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Replicated the efficacy of a short-term, combined medical and behavioral intervention protocol for retentive encopresis. Fifty-nine children who had failed standard medical management for retentive encopresis and their parents participated in six 1-hour group treatment sessions. Treatment protocol combined the medical management strategies of enema clean out, increasing dietary fiber, and daily toilet sitting with the child behavior management strategies of differential attention, contingency management, and contracting. For the overall sample, the number of soiling incidents decreased 85%, the weekly frequency of independent bowel movements increased 15%, the weekly frequency of parent-prompted bowel movements increased 9%, and daily dietary fiber intake increased 121% pre- to posttreatment. The majority of the sample (86%) stopped soiling by the end of treatment and did not require further treatment. Results are discussed in terms of the comparability with previous findings and the utility of combined medical and psychological treatments for children with encopresis who have failed standard medical approaches.

KEY WORDS: encopresis; constipation; group behavior therapy; children.

Encopresis and constipation are common problems in childhood and are estimated to account for 3% of all general pediatric visits and 25% of all pediatric gastroenterology visits (Sonnenberg & Koch, 1989). Encopresis is defined as the voluntary or involuntary passage of fecal material into underwear or other inap-
The etiology of encopresis is best understood as an interaction of multiple physiological and psychological factors. The problem originates following one or more episodes of constipation. Constipation may result from a number of causes including environmental factors (e.g., withholding bowel movements during toilet training, ignoring physiological cues to use the toilet while distracted by activities, failing to use the toilet during school), a genetic predisposition toward decreased bowel motility, food intolerance, or certain medications. Constipation may cause distention of the colon, decreasing the child's ability to detect the urge to have a bowel movement, fecal hardening and build up in the colon, and subsequent leakage of fecal material. Once the problem begins, it can be maintained by the child's avoidance of large or painful bowel movements, attempts to assert independence or control, or insensitivity to stool in the colon. Standard medical management typically includes some combination of rectal clean out, stool softening (via oral laxatives or mineral oil), daily toilet sitting, and recommendations for increased dietary fiber (Levine, 1982). This set of recommendations is typically given during a single medical office visit with a follow-up visit scheduled approximately 1 month later.

Treatment studies of medical management report a failure rate of 20 to 40% for encopretic referrals (Landman, Levine, & Rappaport, 1983; Levine, 1982). Little is known about effective interventions for this population. However, medical management strategies for treatment failures are typically costly and time consuming (Landman & Rappaport, 1985). Studies investigating the predictive factors of treatment outcome have identified few differences between children who successfully complete treatment and those who fail (Landman et al., 1983; Levine & Bakow; 1976; Stark, Spirito, Lewis, & Hart, 1990). However, one important difference that has emerged in two studies is that more children who fail standard medical management are reported to have behavior problems than children who succeed (Levine & Bakow, 1976; Stark, Spirito, et al., 1990). This implies that children who fail medical management require more intensive treatment targeting problem behaviors, such as compliance, in addition to the physical symptoms of encopresis.

Previous studies support the utility of combining behavioral intervention and medical management in the treatment of encopresis. The application of behavioral techniques along with medical management, such as rewards and consequences for toilet sitting (Christophersen & Rainey, 1976; O'Brien, Ross, & Christophersen, 1986; Wright, 1973) and positive reinforcement for increased fiber intake (Houts, Mellon, & Whelan, 1988; Houts & Peterson, 1986) has been effective in treating children with retentive encopresis. However, none of these studies specifically...
targeted children who failed standard medical management; thus, it is unclear whether behavioral intervention would be effective with this population. Furthermore, past research in this area has had several other limitations. The interventions have been labor and time intensive (e.g., requiring up to 39 weeks) and therefore are not cost-effective treatment alternatives. In addition, treatment protocols have typically been evaluated in single-case designs with small samples (i.e., $N = 4$), and no systematic replication of any one protocol has been reported.

In an effort to improve on these limitations, Stark, Owens-Stively, Spirito, Lewis, and Guevermont (1990) reported on a clinical protocol that specifically targeted children with retentive encopresis who had failed previous medical management in a pediatric gastroenterology clinic. The treatment protocol combined behavior therapy and medical management in a six-session group treatment. Medical management was divided into three components with two treatment sessions spent on each component: Enema clean out, increased dietary fiber, and daily toilet sitting. Medical components were coupled with several child behavior management strategies, including differential attention, contingency management, and contracting designed to increase compliance with treatment recommendations. Eighteen families with children between 4 and 11 years of age completed the protocol. An 83% decrease in soiling was found pre- to posttreatment, with an increase of 116% in appropriate bowel movements and a 40% increase in fiber intake. Although promising, the above study is the only report to date of a group intervention for children with retentive encopresis and the only study to specifically target children who have failed previous efforts at medical management.

The present study is a replication of the Stark, Owens-Stively, et al. (1990) study with a sample of 59 children who were clinically referred for constipation and soiling following failure of medical management. In addition to having more power to detect pre- and posttreatment differences, the larger sample in the present study allowed us to conduct a more fine-grained analysis of treatment progress for those children who were not symptom free posttreatment. It was hypothesized that the children participating in group behavioral treatment would demonstrate decreased soiling, increased appropriate bowel movements (i.e., both independent and parent prompted bowel movements in the toilet), and increased dietary fiber intake pre- to posttreatment.

**METHOD**

**Participants**

Subjects were 59 children and their parent(s) who participated in a group behavioral treatment program for retentive encopresis. All children had failed individual medical management of encopresis and were referred by either their
primary care physician or a pediatric gastroenterologist. All children met the criteria for chronic constipation assessed by parent report and fecal impaction as diagnosed by physical exam. Although no definition of chronic constipation is available for children, in adults it is defined as the passage of large, hard stools on an infrequent basis for greater than 1 1/2 months (Rosenberg, 1993). All children in the current study met the definition for adults. Mean duration of problems with constipation and soiling for the current sample was 3 1/2 years, with a range of 7 months to 10 years. Fecal impaction was diagnosed upon physical exam by palpitation of the abdomen indicating a firm mass of stool in the supra pubic area or left quadrant and the presence of a large quantity of stool in the rectal vault. Children under 4 years of age were admitted to treatment if they had a history of constipation, were impacted at time of intervention, and had failed previous treatment using medical procedures employed in the treatment group (i.e., enema clean out). Because all children in the present study received standard clinical care through the division of child and family psychiatry for encopresis/constipation, human subjects approval was obtained through an expedited review, which allowed the investigators to evaluate the effectiveness of the treatment protocol through systematic review of clinical data collected during treatment via chart review.

The children ranged in age from 2 years 8 months to 12 years 8 months (M = 7 years 5 months) and included 41 boys and 18 girls. Ninety-five percent of the sample was Caucasian, and 5% was Hispanic. Seventy-five percent of the children came from intact families. Socioeconomic status (SES) was determined using the Hollingshead four-factor method (Hollingshead, 1975). According to this method, 18% of the families were classified as lower class (Level I), 54% of the families as middle class (Levels II and III), and 29% as upper class (Levels IV and V). Eighty-three percent of the families in this study were covered by private insurance, 14% received medical assistance, and 3% had no medical coverage. Seven children dropped out of treatment prior to the midpoint of the intervention (Session 4) and were not included in subsequent data analyses. Participants dropped out of treatment for a range of reasons including parent illness (n = 2), child illness (n = 2), refusal of rectal exam (n = 1), and inability to complete weekly monitoring (n = 2). This left a total of 52 children who completed treatment and were included in the final data analyses.

**Measures**

*Demographic Questionnaire*

Prior to beginning treatment parents completed a demographic questionnaire designed to collect information about their child’s age and gender; their own age, educational level, and occupation; and the parents’ marital status.
Bowel Movements

Parents kept daily records of their child's bowel movements throughout the course of treatment on specifically designed recording sheets. Parents recorded the day and time of each bowel movement and checked a box on the sheet indicating whether it was an independent bowel movement in the toilet, a prompted bowel movement in the toilet, or a soiling incident in the child's pants. Only bowel movements in toilet confirmed by parents were recorded as appropriate. If the child reported an appropriate bowel movement at school, it was not recorded because it could not be verified. However, soiling incidents at school were recorded because these could be verified by school personnel and soiled underwear. It should be noted that no incident of soiling occurred in school during treatment. Monitoring sheets were collected from parents at each weekly treatment session.

Fiber Intake

Parents kept daily records of their child's dietary intake throughout the course of treatment. Food diaries were collected during the treatment sessions on a weekly basis and used to assess average weekly fiber intake. Staff reviewed the diet diaries in session to insure completeness and parents were questioned about any missing data. Parents were taught to calculate daily fiber intake beginning Week 3 of treatment. However, to insure accuracy of the fiber counts, staff members continued to calculate fiber content of the food recorded on the diet diaries throughout treatment and the staff fiber calculations were used for data analysis.

Treatment Outcome Classification

Prior to data analysis, the progress of all 52 subjects was independently rated by two clinical psychologists. The psychologists were blind to subject identity. Treatment progress was classified as success, partial success, or failure according to the following criteria: Subjects who exhibited a pattern of decreased soiling (i.e., 1 or fewer episodes per week), increased independent bowel movements pre- to posttreatment, and minimal need for parent prompted toilet sitting posttreatment (i.e., less than 2 episodes per week) were classified as treatment successes. Partial success was indicated by a pattern of decreased soiling (i.e., 1 or fewer episodes per week), minimal change in independent bowel movements pre- to posttreatment, and increased parent prompting; and subjects who continued to soil more than 1 time per week, with minimal or no change in independent bowel movements pre- to posttreatment, were classified as treatment failures.
Interrater reliability was calculated on all cases using the formula: No. of agreements/No. of agreements + No. of disagreements). Reliability across all cases was 98%. These classifications were used to further evaluate the effects of treatment.

Procedures

Intake

Prior to enrollment in the group, all children were evaluated in an individual intake by a psychologist, psychology postdoctoral fellow, or psychology intern and a pediatric gastroenterologist or nurse practitioner. A complete encopresis history was obtained, and a physical exam was conducted by the physician or nurse.

Group Treatment

Subjects participated in one of 14 behavioral treatment groups conducted during a 3½-year period in a child psychiatry department at an urban pediatric hospital. A group was formed when a minimum of three referrals were made, and each group consisted of three to six families. The encopresis treatment protocol involved six 1-hour sessions over a 7-week period. There was a 2-week break between the fifth and sixth sessions to allow for fading of the treatment providers’ involvement.

Parents and children were seen simultaneously in separate groups. The parent and child groups focused on similar material presented at age-appropriate levels. The parent group was conducted by a staff psychologist or postdoctoral psychology fellow and a physician or nurse practitioner specializing in pediatric gastroenterology. The children met with a psychology intern or postdoctoral fellow.

Intervention followed the behavioral group treatment protocol for encopresis developed and described in detail by Stark, Owens-Stively, et al. (1990). The parent group included psychoeducation about encopresis, medical management, and child behavior management training. The psychoeducation component provided information about the physiology and treatment of encopresis. Medical management included instruction in enema administration and weaning from oral laxatives (when indicated), and education around increasing dietary fiber. The children received a rectal examination by the physician or nurse practitioner coleading the treatment group at the pretreatment assessment, at Session 3 (post enema clean out) and on an as-needed basis at subsequent sessions. Children did not receive any outside medical treatment for constipation.
during the course of group. The child behavior management component focused on teaching parents how to gain their child's compliance with enemas, toilet sitting, and dietary fiber intake. Instruction in child management skills included differential attention, contingency management, implementation of rules, consequences, time-out, and contracting around toileting behaviors and diet. The treatment was divided into three phases, each focusing on a different component of encopresis management. In Phase I (the 2 weeks across Sessions 1 and 2), baseline data were collected on all dependent measures, and parents learned how to conduct an enema clean out. Enema clean outs were conducted during the weekend prior to Session 3, as all treatment groups were conducted on a Monday or a Tuesday. This ensured that children were not impacted prior to the subsequent fiber intervention. Phase II (Sessions 3 and 4) focused on increasing dietary fiber and Phase III (Sessions 5 and 6) focused on toileting behaviors. (See Stark, Owens-Stively, et al., 1990, for a comprehensive description of each treatment session.)

The topics covered in the children's group paralleled those addressed in the parent group. All sessions included education around a weekly topic, the introduction of behavior management techniques that parents would be implementing at home, instruction in behavioral self-control techniques (i.e., relaxation), and a high-fiber snack for practicing appropriate eating behaviors with high-fiber foods. Children were given weekly sticker charts targeting the weekly topic and could earn a prize each week for successful completion of the desired behavior (e.g., compliance with enema clean out, fiber intake, and daily toilet sitting practice).

RESULTS

Evaluation of Treatment Dropouts

Preliminary analyses were conducted to determine whether differences existed between families who dropped out of treatment prior to the fourth session and those who completed treatment. No differences were obtained for age, $t(57) = 0.51$, ns; gender, $\chi^2(1, N = 59) = 0.57$, ns; SES, $\chi^2(4, N = 56) = 8.47$, ns; or parents' marital status, $\chi^2(1, N = 59) = 0.04$, ns. In addition, the groups did not differ on the major study variables at baseline, including soiling, $t(55) = 0.12$, ns; independent bowel movements, $t(55) = 1.19$, ns; parent-prompted bowel movements, $t(55) = 0.91$, ns; and fiber intake, $t(56) = 0.94$, ns. The small number of families who dropped out of treatment and unequal sample sizes between treatment completers ($n = 52$) and treatment dropouts ($n = 7$) made it unlikely that significant differences would be found. Therefore, the means for the major study variables were examined to ensure similarity across groups. The
means on each variable for treatment completers and dropouts, respectively, were: soiling $M = 3.67$ ($SD = 4.12$) and $3.90$ ($SD = 4.93$); independent bowel movements $M = 4.09$ ($SD = 3.63$) and $2.10$ ($SD = 3.00$); parent-prompted bowel movements $M = 1.67$ ($SD = 1.89$) and $0.90$ ($SD = 0.89$); and fiber $M = 7.17$ ($SD = 4.07$) and $8.83$ ($SD = 4.44$). These data supported the finding of no group differences.

**Treatment Outcome**

The effects of group treatment on soiling, independent bowel movements, parent-prompted bowel movements, and fiber intake for the entire sample of treatment completers were examined.

**Bowel Movements**

The mean number of soiling incidents, independent bowel movements, and parent-prompted bowel movements for each phase of treatment (i.e., baseline, fiber intervention, toileting intervention) is presented in Figure 1. As shown, child participants were having an average of $3.67$ ($SD = 4.12$) soiling incidents per week across baseline, fiber, and toileting phases of treatment.

![Fig. 1. Average number and type of bowel movements (soiling, prompted, independent) per week across baseline, fiber, and toileting phases of treatment.](image)
per week, an average of 4.10 (SD = 3.63) independent bowel movements per week, and 1.67 (SD = 1.87) parent prompted bowel movements per week at baseline. Soiling decreased 59% to 1.51 (SD = 1.92) incidents per week during the fiber intervention phase and decreased 85% from baseline to 0.55 (SD = 0.89) incidents per week by the end of treatment, \( t(47) = 5.56, p < .001 \). The number of independent bowel movements initially decreased slightly by 11% to 3.66 (SD = 2.92) per week during the fiber intervention phase and then increased to 4.72 (SD = 2.57) per week during the toileting phase of treatment, a 15% improvement from baseline, \( t(47) = 1.56, \) ns. Parent-prompted bowel movements increased 2% over baseline during the fiber intervention phase for an average of 1.71 (SD = 2.17) prompts per week and increased 9% to 1.82 (SD = 2.27) prompts per week by the end of treatment, \( t(47) = 0.26, \) ns.

**Bowel Movements by Treatment Outcome**

To further examine the effects of treatment, children were classified by two independent clinician raters into three groups according to their treatment response. Of the 52 children who completed treatment, 35 (67%) were classified as treatment successes, 10 children (19%) were classified as partial successes, and 7 children (14%) were classified as treatment failures. These groups did not significantly differ on age, \( F(2, 51) = 2.39, \) ns; gender, \( \chi^2(2, N = 52) = 0.77, \) ns; SES, \( \chi^2(8, N = 49) = 2.30, \) ns; race, \( \chi^2(2, N = 52) = 1.55, \) ns; or parents' marital status, \( \chi^2(2, N = 52) = 0.80, \) ns. When the effects of group treatment on each of these groups were examined, children in the success group showed significant improvement on all three bowel movement measures. Soiling decreased 92% from an average of 3.65 (SD = 4.15) times per week at baseline to 0.29 (SD = 0.45) times per week by the end of treatment, \( t(32) = 4.78, p < .001 \). Independent bowel movements increased 40% from 3.95 (SD = 3.18) times per week to 5.53 (SD = 2.41) times per week, \( t(32) = 2.81, p < .01. \) Parent-prompted bowel movements decreased 37% from approximately 1.56 (SD = 1.69) per week at baseline to an average of 0.98 (SD = 1.51) times per week by the end of treatment, \( t(32) = 2.28, p < .05. \)

The children classified as partial successes and treatment failures also showed pre- to posttreatment improvement in bowel movements. Soiling decreased significantly for children in the partial success group by 84% from 4.33 (SD = 4.18) times per week at baseline to 0.67 (SD = 1.20) times per week by the end of treatment, \( t(8) = 2.88, p < .05. \) Independent bowel movements decreased slightly (19%) from 3.22 (SD = 3.45) times per week at baseline to 2.61 (SD = 2.06) times per week by the end of treatment, \( t(8) = .93, \) ns. Parent-prompted bowel movements increased 52% from approximately 2.78 (SD = 2.56) times per week at baseline to 4.22 (SD = 2.51) times per week, \( t(8) = 1.31, \) ns.
Children classified as treatment failures exhibited a 59% decrease in soiling from an average of 4.42 (SD = 5.01) soiling incidents per week at baseline to 1.83 (SD = 1.21) incidents per week by the end of treatment, t(5) = 1.11, ns. They experienced a minimal (27%) decrease in independent bowel movements from a baseline average of 4.67 (SD = 5.42) per week to 3.42 (SD = 1.93) per week by the end of treatment, t(5) = .50, ns. Accordingly, parent-prompted bowel movements increased 142% from 1.17 (SD = 1.37) times per week at baseline to 2.83 (SD = 2.77) times per week at the end of treatment, t(5) = 1.62, ns. However, none of the changes exhibited by the treatment failures were statistically significant.

Further medical work-up of two of these treatment failures was conducted. One child was diagnosed as having a weak sphincter muscle. Soiling was eliminated when the child participated in four anal sphincter biofeedback sessions and continued following the group treatment protocol of a high-fiber diet and daily toilet sitting. The second child tested negative for lactose intolerance and did not follow up with further treatment. Five children were referred for individual psychological treatment to address behavior problems and treatment compliance issues. Three families did not follow up with the treatment recommendations. Two families followed up and received three sessions to support the implementation of contingency management skills; their children were soil free 1 month post group treatment.

**Fiber Intake**

The mean fiber intake for the overall sample as well as for two different age groups across each of the three treatment phases is presented in Figure 2. The average daily fiber intake for the entire sample (N = 52) was 7.17 (SD = 4.07) grams at baseline. During the fiber intervention, children increased their fiber intake by 118% to an average of 15.63 (SD = 5.85) grams/day. By the end of treatment, the children exhibited a 121% increase from baseline to 15.86 (SD = 5.67) grams/day. Paired t tests indicated a significant treatment effect on fiber intake (t = 11.39, p < .001) from pre- to posttreatment. Significant changes in fiber intake were demonstrated regardless of overall treatment success classification. Children in the success group significantly increased their daily fiber intake 127% from 6.93 (SD = 3.69) grams at baseline to 15.70 (SD = 5.32) grams by the end of treatment, t(31) = 8.41, p < .001. Children classified as partial success significantly increased their daily fiber intake from 6.26 (SD = 3.16) grams to 14.71 (SD = 6.41) grams/day, a 135% increase over baseline, t(9) = 6.00, p < .001. Similar results were obtained for treatment failures who significantly increased their fiber intake from 8.11 (SD = 5.75) grams per day to an average of 18.21 (SD = 6.36) grams/day, a 125% increase over baseline, t(6) = 5.09, p < .01.
Fiber Intake by Treatment Outcome

Treatment effects for fiber were examined separately by age group because the treatment recommendations for younger children differed from those for older children. Specifically, the treatment recommendations were 10–20 grams of fiber per day for children 2 to 6 years of age and 20–30 grams per day for children 7 to 12 years of age. As shown in Figure 2, children between the ages of 2 and 6 years ($n = 25$) exhibited an average daily fiber intake of 7.28 ($SD = 4.06$) grams at baseline with a range from 1.00 to 17.95 grams of fiber per day. During the fiber intervention, younger children increased their fiber intake by 98% to an average of 14.38 ($SD = 5.07$) grams/day. By the end of treatment, daily fiber intake had increased 109% to 15.18 ($SD = 5.11$) grams with a range from 4.10 to 27.25 grams/day. This increase was significant, $t(23) = 9.54, p < .001$, and was within the specified treatment recommendations.

Children 7 to 12 years of age ($n = 27$) had an average daily fiber intake of 7.08 ($SD = 4.15$) grams at baseline with a range from 1.90 to 17.10 grams. The older children increased their fiber intake 133% to 16.51 ($SD = 6.19$) grams/day during the fiber intervention phase of treatment. By the end of treatment, these children were consuming between 8.25 to 34.55 grams for an average of 16.79 ($SD = 6.37$) grams of fiber per day, a 137% increase over baseline. This increase
was also significant, $t(24) = 7.31, p < .001$, although 3 grams short of their recommended fiber goal of 20 grams per day.

**DISCUSSION**

The present study replicates earlier findings of a group intervention protocol for children with retentive encopresis who had failed previous medical management. An 85% reduction in soiling pre- to posttreatment across the sample was obtained, and 86.5% of the children participating in the present study had fewer than 1 soiling episode per week by the end of treatment. Even the children classified as treatment failures (i.e., those having more than 1 soiling episode per week postintervention) demonstrated a significant decrease in soiling. Although the overall sample did not demonstrate a significant increase in independent bowel movements, the average number of appropriate bowel movements (independent and parent-prompted) was 6.5 times per week, or approximately once per day posttreatment. Finally, all children increased their dietary fiber consumption, with younger children achieving their recommended daily fiber goal and older children coming within 3 grams of their fiber goal by the end of treatment.

These findings are remarkably similar to the outcome of the original treatment study by Stark, Owens-Stively, et al. (1990). The 85% decrease in soiling for the 52 children in the present study is almost identical to the improvement reported in the initial study with 18 children (i.e., 83%). The percentage of children who continued to have soiling incidents posttreatment was very modest across both studies (11% reported by Stark, Owens-Stively, et al., 1990, and 14% in the present study). Thus, increasing the sample size did not increase the failure rate and further demonstrates the efficacy of the treatment protocol. The larger sample in the present study allowed for exploration of the treatment effects on children who were judged to have failed group intervention. Despite continued episodes of more than one soiling incident per week in this group, this was significantly lower than the number of soiling incidents at baseline. Thus, even children considered to have failed treatment demonstrated improvement, and three of the seven became soil-free after brief individual behavior therapy or physical work-up and specialty treatment (i.e., anal sphincter biofeedback).

The lack of change in independent or appropriate bowel movements (independent plus prompted bowel movements) in the present study is most likely related to the referral base. Children who were referred had received a variety of treatments and spent varying degrees of time in treatment with a primary care physician or pediatric gastroenterologist. It is possible that medical treatment received prior to encopresis group referral may have improved the rate of independent bowel movements, despite continued problems with soiling (i.e., approximately 4 incidents per week). Alternatively, the treatment failures in the present study may have been more recalcitrant than those in the Stark, Owens-Stively, et al. (1990) sample.
as evidenced by their continued problems with soiling and constipation despite almost daily bowel movements in the toilet at the time of referral. The previous treatment sample consisted of children who were not soil-free at a standard 1-month follow-up in a pediatric gastroenterology clinic.

Although the results of the present study, together with our previous work, suggest that behavioral group treatment is a highly effective intervention for retentive encopresis, there are likely certain child and family characteristics that may interfere with treatment success. Anecdotally, we have noted that families in which there are coexisting general noncompliance issues may benefit from additional support and individual attention. Some of the children in our partial success and failure groups showed continued improvement with additional short-term individual treatment focused on global behavior problems. Similarly, disorganized or chaotic families also may require additional individual support during group in order to enhance compliance with weekly assignments and monitoring.

The present study includes children below the age criterion of 4 years required to meet the diagnosis of encopresis in DSM-IV (American Psychiatric Association, 1994). Children under 4 years are excluded as encopretic in DSM-IV because of the possible confound of physiological immaturity for toilet training. Children as young as 2 years 8 months were included in the group treatment if they presented with chronic constipation and fecal impaction, had painful bowel movements in a diaper or clothing, and had previously failed standard medical procedures for constipation used in the group treatment (i.e., enema clean out). These criteria differentiated young children who presented with soiling secondary to constipation and those who were soiling due to physiological immaturity. This distinction, while rarely made in the psychological literature, appears important. In a study of constipation and encopresis, Hatch (1988) reported that the onset of constipation for children between the ages of 1 and 5 years was 70% and only 17% for children above 5 years of age. Consequently, if younger children were excluded from treatment based solely on age, their symptoms would probably continue and potentially worsen, particularly in instances of failed medical management.

There are no reports of behavioral interventions for children with constipation and soiling below age 4 years. Thus, the current study is important in demonstrating that this population may benefit from behavioral treatment. In addition, these children did well in treatment groups that consisted of a wide range of ages (up to 12 years) and did not decrease the effectiveness of the group process. The number of children below 4 years of age treated in the present study was too small (n = 4) to evaluate independently. However, the results for this underserved age group are encouraging and suggest that they may benefit from behavioral treatment in the short term for relief of the immediate symptoms of constipation and soiling and in the long term by preventing significant psychological distress associated with the inability to control soiling at later ages (Thapar, Davies, Jones, & Rivett, 1992).
Despite the contributions of the present study to the existing literature on encopresis and constipation, it suffers from many of the same shortcomings found in other studies. For example, bowel movements are typically private events that prevent the collection of reliability data. Consequently, the primary outcome measure is parent- or self-report. Although children may over- or under-report bowel movements and soiling, it is unlikely that parents would report an absence of symptoms (i.e., no soiling) due to the experimental demands of attending treatment sessions because these symptoms are so aversive to parents.

The treatment protocol implemented a package of behavioral techniques and targeted three aspects of medical management (bowel clean out, increased dietary fiber, and scheduled toilet sitting). Unfortunately, it was not possible to identify the unique contributions or necessity of any one treatment component. Without exception, treatment protocols for retentive encopresis intervene on more than one target variable. Given the hypothesized interaction between physical (constipation and impaction) and psychological factors (learned avoidance of defecation or use of toilet) it is unlikely that any one component would be effective in the absence of the others. However, this remains to be demonstrated empirically.

Finally, the current study is also limited by the lack of follow-up. Due to the fact that this study evaluated treatment outcome in patients receiving a clinical service, participants were not systematically followed posttreatment. While our past data (Stark, Owens-Stively, et al., 1990) suggest that children continued to improve at 6-months posttreatment, little is known about the long-term maintenance of these effects. Future studies should attempt to identify the percentage of children who relapse over time and attempt to identify predictors of relapse.

In summary, the present study provides further support for the use of a standardized group intervention combining behavior therapy and medical management in the treatment of children with retentive encopresis who have failed medical management. This study also contributes to the broader field of pediatric psychology by demonstrating that behavioral treatment can enhance the outcome of medical management and by providing a model for an interdisciplinary approach to complex medical problems requiring extensive and ongoing life-style changes on the part of the child and family. Future studies are needed to evaluate the contributions of the individual components of treatment and the efficacy of behavioral treatment with young children (below age 4 years) who do not respond to standard medical management for constipation and inappropriate bowel movements.

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