, C. P., & Armstrong, P. M. (1977). Positive practice, overcorrection and behavioral rehearsal in the treatment of three cases of encopresis. *Journal of Behavior Therapy and Experimental Psychiatry*, *8*, 411-416.
- Doleys, D. M., & Arnold, S. (1975). Treatment of childhood encopresis by full cleanliness training. *Mental Retardation*, *13*, 14-16.
- Foxx, R. M., & Azrin, N. H. (1973). Dry pants: A rapid method of toilet training children. *Behavior Research and Therapy*, *11*, 435-442.
- Hartmann, D. P. (1977). Considerations in the choice of interobserver reliability estimates. *Journal of Applied Behavior Analysis*, *10*, 103-116.
- Levine, M. D. (1975). Children with encopresis: A descriptive analysis. *Pediatrics*, *56*, 412-416.
- Levine, M. D. (1982). Encopresis: Its potential, evaluation, and alleviation. *Pediatric Clinics of North America*, *29*, 315-330.
- Wright, L. (1973). Handling the encopretic child. *Professional Psychology*, *4*, 137-144.
- Wright, L. (1975). Outcome of a standardized program for treating psychogenic encopresis. *Professional Psychology*, *6*, 453-456.
- Wright, L., & Walker, C. E. (1976). Behavioral treatment of encopresis. *Journal of Pediatric Psychology*, *4*, 35-37.

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