Edward R. Christophersen · Patrick C. Friman

Elimination Disorders
in Children and Adolescents

HOGREFE

Elimination Disorders in Children and Adolescents

About the Authors

Edward R. Christophersen, PhD, received his doctorate in Developmental and Child Psychology from the University of Kansas in 1970. He is a Fellow in the American Psychological Association and is Board Certified (by examination) in Clinical Psychology by the American Board of Professional Psychology. He has published 10 books (the most notable was *Treatments that Work with Children: Empirically Supported Strategies for Childhood Problems*, a best selling textbook), 181 papers and chapters, and given over 600 presentations at regional and national conferences. He has been the recipient (as PI or Co-PI) of 38 grants with total direct costs of over six million dollars. In recognition of his unique contributions in the area of child health and development, in 1998 he was made an Honorary Fellow in the American Academy of Pediatrics.

Patrick C. Friman, PhD, ABPP is the Director of Clinical Services at Boys Town in Omaha Nebraska and a Clinical Professor of Pediatrics at the University of Nebraska School of Medicine. Dr. Friman is a Fellow in the American Psychological Association and is Board Certified (by examination) in Cognitive and Behavioral Psychology by the American Board of Professional Psychology. He has published two books and more than 170 papers in scientific journals and books. He is the former editor of the *Journal of Applied Behavior Analysis*, is currently on the editorial boards of nine peer reviewed journals, and is the president elect of the Association of Behavior Analysis International.

Advances in Psychotherapy – Evidence-Based Practice

Danny Wedding; PhD, MPH, Prof., St. Louis, MO
(Series Editor)
Larry Beutler; PhD, Prof., Palo Alto, CA
Kenneth E. Freedland; PhD, Prof., St. Louis, MO
Linda C. Sobell; PhD, ABPP, Prof., Ft. Lauderdale, FL
David A. Wolfe; PhD, Prof., Toronto
(Associate Editors)

The basic objective of this series is to provide therapists with practical, evidence-based treatment guidance for the most common disorders seen in clinical practice – and to do so in a "reader-friendly" manner. Each book in the series is both a compact "how-to-do" reference on a particular disorder for use by professional clinicians in their daily work, as well as an ideal educational resource for students and for practice-oriented continuing education.

The most important feature of the books is that they are practical and "reader-friendly:" All are structured similarly and all provide a compact and easy-to-follow guide to all aspects that are relevant in real-life practice. Tables, boxed clinical "pearls", marginal notes, and summary boxes assist orientation, while checklists provide tools for use in daily practice.

Elimination Disorders in Children and Adolescents

Edward R. Christophersen
University of Missouri at Kansas City School of Medicine and Children's
Mercy Hospital, Kansas City, MO

Patrick C. Friman
Clinical Services at Boys Town in Omaha, NE and the University of
Nebraska School of Medicine

HOGREFE

Table of Contents

1

General Introduction

The elimination of bodily waste is a simple mammalian behavior with a multitude of meanings. It can mark territory, project anger, represent fear, initiate play, and even intensify sexual congress. It can also pose problems: Mammalian prey often meet an untimely demise when carnivorous predators track them by attending to the scent of their waste. Not surprisingly, the elimination of bodily waste of humans has generated the most meanings – almost bizarre in its range – and caused the most problems in the mammalian world. It extends from the psychosexual meanings supplied by Freud and his followers to the triad of characteristics (i.e., fire-setting, cruelty to animals, bedwetting) used historically (Hellman & Blackman, 1966) and spuriously (e.g., Slavkin & Shohov, 2004) to identify persons predisposed to violent crime. Human beings seem to enjoy generating complex meaning, even when the subject of their musings involves such simple substances as urine and feces. The range of problems created by the elimination of waste is also very broad, extending from health problems (e.g., infection, compaction, reflux) to social problems (e.g., rejection, ridicule) to family problems (e.g., abuse, neglect) to psychological problems (e.g., anxiety, depression).

As in so many other domains of human life, the scientific approach to the elimination of bodily waste by humans has dramatically simplified and reduced the meanings attributed to it and solved – or at least simplified – almost all the problems it can cause. This book focuses on two of the many problems, namely, childhood encopresis and enuresis. Although many persons have contributed in the past to the scientific progress made in the study of these conditions, each has a scientific patron saint, as it were. For enuresis, Herbert Mowrer was the first and the foremost early investigator to explore the utility of the so-called urine alarm in the treatment of nocturnal enuresis (Mowrer & Mowrer, 1938). For encopresis, Murray Davidson was the first and the foremost early investigator to explore the utility of stool softeners in the treatment of encopresis (Davidson, 1958). In so doing, both individuals inaugurated lines of investigation that gradually grew, elbowed out arcane, speculative and nonproductive perspectives on enuresis and encopresis, and eventually resulted in the empirically supported biobehavioral approaches to assessment and treatment used today.

In this book we cover each condition comprehensively in a specified sequence: multicomponent descriptions (e.g., definition, diagnosis, epidemiology, etc.), influential theories and models, major approaches to treatment, problems encountered carrying out treatments, and case vignettes. The book is divided into three sections: The first covers constipation and encopresis, the second nocturnal enuresis, and the third diurnal enuresis. The encopresis sec-

tion also includes a discussion on toileting refusal. Consistent with the theme of the series of which this book is a part, we will strongly emphasize and favor evidence-based perspectives on all aspects of both conditions, particularly treatment.

2

Constipation and Encopresis

2.1 Description

2.1.1 Terminology and Definition

Encopresis is the involuntary loss of formed, semiformed, or liquid stool in inappropriate places such as underwear, diapers, or pull-ups in children over 4 years of age (Loening-Baucke, 1996). Primary or continuous encopresis applies to children who have been incontinent their entire lives; secondary or discontinuous encopresis applies to children who were fully bowel-trained at some point (Levine, 1975) and then later resumed soiling. The diagnostic criteria for encopresis, as indicated in the *Diagnostic and Statistical Manual of Mental Disorders*, Fourth Edition (DSM-IV; American Psychiatric Association, 1994), may be found in Table 1.

Other terminology important to the understanding of encopresis are *Hirschsprung disease, constipation, and toileting refusal*. Hirschsprung disease (congenital aganglionic megacolon) is a congenital anomaly wherein the furthest part of the child's large intestine lacks appropriate innervation (Christophersen & Mortweet, 2001). Some 40% of children with Hirschsprung disease are diagnosed in the first 3 months, 61% by 12 months, and 82% by 4 years of age (Loening-Baucke, 1994). Hirschsprung disease in the older child causes chronic constipation and abdominal distention. The stools, when

Primary or continuous encopresis applies to children who have been incontinent their entire lives

Generally, a physician has already ruled out Hirschsprung disease prior to a child being seen by a mental health clinician

---

Table 1
DSM-IV Criteria for Encopresis

A. Repeated passage of feces into inappropriate places (e.g., clothing or floor) whether involuntary or intentional.
B. At least one such event a month for at least 3 months.
C. Chronological age is at least 4 years (or equivalent developmental level).
D. The behavior is not due exclusively to the direct physiological effects of a substance (e.g., laxatives) or a general medical condition except through a mechanism involving constipation.

Code as follows:

797.6 With Constipation and Overflow Incontinence: there is evidence of constipation on physical exam or by history

307.7 Without Constipation and Overflow Incontinence: there is no evidence of constipation on physical exam or by history

Reprinted with permission from the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition* (© 1994) American Psychiatric Association.

passed, may consist of small pellets, be ribbon-like, or have a fluid consistency; the large stools and fecal soiling of patients with functional constipation are absent. In the vast majority of cases, a physician has already ruled out Hirschsprung disease prior to a child being seen by a clinician (Christophersen & Mortweet, 2001). Further information on distinguishing Hirschsprung disease from encopresis may be found in the "Differential Diagnosis and Diagnostic Procedures and Documentation" discussions of this section of the book.

Constipation has been defined as the passage of large or hard stools at a frequency of less than 3 times per week (Sutphen, Borowitz, Hutchison, & Cox, 1995). Luxem and Christophersen (1999) defined constipation as "hard stools that are difficult to pass," rather than referring to the frequency of stooling. They also reported that constipation in children may be accompanied by complaints of abdominal discomfort, infrequent bowel movements (e.g., fewer than three bowel movements a week), a palpable abdominal mass, emotional upset, including crying and screaming before, during, and after defecation, vigorous attempts at bowel-movement withholding, nausea and vomiting, poor appetite, weight loss, sadness and irritability, and leaking of small amounts of stools which the children often report not feeling. Occasionally, children with encopresis (secondary to constipation) are able to pass enough feces to plug up toilets. A history of constipation in one or both parents may also predispose a child to constipation as a result of an abnormally long colonic transit time, overly efficient intestinal absorption of water, or both. Schonwald and Sheldon (2006) stated that "constipation doesn't mean that the child hardly ever poops; it means that the poops often hurt or are hard to make."

> **"Toileting refusal" refers to children who refuse to have a bowel movement in the toilet but will use a diaper or a pull-up**

Toileting refusal is used to refer to children who refuse to have a bowel movement in the toilet but who willingly have a bowel movement in a diaper or a pull-up (Luxem, Christophersen, Purvis, & Baer, 1997). Toileting refusal is discussed in a separate section below. Children with encopresis may come to the attention of the clinician through a referral from the child's physician for assistance with bowel retraining, or while obtaining the history via a diagnostic interview for a different problem. The differential diagnosis of these toileting disorders are outlined in more detail later in the book.

2.1.2   Epidemiology

2.1.2.1   Prevalence

> **The prevalence of encopresis in the US ranges from 1% to 3%, affecting boys 3–6 times more often than girls**

Schonwald and Rappaport (2008) estimated that the prevalence of encopresis in the United States ranges from 1% to 3%, affecting boys 3–6 times more often than girls. Levine (1975) reported a slightly higher prevalence rate of clinic-referred cases at 3%. Levine also reported that the mean age of onset for secondary encopresis is 7 years and 4 months of age. Despite the prevalence of encopresis, it has been called a "hidden disease" in at least one published report (Brody, 1992). Parents of children with encopresis often think that they are the *only* family who has a child with this problem (Christophersen & Mortweet, 2001). In addition, the fact that encopresis is rarely mentioned in the popular press may contribute to this misconception. Clearly, there are other medical conditions with an incidence rate of far less than 1%–3% that are mentioned

more regularly than encopresis in the media. For example, in children under 20 years of age in the United States the incidence of diabetes is less than 1%.

Since constipation is often directly related to encopresis, it is important to report the prevalence rates for constipation as well. More than 90% of children referred for the treatment of encopresis present with functional constipation (Schonwald & Rappaport, 2008). The prevalence of constipation – and thus, possibly encopresis – appears to be increasing, although no apparent explanation has been reported in the literature for this increase (Christophersen & Mortweet, 2001).

2.1.3 Etiology

Although numerous theories have been offered on the etiology of encopresis, including coercive toilet training, a history of hostile or violent events, and child abuse, the only etiological factor we could find support for in the literature was constipation. Constipation plays a major role in encopresis as well as in other toileting problems such as withholding, which can create and exacerbate stooling difficulties. In fact, constipation-related problems, including encopresis and toileting refusal are usually present in children who are referred to gastroenterology clinics (Luxem et al., 1997).

The fecal elimination process is profoundly affected by diet and behavior. The motility of the colon is easily reduced either involuntarily, due to insufficient bulk or roughage or too many bland foods in the diet, or voluntarily due to toileting refusal. Reduced motility results in excess quantities of moisture being drawn off the fecal mass making it dryer than normal and thus reducing colonic motility even further. This pattern can lead to a regressive cycle in which the retention of feces decreases motility – leading to further retention of feces. This cycle then becomes a primary cause of constipation and fecal incontinence. Not surprisingly, the vast majority of children with encopresis have histories of constipation (Friman & Jones, 1998; Levine, 1982).

Precisely establishing the etiology for this constipation/soiling cycle is a difficult assignment. However, there are several behavioral/dietary factors with a known causative role. These include (1) insufficient roughage or bulk; (2) a bland diet, too high in dairy products and cheeses, resulting in reduced colonic motility; (3) insufficient oral intake of fluids (which allows the normal reabsorption of water from the colon to dehydrate the feces too much) or dehydration stemming from activities that increase the loss of fluids by sweating; (4) fecal retention by the child; (5) medications that have the side effect of promoting constipation (such as drugs that are used to control seizures or attention deficit hyperactivity disorder, and narcotics used to control pain); and (6) the child's emotional state. Any of these factors, singly or in combination, can result in constipation-like symptoms or actual constipation. Loening-Baucke, Cruikshank, and Savage (1987) found that the persistence of encopresis at 6-month and 12-month follow-ups was not related to social competence, but was significantly related to the inability to defecate and relax the external anal sphincter during defecation attempts.

When a child with a history of uncomfortable or painful bowel movements feels the urge to defecate, he or she may associate that urge with sensations

that occurred previously and were followed by a painful or uncomfortable bowel movement. In an attempt to prevent a recurrence of the painful bowel movement, the child may then voluntarily retain feces, thus exacerbating the problem. If constipation is extended, the child may become lethargic, which in turn reduces activity levels, the reduced activity leads to an additional decrease in colonic motility, the constipation is perpetuated and so on. More severe constipation may also result in a decreased appetite. The child may develop a fecal impaction or a large blockage caused by the collection of hard dry stool. Not infrequently, these children experience seepage around the fecal mass, producing what has been termed "paradoxical diarrhea" (Levine, 1982): Although the child is actually constipated, he or she appears to have diarrhea. Some parents may even attempt to treat this type of "diarrhea" with over-the counter antidiarrheal agents that only worsen the problem.

2.1.4   Course and Prognosis

As with other childhood disorders, a thorough history of the child's and the family's physical and mental health should be obtained. This history should include questions about the family medical history, the child's stooling habits, the child's diet history, and information about any previous attempts to deal with the encopresis, including rewards or punishment. Healthcare providers may find that having parents complete a detailed history prior to the child's first appointment can increase the efficiency of the initial intake interview.

Relief from constipation can be accomplished by administering medications orally or rectally.

There are two often distinct goals in the treatment of encopresis. If the child is constipated or impacted, the first goal is to relieve the constipation or impaction (Christophersen & Mortweet, 2001), which can be accomplished by administering medications orally or rectally. There are no outcome-based studies comparing the efficacy of these two routes of administration. As Stark (2000) stated, the specific regimen for a bowel cleanout can vary and includes enemas, suppositories, and large doses of mineral oil or a balanced electrolyte lavage solution given by mouth or nasogastric tube. One argument that has been made for the use of oral methods of bowel cleanout is that enemas may be "psychologically unsuitable." However, there is little empirical data to support such an assertion; some survey data indicate that, although children find enemas difficult, over half of the children treated with this modality reported enemas to be useful (p. 255–256).

In the absence of empirical data to help one decide which route to take, we often rely on the decision of the primary care provider. In extreme cases we refer to a pediatric gastroenterologist to relieve the constipation or clean out the colon. In our experience, practitioners new to this area may sometimes come close to apologizing to parents for the need for an initial cleanout, which reflects a lack of understanding of why such as cleanout is so necessary. Without an adequate cleanout, progress may be quite limited. In some cases, we take the approach of getting the child started on a diet that is higher in dietary fiber and lower in milk and other dairy products at least several days prior to the cleanout, which frequently gives much better results.

The second goal, after the child's colon has been cleaned out, is to implement a treatment regimen that will keep the child from getting constipated

again. Although the initial cleanout is usually done within a couple of days at most, it may take months for the muscle in the intestine to heal. During this time, it is important to offer whatever incentives may be necessary to maintain the child's cooperation with the treatment regimen. These strategies are discussed in detail later in this book.

2.1.5　Differential Diagnosis

"For most children with encopresis, assessment can be limited to the history and physical examination alone" (Schonwald & Rapport, 2008, p. 797). Yet getting a good history requires the examiner be familiar with normal toileting practices to ascertain when a toileting history is in fact remarkable.

Although many pediatric textbooks recommend a digital rectal examination (DRE) by a physician to assess for constipation and impaction (cf. Schonwald & Rappaport, 2008), the procedure is not performed in the majority of children evaluated for chronic constipation. Safder, Rewalt, and Elitsur (2006), in a review of the literature on DRE in children with constipation, stated that primary-care physicians "only rarely perform this examination" (p. 411). DRE was performed by the referring physician in only 15% of the patients, compared to 96% by the specialist. The DRE, when performed by an experienced practitioner, is a very useful component in the evaluation of a child presenting with constipation (Rockney, McQuade, & Days, 1995).

Negative findings of constipation at the time of physical examination do not necessarily rule out constipation, because evidence of constipation may be only intermittent (Christophersen & Mortweet, 2001). In cases in which the history is consistent with constipation (but constipation cannot be confirmed by the physical examination), a plain X-ray of the abdomen may be necessary (Levine, 1982). Barr, Levine, Wilkinson, and Mulvihill (1979) used X-rays to assess the degree of retention and reported significant differences between pre- and posttherapy X-rays of treatment successes, but no differences between pre- and posttherapy X-rays of treatment failures. Rockney et al. (1995) used plain X-ray films – an objective, reliable, assessment tool – to film the abdomens of 60 children with encopresis and documented that 78% of the children had fecal retention. Using the plain film of the abdomen as the gold standard, a rectal examination showed a positive predictive value of 85% and a negative predictive value of 50% in assessing fecal retention. These findings lend further support to the notion that the vast majority of children with encopresis have physical findings related to their colon that should be reviewed by the child's physician.

It is important to rule out Hirschsprung disease as a cause. Hirschsprung disease, or congenital aganglionic megacolon, involves an enlargement of the colon caused by bowel obstruction resulting from an aganglionic section of bowel (the normal enteric nerves being absent) that starts at the anus and progresses upwards. Levine (1983) provided a list (Table 2) of the common symptoms of Hirschsprung disease and encopresis in a format that can be readily incorporated into the clinical interview for a child who presents with encopresis. There are several symptoms (e.g., late onset, problems with toilet training, and stool incontinence) common among children with encopresis but rare in children with Hirschsprung disease, and there are symptoms that are common

Table 2
Symptoms of Encopresis and Hirschsprung Disease

Characteristic	Encopresis	Hirschsprung Disease
Stool incontinence	Always	Rare
Constipation	Common, may be intermittent	Always
Symptoms as newborn	Rare	Almost always
Infant constipation	Sometimes	Common
Late onset (after age 3)	Common	Rare
Problem toilet training	Common	Rare
Avoidance of toilet	Common	Rare
Failure to Thrive	Rare	Common
Anemia	None	Common
Obstructive symptoms	Rare	Common
Stool in ampulla	Common	Rare
Loose or tight sphincter tone	Rare	Common
Large caliber stools	Common	Never
Preponderance of males	86%	90%
Incidence	1.5% at age 7	1:25,000 births
Anal manometry	Sometimes abnormal	Always abnormal

Adapted from Levine, M.D. (1983). Encopresis. In M.D. Levine, W.B. Carey, & A.C. Crocker (Eds.), *Developmental-behavioral pediatrics* (2nd ed., pp. 389-397). Philadelphia: Saunders. Reprinted with permission.

among children with Hirschsprung disease but rare in children with encopresis (e.g., failure to thrive, anemia). Symptoms for Hirschsprung disease are rarely, if ever, seen in children with either encopresis or toileting refusal.

2.1.6   Comorbidities

The most common comorbidity in children with encopresis is constipation

The most common comorbidity in children with encopresis is constipation. Partin, Hamill, Fischel, and Partin (1992), in a study of over 200 children who presented with encopresis at a gastroenterology clinic, reported that 85% of the children also suffered from stool withholding, fecal impaction, and pain on defecation. Of the children older than 3 years, 96% exhibited stool withholding, 57% had painful defecation, 73% showed fecal impaction, and 85% presented with encopresis. They also reported that, of the children under 3 years of age, over 70% had fecal impaction and painful defecation, suggesting that they also had problems with constipation. The majority of these children (71%) also suffered from fecal impaction, a condition in which the colon is so full of stool that peristalsis is inhibited.

2.1.7 Diagnostic Procedures and Documentation

2.1.7.1 Medical Assessment

If a child has been referred for treatment by a pediatrician, the first thing to do is establish how much evaluation has already been done. We have had children referred who had absolutely no evaluation (i.e., the parent asked about getting treatment for their child's encopresis and the pediatrician referred them on); and we have had children referred by board-certified pediatric gastroenterologists only after an extensive workup and a medication trial with MiraLax™. Practicing in a large children's hospital (ERC) is an obvious advantage, because any prior evaluation is usually present in the child's medical record.

> If a child has been referred for treatment by a pediatrician, first establish how much evaluation has already been done

2.1.7.2 Evaluation

Our rule of "go no further with treatment until the child has received a medical evaluation" is important for all elimination problems discussed in this book, but it may be most important for encopresis. Apart from the possibility of organic disease (discussed below), there is still the very serious problem of excessive waste accumulating in an organ with a finite amount of space. Unfortunately, an all too frequent problem in medical clinics is when an encopretic child presents who had been in extended therapy with a nonmedical professional, whose initial evaluation did not include referral for a medical evaluation, and whose treatment did not address known causes of encopresis (e.g., diet, behavior, constipation). The child's colonic system can become painfully and dangerously distended – sometimes to the point of being life threatening (e.g., McGuire, Rothenberg, & Tyler, 1983).

> Our rule of "go no further with treatment until the child has received a medical evaluation" is important for all elimination problems, especially encopresis

Regardless of prior treatments, a thorough history of the child's stooling habits since infancy should be obtained. In their more classical presentation, constipation and difficult stooling often start when the parent introduces formula to a child who has previously been breastfed. We find it interesting that pear juice, which is frequently recommended for constipation because it helps to keep stools soft and moist, is usually sold in the infant section of grocery stores, rather than in either the juice or the pharmacy sections. Clearly, store managers know that pear juice, properly placed in the infant section, sells.

To treat encopresis effectively, special attention should be paid to any evidence of prior or current constipation in the child's history (Christophersen & Mortweet, 2001). The Society for Pediatric Gastroenterology, and Nutrition, in its *Clinical Practice Guidelines on the Evaluation and Treatment of Constipation* (2006), defines constipation as "a delay or difficulty in defecation, present for two or more weeks."

Such historical information should include stooling frequency, stool size, stool consistency, any prior problems such as bleeding, and any prior interventions attempted by professionals or by the parents using home remedies (Christophersen & Mortweet, 2001). Many parents fail to recognize constipation in their child, apparently assuming that as long as the child has a bowel movement on most days, he or she "couldn't have constipation." In fact, children can indeed have daily bowel movements and still be constipated. The child, who is having daily bowel movements but not actually expelling all of the waste matter from the rectum, can gradually accumulate larger and larger amounts of fecal matter (Christophersen, 1994). Also, although some children

Table 3
DSM-IV Differential

Toileting refusal	Encopresis 307.7	Hirschsprung disease
• Regular stools • Never in toilet • In diaper/pull-ups • Age 3 or over • Hx of constipation	• Repeated soilings • at least 1/month • Not physiological • Age 4 or over • Hx of constipation	• Anemia as an infant • Easy to toilet train • Failure to thrive • Family history of colon Dx
_____ of 5 (4+ = Dx)	_____ of 5 (4+ = Dx)	_____ of 4 (3+ = Dx)

defecate only every 3–5 days, their parents might assume that they are not constipated because they have bowel accidents; and on the days without any bowel accidents, their children used the toilet appropriately. In school-age children, soiling accidents tend to occur at home, typically after school between 3 and 7 p.m. (Levine, 1976), although children with a history of chronic and frequent soiling may have accidents outside the home and at various times throughout the day. Only rarely do children soil during their sleep. Parents report that their children are often observed to be standing upright, walking or engaged in vigorous play when soiling occurs (Luxem & Christophersen, 1999).

A number of medications, such as pain medications and some anticonvulsants, relax the intestine and may produce or aggravate constipation as a side effect. For this reason, asking parents to complete a detailed history form and bring it with them to the first office visit helps identify any medication-related constipation problems. Also, because some parents mistake "overflow" diarrhea for actual diarrhea, children who soil may also have been treated by their parents, with the best of intentions, with antidiarrheal medications such as Imodium™, Pepto-Bismol™, or a number of over-the-counter or prescription medications for diarrhea.

In the authors' experience, in the vast majority of cases a primary-care physician has already ruled out Hirschsprung disease prior to the child being seen by a mental-health practitioner. If a primary-care physician has not seen a child, such a referral is indicated. To facilitate a differential diagnosis of encopresis, Table 3 provides a list of the symptoms of toileting refusal, encopresis, and Hirschsprung disease. Although toileting refusal and Hirschsprung disease are not included in DSM-IV (American Psychiatric Association, 1994), these conditions must be ruled out as part of the diagnosis of encopresis.

2.1.7.3   Behavioral Assessment

Assessment of the child's history of toilet-training should include a review of the onset and duration of the child's bowel and bladder training, the methods used, and the behavioral responses of the child, parents, and other persons involved in the training process (Luxem & Christophersen, 1999). Evaluation of previous treatments for the child's constipation and soiling, including behavioral and psychological interventions, can reveal telling evidence of the ability and willingness of the child and the child's parents to adhere to treatment rec-

It is rare for children to soil during their sleep

A number of medications may produce or aggravate constipation as a side effect

ommendations. For example, parents commonly report that their child "hides soiled underwear" (Schonwald & Sheldon, 2006), which suggests a prior history of punishment for soiling. When there is such a history, it is imperative that the parents be thoroughly educated about the most common causes of encopresis, so they understand that the child is not soiling intentionally, and that punishment for soiling is rarely effective (Christophersen & Mortweet, 2001).

Although most early studies documented the absence of significant behavior problems in children with encopresis (Friman, Mathews, Christophersen, & Leibowitz, 1988; Gabel, Hegedus, Wald, Chandra, & Chiponis, 1986), more recent studies have suggested that children with encopresis do present with more psychological problems than children without encopresis (Cox, Morris, Borowitz, & Sutphen, 2002; Joinson, Heron, Butler, & von Gontard, 2006). Cox et al. (2002) compared 86 children with encopresis to 62 nonsymptomatic children on five psychometric instruments (Child Behavior Checklist, CBCL Teacher Report Form, Family Environmental Scale, Wide Range Achievement Test – Revised, and Piers-Harris). They reported that, as a group, children with encopresis differ from children without encopresis on a variety of psychological parameters, but that only a minority of children with encopresis demonstrated clinically significant elevations in these parameters. Joinson et al. (2006) conducted a population-based study on a total of 8,242 children aged 7–8 years and born to mothers in the United Kingdom. They compared children who soil frequently with children who soil occasionally and children who do not soil at all:

"Children who soil were reported by their parents to have significantly more emotional and behavioral problems compared with children who do not soil (p. 1575)."

However, whether soiling caused emotional and behavioral problems or vice versa cannot be answered based upon their reported data.

In our opinion, both parents and teachers should be asked to complete a standardized rating scale such as the Child Behavior Checklist (CBCL; Achenbach, 1991) or the Behavior Assessment System for Children (BASC; Reynolds & Kamphaus, 1992) to ascertain – prior to any treatment attempt – that the child does or does not present with significant behavior problems. If the history and the rating scales are significant for behavior problems, the treatment of encopresis may be more complicated. The clinician must then decide whether first to treat the encopresis or the problems with behavior management. Christophersen (1994) suggests that this determination can be made based upon whether the history and rating scales document significant problems with behaviors, such as defiance and difficulty following instructions. These behavior problems may interfere with the parents' or the child's ability to adhere to the treatment recommendations. If adherence has been or is expected to be a problem, Christophersen (1994) recommends introducing small changes such as a slight modification of the diet (described later in this chapter) and then concentrating on dealing with the adherence issues.

Prior to Davidson's (1958) seminal work on constipation and encopresis, the common misconception was that encopresis was a symptom of an underlying mental health problem (Richmond, Eddy, & Garrard, 1954). Mellon, Whiteside, and Friedrich (2006) addressed the issue of soiling as an indicator of sexual abuse by comparing 466 children referred and treated for sexual abuse with 429 psychiatrically referred children and 641 normative children

Both parents and teachers should be asked to complete a standardized rating scale to assess behavorial problems

The predictive utility of fecal soiling as an indicator of sexual abuse is not supported by research

recruited from the community. They concluded that the "predictive utility of fecal soiling as an indicator of sexual abuse is not supported" (p. 25).

2.2   Theories and Models of Constipation and Encopresis

2.2.1   Physiological Factors

The large intestine or colon is the distal end of the alimentary tract, sequentially composed of the esophagus, stomach, biliary tract, and the intestines (small and large). The colon has three major functions: storage of waste, fluid absorption from waste, and evacuation of waste. Extended storage and planned evacuation of fecal waste into an appropriate location are the defining features of fecal continence. Evacuation is achieved through a motor function called peristalsis, which involves a wavelike motion of the walls of the colon. Retrograde peristalsis in the ascending colon keeps liquid fecal waste in contact with the absorptive walls of the colon, resulting in gradual solidification of the waste, which begins to move forward as it takes on mass. Movement occurs over an extended period and is potentiated by external events, for example, gross motor activity (resulting in the orthocolic reflex) and eating (resulting in the gastrocolic reflex).

The rectum usually contains little or no fecal matter. But when colonic movement leads to the contraction of the sigmoid colon, feces are propelled into the rectum and its distension stimulates sensory receptors in the rectal mucosa and in the muscles of the pelvic floor. Two muscle-based "switching systems" – the internal and external sphincters – regulate fecal progression from that point. The internal sphincter is involuntary and opens only through the stimulation generated by the process described above. As fecal mass distends the rectum, the child can manipulate the external sphincter using three muscle groups (thoracic diaphragm, abdominal musculature, and *levator ani*) to start or stop defecation. (These muscle groups are also used to start or stop urination – described more fully in the enuresis section.) Thus, as with the achievement of urinary continence, fecal continence requires appropriate responses to stimulation generated by a waste-receiving organ system. In very general terms, the purpose of fecal toilet training is to acquaint the child with the proprioceptive feedback from the colon and to coordinate the relaxing of the external anal sphincter with sitting on a toilet (Friman & Jones, 1998; Weinstock & Clouse, 1987)

Encopresis was once thought to be a psychiatric disorder (Richmond et al., 1954). Davidson (1958) was one of the first authors to challenge the long-standing notion that the cause was psychogenic. Davidson's work was also instrumental in recognizing the important role that constipation plays in the etiology of encopresis. His treatment program focused on managing the child's constipation first and toilet training second. His program has been labeled the "pediatric approach"; it relied primarily on the use of mineral oil to treat the child's constipation.

Borowitz et al. (2003) compared symptoms that occurred during the 3 months before a child presented with a chief complaint of constipation at a