Enuresis: A Case Study

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ENURESIS: A CASE STUDY

by

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A Thesis
Submitted to the
Faculty of The Graduate College
in partial fulfillment
of the
Degree of Master of Arts
Department of Psychology

Western Michigan University
Kalamazoo, Michigan
April 1982
A 15-year-old male with a history of high rates of nocturnal enuresis was trained using the method of Azrin and Thienes (1978) and Azrin, Thienes, Hontos, and Besatel (1979). The method consisted of a 1½-hour in-office training of the child and parents. The parents then conducted an intensive training day and subsequent procedures in the home. The procedures included reinforcement for increased urine retention and dryness, training for increased alertness to bladder cues and sensations of dryness, an overcorrection procedure for wetness, and behavior rehearsals of correct toileting sequences. Using this method, the child ceased bedwetting. The Azrin et al. method is a complex, time-consuming, but, in this subject's case, successful method of eliminating a persistent problem of nocturnal enuresis.
ACKNOWLEDGEMENTS

In writing this thesis I have benefited from the patience, encouragement, advice, and constructive criticism of Professors Malcolm Robertson, Chris Koranokos, and Roger Ulrich. My thanks to them, as well as to the family who participated in this study. A special note of thanks and admiration to the 15-year-old enuretic in this study. He truly convinced me of the maxim, "Persistence pays off."

I take sole responsibility for what is written here.

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CHAPTER I

INTRODUCTION

Through the past four centuries, much has been written about the possible causes and treatments for nocturnal enuresis. L. B. Glicklich, in a historical review of medical documents (1951), notes that enuresis "... has been recognized as a disturbance of childhood necessitating medical treatment since the time of the Papyrus Ebers, which is dated 1550 B.C." (p. 850).

Glicklich found that prior to the nineteenth century, the most widely held theory regarding the cause of nocturnal enuresis was that it was a result of "weakness of the bladder" (1951, p. 861). Such remedies as eating pulverized parts of various animals, drinking teas made from various plants and/or animal organs, and the wearing of plasters or poultices of varying origins were widely used (Glicklich, 1951, p. 862).

In the nineteenth century, a number of other causes and treatments were suggested, including the following:

1) Hereditary predisposition - Medical writers of the time were noting that often there was a family history of nocturnal enuresis (Glicklich, 1951, p. 863).

2) Sleep patterns - "Heavy sleepers were believed to have enuresis more frequently than those who were not" (Glicklich, 1951, p. 863).

3) Imbalance of musculature in the bladder - i.e., "irri-
cable detussor acting against a relaxed sphincter" (Glicklich, 1951, p. 863).

4) Urinary irritations or general system irritations - Writers included such causes as intestinal parasites, various foods or drinks, and hip diseases (Glicklich, 1951, p. 863).

5) Dietary hygiene or behavior habits - Improper foods, parental failure to see that the child emptied his or her bladder before bed, and habit were given as possible causes (Glicklich, 1951, p. 864).

6) Dreams - "Dreams were often mentioned as the inciting cause of enuresis. These included dreams of wetting the bed, dreams of urinating in a convenient receptacle, and amorous or lascivious dreams which in later life give rise to nocturnal emissions" (Trousseau, 1870 & Smith, 1885, cited in Glicklich, 1951, p. 864).

7) Neurogenic - These explanations included specific origins such as dysfunction of nerves to the bladder and general origins such as 'neurosis,' with Glicklich noting that "... neuroses were thought of as organic rather than functional disturbances" (1951, p. 685).

8) Pathology of the genitourinary tract - These included anatomical malformations and genital or urinary diseases (Glicklich, 1951, p. 685).

9) Personality variables - Glicklich (1951, p. 865) credits Trousseau (1870) as listing "laziness, cowardice and fright" as possible causes of enuresis.
Among the nineteenth-century medical writers and lecturers, Glicklich (1951) noted the following treatments:

1) "limiting fluid intake three hours before bedtime, emptying the bladder at bedtime" (p. 866).

2) "... Sleeping on a hard mattress with few covers, assuming any position but that of lying on his back" (p. 866).

3) "Deep sleep was to be avoided by awakening the child during the second hour of sleep. The child should further be awakened just prior to the time he usually wet" (p. 866).

4) Cold or warm sitz baths (p. 866).

5) Various pharmacological techniques (p. 866).

6) Various diet and exercise recommendations (p. 866).

7) Prohibition of the supine position (p. 876).

8) Surgical procedures, including cauterizing the orifice of the urethra with silver nitrate (thought to increase sensitivity to urine passing over it) (p. 867).

9) Distending the bladder gradually with water until it held up to one pint (p. 867).

10) Various mechanical gadgets. For females, some of these included India rubber bags placed in the vagina and inflated with air (thought to put pressure on bladder and urethra and thereby eliminate the problem); for males, penile bandages, pouring collodion into the prepuce, etc. (p. 867).

11) Do nothing. This theory (perhaps born out of frustration) was based on the idea that natural shocks to the genito-urinary systems, such as the onset of puberty, intercourse,
pregnancy, or the development of special organs, would take care of the problem in time (p. 867).

Twentieth-century thought on causes and treatment of enuresis ranges from a behavioral view to a psychodynamic view. The behavioral view is expressed by Walen, Hauserman, and Lavin (1977): "... an inadequate behavioral repertoire appears to be responsible. Enuretic children are unable to inhibit the voiding reflex when the volume and pressure of urine in the bladder increase" (p. 65). Yates (1970) summarizes the psychodynamic view: "Enuresis is a symptom of some underlying disturbance of a fundamentally more important nature" (p. 79). Whatever the psychological view, physiologically only "... 1-2% of the children who wet their beds have medical problems that could account for the bedwetting" (Azrin, 1979, p. 27).

There is some variation in the reported prevalence of nocturnal enuresis in the U.S. population. Pierce (1967) and Murphy, Nichols, Eddy, and Umpress (1971) found that "... approximately 85% of the population has acquired bladder control by 4½ years of age and 90% by age 7½; only 3% of adolescents and 1% of young adults experience this problem" (cited in Walen et al., 1977, p. 65). Azrin (1979) reports a slightly higher incidence: approximately 33% of all three-year-olds are bedwetters, 25% of all four-year-olds, one-seventh (15%) of the five- and six-year-olds, seven percent of all eight- and nine-year-olds, four percent of all 12-14-year-olds, and two percent of all 17-18-year-olds still wet the bed (p. 13-14). In quoting studies of army draftees, Azrin further reports that two percent of these males
are bedwetters (1979, p. 14). Both Azrin and Walen et al. note that bedwetting is more prevalent in the male population than in the female, with approximately twice as many male children being bedwetters as female children.

Current treatment approaches can basically be categorized into one of the following three areas: (a) pharmacology; (b) psychotherapy; or (c) behavior modification.

One technique, modification of fluid intake, is often reported as being used in combination with one or all of the above. When used by itself, neither restricting fluid intake (typically after 6:00 p.m.) nor increasing fluid intake is reported as successful in eliminating nighttime enuresis (Rituo, 1970, cited by Walen et al., 1977, p. 66).

Pharmacological treatment typically consists of the use of imipramine or, less frequently, the use of amphetamines. Notwithstanding the possible side effects of imipramine, "nervousness, sleep disorder, tiredness and mild gastrointestinal disturbances" (PDR, 1981, p. 917), and amphetamines, "drug dependence" (PDR, 1981, p. 1290), their success rate in eliminating nocturnal enuresis is questionable (Shaffer, Costello, & Hill, 1968; Poussaint & Ditman, 1965).

Shaffer et al. (1968) report that although imipramine did reduce nighttime enuresis in approximately 50% of the children studied, enuresis was eliminated in only two of the 56 children once the drug was withdrawn. Further, they found that whether the drug was withdrawn abruptly or slowly, the rate of relapse remained the same, 53 out of 56 reported relapses. These findings are inconsistent with
Poussaint and Ditman's results of a 24% cure rate when the drug was removed (1965).

Yates (1970, p. 94) states that the results of the Forrester, Stein, and Susser study (1964) indicate that amphetamines do not result in a higher remission rate than that which occurs naturally.

DeLeon and Mandell (1966) compared "psychotherapy" with the use of a conditioning apparatus (pad and buzzer). They found that out of 87 children studied, 86% were "cured" using the pad and buzzer system, while only an 11% cure rate was achieved by the use of psychotherapy. The criterion for a "cure" was 13 consecutive dry days. One major flaw in this frequently cited study is that the type of psychotherapeutic techniques used were unspecified. The reader is told only that the sessions occurred 12 times, at a rate of one per week. Forty minutes were spent with the child, 20 minutes with the mother. Sessions were conducted by a psychiatrist, psychologist, or (in two cases) a psychology intern.

There are many behavioral approaches to treating nocturnal enuresis. The most commonly referred to is the pad and buzzer method developed by Mower and Mower in 1938. This method is based on a classical model of conditioning, in which the buzzer serves as an unconditioned stimulus for awakening. After several pairings of the buzzer (UCS) with the body sensations of a full bladder, the body sensations become a conditioned stimulus for awakening. Azrin (1978, p. 343) cites reviews by Lovibond (1964) and Yates (1970) reporting a success rate of 80-90% using the pad and buzzer method. He cites Young (1965), Young and Morgan (1972; 1973), and Turner, Young, and
Rachman (1970) as reporting a 30% dropout rate with this method. Azrin (1978, p. 343) suggests this dropout rate may be due to the length of time it takes the child to achieve dryness (weeks or months), the disruption to the family's sleeping due to the alarm, and the occasional dysfunction of the alarm. Walen et al. (1977) further hypothesize the high dropout rate may be due to the apparatus frightening or failing to awaken the child.

Other typical behavioral approaches include a reward system, in which the child and parents keep track of nights on which dryness occurs, with daily rewards for success. Walen et al. (1977) report that although many children appear motivated by this system, they continue to wet the bed because they "... sleep through the wetting event" (p. 66).

Punishment procedures have been reported, ranging from "... requiring the child to change his bed (and/or) wash his pajamas and sheets (and/or) subtract a reward from his chart" (Walen et al., 1977, p. 67) to extremes such as "... plunging the child into cold water ... as the alarm signals a wet bed" (Tough, Hawkins, MacArthur, & ValRavensway, 1971, cited in Walen et al., 1977, p. 67).

In the case of some of the more extreme forms of punishment, many parents and therapists would voice ethical concerns. Also, unless the punishment is paired closely in time to the wetting, it would be ineffective. Therefore, unless the pad and buzzer were simultaneously used, many children who appear motivated by the punishment procedure would sleep through the actual wetting.

A behavioral method developed by Kimmel and Kimmel (1970) involves
teaching increased urinary retention during the day (up to 30 minutes) with the hope that generalization will occur during the child's sleep (Azrin, 1978). In this method, the child is "... rewarded for reporting an urge to urinate and then holding it in for a span of only two or three minutes at first; ... eventually the child can be required to hold the urine up to 30 minutes" (Kimmel & Kimmel, 1970, cited in Walen et al., 1977, p. 66). Reported results show a success rate of approximately 50% (Kimmel & Kimmel, 1970, cited in Azrin, 1978, p. 344).

Walen et al. (1977) cite several studies on random awakenings using institutional populations. They conclude that this method is successful with some patients; however, they cite McConaghy's findings (1968) that in home use, approximately 50% of the parents using the random awakenings discontinued treatment before the study was complete.

Walen et al. (1977) briefly present Azrin's "dry bed procedure" and describe it as "an elaborate training program" (p. 68). They conclude that the procedure "... is probably best conducted by trained personnel rather than by parents." and that "... it may be most useful, however, with severe enuretics who have not achieved success with any of the simpler procedures" (p. 68).

However, an in-depth review of N. H. Azrin's work in the behavioral area of nighttime enuresis control is quite impressive. Azrin's experiments reveal a high success rate, low rate of recidivism, and low dropout rate. In initial publications (Azrin, Sneed, & Foxx, 1974), the standard pad-and-buzzer procedure was incorporated with an operant learning procedure. The results of this control group compari-
son study study were that the combination of the operant procedures with the pad and buzzer was more effective in eliminating enuresis than the use of the pad and buzzer alone. In 1978, Azrin and Thienes compared the use of a refined version of this operant learning procedure and the pad-and-buzzer procedure. Their method basically consisted of an intensive training day, in which a trainer went to the parental home in the late afternoon and early evening and conducted the procedures for the first night. After the first night, the parents took over supervision of the procedure. The procedure included reinforcement for retaining urine for increasing periods of time, training in increasing alertness to bladder sensations and sheet dryness, an overcorrection procedure when accidents occurred, behavior rehearsals of correct toileting sequences, and a reward system for dryness.

In the first two weeks of training, the operant learning procedure resulted in a reduction of bedwetting, from 90% of the nights wet during baseline to 15%. The pad-and-buzzer group at the end of two weeks was still wetting the bed on 76% of the nights.

In 1979, in an attempt to make the procedure more convenient, Azrin, Hontos, and Besalel-Azrin studied the effect of eliminating the trainer going to the home to conduct the intensive training night. They found instructing the parents and child in the office regarding the procedures and then allowing the parents to conduct the training in the home was as effective as the procedure conducted by the trainer (Azrin et al., 1979).
In Azrin's most recent published work on the elimination of nighttime enuresis (1979), the use of the pad and buzzer in addition to the operant learning procedure is optional. He had recommended in an earlier study, however, that "... the pad and buzzer might be used as an addition to the present method if maximum effectiveness is the principal objective and if its use does not create great inconvenience and unreliability" (Azrin & Thienes, 1978, p. 357).

Because of the high reported success rate (92%), low relapse rate (20%), and low dropout rate (8%) of Azrin's method, it was selected for field testing in this case study. The parents did choose to include the pad-and-buzzer system.
CHAPTER II

METHOD

Subject

The subject was a 15-year-old male of normal intelligence. Examination by a family physician revealed no physiological basis for the nighttime enuresis.

The subject's parents reported that toilet training occurred at approximately age three, with daytime dryness occurring at that age. Nighttime dryness was never achieved for more than three consecutive nights. Previous attempts to control bedwetting had included: negative verbal statements, psychotherapy, a monetary reward system for dryness, requiring the child to change his own sheets, no liquids after 6:00 p.m., and stable and varied nighttime awakenings. None of these systems had resulted in dryness for longer than the typical three consecutive nights. The family was opposed to the use of imipramine for various philosophical reasons; it had, therefore, never been used.

The parents described the child as "a very heavy sleeper," i.e., he was difficult to awaken once asleep. The mother reported that she was a bedwetter until age 12. Her bedwetting ceased when her father awakened her at a prescribed time. The nocturnal awakenings were gradually phased out.

This child is the youngest of five siblings, with two other children reported as having trouble with nighttime enuresis. The
father stated that both these children had stopped wetting the bed at approximately age 12 as a result of being embarrassed when wettings occurred while friends visited overnight.

The child described much teasing at school due to the bedwetting. He stated he wet the bed so frequently and profusely that the odor of urine was not eliminated even though he showered. Other students were leaving deodorant, soap, etc. by his locker at school. Further he reported that he would not spend the night at others' homes or go camping for fear of wetting the bed.

The parents reported that they, too, were extremely frustrated with the situation. They stated that they had given up attempting to eliminate the odor of urine from their home. They stated further that they had stopped all attempts at nighttime bladder control.

At the time of the training program, the parents were separated. Both of them agreed to be involved in the training program to yield consistent follow-through. The child was residing with his father and spending every other weekend with his mother.

Apparatus

Sears and Roebuck Wee AlertR Conditioning Apparatus Model #669, was the apparatus employed. It consisted of two foil pads separated by absorbent paper and connected to a six-volt, battery-operated buzzer. Moisture on the pad completed the circuit and activated the buzzer.
Procedure

In Office

The parents and the child were instructed in the details of the procedure during a single session which was approximately two hours in duration. The child was taught the procedure by role play and discussion in the presence of the parents. When the child was able to describe and replicate each portion of the procedure with only minimal prompts, the father was asked to play the role of the trainer. Prompts for both the mother and the father on how to act as trainer were written out on paper, with the ultimate goal of each parent acting as trainer in his or her respective home. The result in the office was both the parents and the child role playing their respective portions of the procedure in the presence of the trainer. The trainer praised accurate replications of the procedure and required remedial practices on any incorrect replications. The trainer, parents, and child then discussed what reinforcers the child would receive from the parents for his success in staying dry. Both daily reinforcers (10¢ per day) and larger reinforcers (4 successes = bowling or movie, paid for by parents; 9 dry nights = new shirt; 14 consecutive dry nights = new blue jeans) were agreed upon in this office session. Releases regarding the terms of this study were also obtained during this office contact. (See Appendix.)
In Home: Intensive Training Day

The Intensive Training Day began at 4:00 in the afternoon and ended at 1:00 a.m. Once the training began, the child was asked to remain in the house. He did engage in his usual indoor activities. He was encouraged to drink at least 16 ounces of his favorite beverage every hour for the first few hours. He chose Mountain Dew and Pepsi. Salty snacks were freely available to him. This "forced liquid" portion of the procedure was only used during the first day of the training and was discontinued at 11:00 p.m. the first night.

"Holding back" training started about one half-hour after the "forced liquid" procedure began and continued every half-hour until bedtime. He was instructed during this time to walk into the bathroom, strain to urinate, and once the urge to urinate was felt, to hold back the urine. He then was to go to his bed, lie down, and was encouraged verbally by his father to hold back for two minutes. If after two minutes the urge to urinate was gone, he returned to his previous activities. If, however, he said he could not wait any longer, he returned to the bathroom and urinated. The duration of the "holding back" procedure was increased by one minute from one trial to the next if the previous trial had been successful (i.e., the child was able to hold back for the duration). If he could not hold back for the designated duration, the procedure would have been to keep it at that duration for the next few trials until he was successful. This child was, however, able to hold back successfully for all practice period durations.
If the child had to urinate before the next scheduled practice, he was instructed to call his father, at which time his father timed and encouraged the "holding back" procedure in the same manner as if it were a regularly scheduled practice. When this occurred, that practice served as a substitute for the next practice period.

The father's verbal encouragement during the "holding back" practice consisted of instructing the child to focus on bladder sensations, calling particular attention to "full feelings." Just prior to the child getting up from the bed, the father asked him something to the effect of, "What will you do at night if you need to urinate?" The child was instructed to respond, "I will jump up and go."

On the Intensive Training Day, the child's bedtime was set at 9:00 p.m. to allow more sleep time practice. At 8:00 p.m. on the Intensive Training night, the child practiced changing his bed sheets while his father watched. He also was instructed to complete 20 sequences of the "getting up" practice. This took about one half-hour. In the "getting up" practice, the child would lie on his bed with the lights off, counting to 50. At the count of 50, he was to rise from the bed, walk to the bathroom, and attempt to urinate. He would then strain and hold back, return to his bed, and repeat the sequence. His father was instructed to stay with him during this sequence, i.e., sitting in the bedroom while the child was counting in bed and walking with him as far as the bathroom door.

When the child had completed the "getting up" practice and was ready to remain in bed for the night, his father was instructed to have the child describe what he would do if he needed to urinate in
the night. The child's response was to be, "Jump up and go." The child was also asked to describe the benefits of staying dry. The child reviewed with his father the procedure if he was wet (changing the sheets and getting up practice). The father instructed the child to focus on his bladder sensations. He also asked him to feel the sheets and comment on their dryness. He then assured the child of his confidence in his ability to stay dry, based on performance during practice periods in the day.

Only on the Intensive Training night was the child awakened by the father every hour until 1:00 a.m. Prior to awakening the child, the father felt the sheets. If they were dry, when the child was awakened his father asked him if he had a full feeling in his bladder. If the child's response was "yes", he was asked if he must go to the bathroom or if he could wait one more hour. If the child's response was "I can wait", he was praised for his control and was instructed to feel the sheets' dryness. The child was also given more liquids at that time. Water was used instead of caffeine products at bedtime, so as not to impair the child's ability to sleep. If the child could not wait, he was instructed to "jump up and go". The father then followed him to the bathroom door. When the child returned to bed, he felt the sheets for dryness before again concentrating on the full feeling. Water was given. The child was then allowed to return to sleep for another hour. No liquids were given during the last two awakenings (12:00 and 1:00).

If the sheets were wet at the hourly check, the father was instructed to 1) awaken the child, 2) have him put on clean clothing
and put wet clothing in the hamper, 3) have him change the wet sheets and put them in the hamper, and 4) complete 20 trials of "getting up" practice (i.e., lie on the bed, eyes closed, count to 50, walk to bathroom, attempt to urinate, hold back). After 20 trials, he would return to bed for the night. The father would again instruct the child to feel the sheets for their dryness, to think harder about his full feeling, and remind him that he will do "getting up" practice before bedtime to prevent further accidents. The father would then check to make sure the buzzer was reset and reassure the child of his confidence in his being dry on the next check. The father was also instructed to keep conversation to a minimum, neither scolding nor discussing other topics. This child remained dry on the first night. After the last awakening, the father checked the pad and buzzer to make sure it was on.

In Home: Subsequent Days

The days following the Intensive Training Day utilized variations of that first day's training. The "forced liquid" procedure was discontinued, as was the "strain and hold" procedure and the hourly awakenings.

Instead of the "strain and hold" procedure utilized on the Intensive Training Day, a bladder capacity procedure was instituted. In this procedure, the child was asked when urinating at home to urinate into a plastic measuring cup. After each urination, he was asked to record the number of ounces of urine on a chart kept in the bathroom. The child's goal in this procedure was to increase the
amount of urine excreted at each urination. The father was instructed
to look at the chart daily and praise successes in increases. Azrin's
rationale for this procedure was to increase the child's capacity to
hold urine in the bladder.

After the Intensive Training Day, the child was only awakened
once per night, initially at the father's bedtime (midnight). At this
awakening, the father was instructed to ask, "What should you do?" The
child was instructed to respond, "Jump up and go." If necessary, the
father was instructed to assist the child in sitting up. He was
further instructed to make sure the child was fully awake (i.e., able
to look at him and talk to him). The child was instructed to feel the
sheets and comment on their dryness, both before he left the bed to
walk to the bathroom and after he returned to the bed. Upon returning
to the bed, the child gave a verbal description to the father of what
he would do if he had the need to urinate later in the night. The
father then assured the child of his confidence in him, and both went
to bed.

The time the father awakened the child was adjusted on a daily
basis, based on the child's performance the night before. If the
child was wet the preceding night, the father awakened him at the
same time the next night. If the child was dry the preceding night,
the father awakened him one half-hour earlier. Azrin's rationale for
this was to train the child to hold back his urine for increasing
intervals. When the awakening time was one hour after the child's
bedtime, the nightly awakenings were discontinued. To summarize, the
time the child was awakened either remained the same or was decreased.
by one half-hour per night, depending on his success in staying dry.

Azrin recommended the use of a "Happy Clock", a clock drawn on paper to indicate visually to the child what time the nightly awakening would occur. It was not used in this project, as the child was 15 years old. Instead, the father told the child each night and each morning what time he would be awakened that night.

This child continued to change his clothing and remake the bed in the night when accidents occurred. After the bed was remade, the getting up practice was performed. The getting up practice was performed both when the accident occurred and the next night before bed, 20 trials each time. Getting up practice was conducted one half-hour prior to the child's normal bedtime.

The bedtime procedure was much the same as in the Intensive Training night. The child was instructed by the father to feel the sheets and note their dryness prior to falling asleep. The father continued to prompt the child on correct toileting behavior by asking him, "What will you do if you have to urinate in the night?", to which the child responded, "Jump up and go." Further, as part of the nightly bedtime procedure, the father asked the child to focus on the full feeling as the child was lying in bed. If the child indicated he had the need to go, the father would ask what he should do, and again the child responded, "Jump up and go," which he then did. If the child indicated he did not feel the urge, the father asked him to strain to create the urge. Again the father would ask, "What should you do?" and again the child responded, "Jump up and go," which he
then did. Also, each night at bedtime, the father reviewed with the child his progress, calling attention to the successes and ignoring the wet nights.

Every morning, one half-hour prior to the child's wake-up time, the father felt the sheets for dryness. If they were dry, the child was allowed to continue sleeping; if they were wet, the child was awakened, and the changing of sheets and getting up procedures were completed.

Any time the buzzer went off in the night, the getting up practice and the changing of sheets procedures were used.

To facilitate the urine flowing freely onto the pad and thereby triggering the alarm, the manufacturer and Azrin suggested the child sleep without nightclothes below the waist. This child did comply.

After 14 consecutive nights of dryness, the pad-and-buzzer procedure and the bladder capacity procedure were no longer used. The praise for dryness and rewards were eliminated as a formal procedure, although the father was encouraged to comment spontaneously and praise the child for dryness. Azrin indicated charting could be dropped after 30 days of uninterrupted dryness. For purposes of this study, charting continued on a daily basis for a total of 140 days.

Because of the complexity of the training procedure, the father, mother, and child were given a summary list of the procedures to serve as a prompt for correct replication.

The parents were also given the trainer's phone number and asked to call if at any point they became confused. Amazingly, only one
clarifying phone call occurred at a time other than data collection contacts. This was on the second night of the procedure. The trainer reviewed with the father the procedure for that and subsequent nights.

Data Collection and Follow-Up

The trainer called the family each day regarding their progress. Data regarding wetting was obtained from these telephone calls and from data sheets given to the child on which he recorded each day's performance. The phone calls further served as an opportunity for the trainer to provide the family with encouragement and information reminders. To provide reliability, the father checked the child's chart for accuracy in reporting sometime during the day. The trainer also kept a data sheet on which she recorded what the family reported regarding progress.
CHAPTER III

RESULTS

Figure 1 shows the percentage of nights per two-week interval on which the child wet his bed. Prior to training, during the two-week baseline period, he wet the bed 71% of the nights. In the first two-week period of the program, the bedwetting was reduced to 21%. By the end of the first month, accidents occurred on 21% of the nights. At six weeks, the frequency of wetting had dropped to 14% of the nights. At two months, wetting was still occurring on 14% of the nights. The incidence of bedwetting declined until the criterion of 14 consecutive days of dryness was reached, 60 days into the training program. This child had 11 accidents (see Figure 2) prior to reaching success. This is slightly higher than Azrin's 7.5 mean, obtained in a study with 44 children.

Thirty consecutive dry days were reached 76 days into the training program. This child did have two accidents after reaching the 30-day criterion (see Figure 2). The maintenance program was instituted (changing sheets and positive practice), and no further accidents have occurred to date (10 months after start of program).
The data points are presented for each two-week period. Point 2 represents the percentage of wet nights at the end of the first two weeks of the training program; point 3 represents the percentage of wet nights at the end of the first month of the program. Point 4 represents the percentage of wet nights at the end of six weeks, point 5 at the end of eight weeks, and point 6 at ten weeks. Fourteen consecutive dry days (criterion) were actually between points 5 and 6.

Figure 1
Percent of Wet Nights
Figure 2
Number of Wet Nights by Week
Azrin and Thiene's method was effective in eliminating nocturnal enuresis in this 15-year-old subject. Two relapses occurred, but when the maintenance procedure was instituted, control was regained. Azrin and Thienes (1978) report that none of the children in their study relapsed more than once.

The effect of the dry bed method was apparent immediately, with the percentage of wet nights dropping from a pretraining high of 71% to 21% in the first two-week period of the program. Further, the impact of this training method appears to be long-term, as ten months after training the child continues to stay dry at night. Relatively few accidents (11) occurred prior to reaching criterion. This method was successful in achieving relatively rapid and durable results.

The method utilizes both reinforcers (praise, extra activities, and tangible rewards) and mild punishers (changing the sheets, early rising and early bed when wet for getting up practice, and getting up practice itself). Further, it incorporates bladder control (strain and hold and measuring urine). Fluid modification is utilized in this system on the first day, seemingly to assist in the strain and hold procedures and to heighten awareness of full bladder body sensations. The use of feeling the dry sheets also was an attempt to sensitize the child to the feeling of dryness. The use of the pad and buzzer added an immediacy factor, in that it closely pairs in
time the wetting event with many of the procedures. In short, Azrin et al. have developed a method which incorporates many of the behavioral techniques used to date.

One clear disadvantage of this method is its complexity. The procedures were successfully carried out by the child and his parents after an in-office behavior rehearsal, but it would be a rare family indeed who could replicate such an intricate training procedure by following only a training manual. Without the assistance of and the reinforcements to the parents of a trainer, a high dropout rate might occur.

One limitation of this study is that it is a clinical case study of how a procedure worked in one particular instance. It is an outgrowth of looking for a solution to one child's problem. This study is a report of how this procedure worked, the difficulties encountered, and an attempt to examine the practicality of the procedure in this particular case. As such, the success cannot be used to predict success with other subjects. It does, however, serve as a view from the field of how one particular method worked with one particular child.

It would be interesting to compare the success of this Azrin et al. method in an inpatient psychiatric setting with the success of typically used programs such as staggered awakenings.
APPENDIX

Informed Consent Form
We, __________________, parents of __________________, agree to participate and give our son permission to participate in a research project studying the elimination of bedwetting, conducted by Elaine Phillips, M.A.

We understand that the project will involve the use of a reward system, an overcorrection procedure, sensitization training, increasing bladder control training, and optional use of a conditioning apparatus. We certify that Ms. Phillips has explained these techniques to us.

Further, we understand that we and our son may withdraw from this project at any point, without repercussions to us. Any data collected at that point will be destroyed if we so desire.

The data collected during this project will be stored in a locked file in the home of Ms. Phillips.

We understand that any publication of these data will not include our names, the name of our son, or any references to our address.

Further, we understand that in pursuing this project, Ms. Phillips is not acting as an employee of any agency. This study is a thesis requirement as part of Ms. Phillips' doctoral training.

Father ____________________  Child ____________________

Mother ____________________  Elaine L. Phillips


