DRY PANTS: A RAPID METHOD OF TOILET TRAINING CHILDREN

R. M. FOXX and N. H. AZRIN
Anna State Hospital, Anna, Illinois, U.S.A. and Rehabilitation Institute, Southern Illinois University, Carbondale, Illinois, U.S.A.

(Received 7 December 1972)

Summary—Toilet training sometimes requires considerable time. An intensive learning procedure was devised for shortening this training time and tested with 34 children who were experiencing toilet training problems. The procedure had the following major characteristics: (1) a distraction-free environment, (2) an increased frequency of urination by increased fluid intake, (3) continuous practice and reinforcement of the necessary dressing skills, (4) continuous practice and reinforcement in approaching the toilet, (5) detailed and continuing instruction for each act required in toileting, (6) gradual elimination of the need for reminders to toilet, (7) immediate detection of accidents, (8) a period of required practice in toilet-approach after accidents as well as (9) negative reinforcement for the accident, (10) immediate detection of correct toileting, (11) immediacy of reinforcement for correct toiletings, (12) a multiple reinforcement system including imagined social benefits as well as actual praise, hugging and sweets, (13) continuing reinforcement for having dry pants, (14) learning by imitation, (15) gradual reduction of the need for immediate reinforcement and (16) post-training attention to cleanliness. All 34 children were trained and in an average of 4 hr; children over 26 months old required an average of 2 hr of training. After training, accidents decreased to a near-zero level and remained near zero during 4 months of follow-up. The results suggest that virtually all healthy children who have reached 20 months of age can be toilet trained and within a few hours.

Until a child has learned to toilet himself properly and without a reminder, the parent and the child must suffer problems of hygiene, skin irritations, excessive dependence on the parent, inconvenience, expense, and, as the child matures, also social embarrassment. Although all normal children seem to learn eventually to toilet themselves, parental “common sense” procedures have resulted in no more benefit than has occurred without training. For example, Madsen, Hoffman, Thomas, Karopsak and Madsen (1969) found that parental training for 1 month reduced accidents by only 5 per cent which is about the same insignificant decrease that they obtained without any toilet training. In view of this failure of training efforts, the common attitude of permissiveness regarding toileting (Spock, 1968) is understandable and justified. One can understand why this permissive view of toilet training as an exercise in futility has recurred about every decade for the past 60 years (Wolfenstein, 1965). Some success in reducing training time has been indicated recently by special reinforcement procedures (Madsen, 1965; Madsen et al., 1969; Mahoney, Van Wagenen and Meyerson, 1971; Pumroy and Pumroy, 1965). Unfortunately, all of these procedures have required at least 1 month of training, all but one (Madsen et al., 1969) have been tested with only 1, 2 or 3 children and all but one (Mahoney et al., 1971) still required continuous reminders to toilet at the end of training. In spite of these limitations, these results indicate that intensive training can reduce somewhat the age at which a child will toilet himself.

* The research was supported by the Illinois Department of Mental Health. We wish to thank Afton Jarvis and Angela Foss for serving as trainers. Reprints may be obtained from either author at the Behavior Research Laboratory, Anna State Hospital, Anna, Illinois 62906.
Recently, a method has been developed for rapidly training the retarded to toilet themselves without prompting (Azrin and Foxx, 1971; Foxx and Azrin, 1973a; Azrin, Sneed and Foxx, 1973). The success of those efforts indicated that similar and even more rapid training might be achieved with normal children by use of that general method. The present study evaluated a modification of that method with a group of nonretarded children.

**METHOD**

**Children**

Thirty-four children were selected for training, 22 boys and 12 girls. Children were recruited by a newspaper ad, by a word-of-mouth request by the authors, and by referral from mothers whose children had been trained by the procedure. Since the training procedure required the child to be capable of responding to verbal instructions, a screening test was devised for ascertaining a potential trainee’s instructional responsiveness. The child was asked successively to point to his (1) nose, (2) eyes, (3) mouth, (4) hair, (5) to sit down, (6) to stand up, (7) to walk with the mother to another room, (8) to look at the mother, (9) to imitate the mother in a simple task, (10) to bring the mother a toy. Of the 43 children referred, 9 could not satisfy the test for instructional responsiveness. All but two of the nine children were under 20 months of age. The mean age for the final sample of 34 children was 25 months with a range of 20–36 months. Virtually all of the parents mentioned difficulties in toilet training their child that led them to seek outside assistance and several mentioned the use of spankings and rewards. Several children, especially the younger ones, did not speak more than a few words and did not dress themselves.

**General rationale**

The present method was based on the same rationale used previously to devise a rapid toilet training procedure for the retarded (Azrin and Foxx, 1971; Foxx and Azrin, 1973a). Normal testing was viewed as a governed reaction that included dressing skills, independence of action, and awareness of one’s appearance as well as sensitivity to bladder and bowel pressures. The general method was to provide an intensive learning experience that maximized the factors known to be important for learning; then to fade out these factors once learning had occurred. The learning factors maximized were a distraction-free environment, a large number of trials, consideration of the component responses, operant reinforcement for correct responses, a variety of reinforcers, quality of the reinforcers, frequency of reinforcement, manual guidance, verbal instruction, immediacy of reinforcement, immediacy of detection of incorrect responses and negative reinforcement for the incorrect response. For the present application to nonretarded children, the previous reliance on manual guidance was deemphasized and greater reliance placed on verbal instructions. An imitation procedure was added as well as a procedure for verbal and symbolic rehearsal of the benefits of toileting correctly. Since children are typically more active than adults, the adult procedure (Azrin and Foxx, 1971) was changed to require more activity. A description follows of the specific procedure used to emphasize each of these learning factors.

**Setting (distraction-free environment).** Distractions and competing activities could be expected to interfere with the child’s performance of the required toileting. Accordingly, all toys were removed and only the trainer was present. Although training was conducted in the home of the child or in the home of the trainer, the parents and family members were asked
to leave for the day. The trainers were two adult female assistants. Only one assistant was used for each child.

*Increased number of trials: increased urinations.* In order to provide many opportunities to reinforce correct toiletings and to negatively reinforce incorrect toiletings, a high frequency of urinations would be desirable. An increased frequency was achieved by giving the child fluids to drink about every 5 min such that about two cups were consumed per hour. The drinks were selected on the basis of the mother's statement of what the child preferred and usually consisted of soft drinks, juices, punches, and milk.

*Operant reinforcement for correct toileting.* Reinforcement for a response is known to increase the strength of that response. Consequently, reinforcers were given for the act of urinating in the 'potty chair' that was provided and also for each of the component skills preceding and following the urination. Reinforcement was withheld at other times and for non-toileting acts.

*Component skills.* Common sense application of reinforcement procedures is often interpreted to mean reinforcing the child after he has completed a correct urination. The present procedure considered each of the component skills such as approaching the potty-chair, grasping the pants, lowering the pants, sitting on the potty-chair, wiping oneself, arising after urination, raising the pants, removing the urine-filled pot from the chair, bringing the pot to the toilet, emptying the pot, flushing the toilet, and returning the pot to the chair. Reinforcers and instructions were given for each of these component acts.

*Quality of reinforcers.* Tasty edibles were used as reinforcers. In addition, an effort was made to identify for use as reinforcers many other events that were of central importance to the child's happiness by questioning the mother and child beforehand. Thus, for a given child a specific type of sweets (such as chocolates) or food (such as potato chips) was used. In addition, the reinforcement consisted of effusive verbal praise, a bodily hug, kisses, caresses, smiles, and applause. Symbolic types of reinforcers were also included (see *Symbolic Rehearsal* below) by telling the child how pleased his important friends, relatives, and 'heroes', would be.

*Variety of reinforcers.* Since any single reinforcer might lose its effectiveness through constant and exclusive use, the large variety of reinforcers described above were used successively and in various simultaneous combinations.

*Immediacy of reinforcement.* The more immediate the reinforcement the greater is the strength of the reinforced response. Since the major response act was urinating while seated on the potty-chair, immediate detection and reinforcement at this moment was critical. Although close visual observation of the seated child would usually be sufficient for immediate detection and was used for five children, a special signalling potty-chair (Star Tinkle, Nursery Training Devices, Inc., Concord, California, Approximate cost $10.) assisted in this detection. The special chair sounded a musical signal when urination activated a device located in the bowl of the chair. The trainer was then alerted and immediately reinforced the child. For the component skills, such as lowering the pants and sitting on the chair, the trainer relied solely on visual observation and gave immediate reinforcement for each component.

*Frequency of reinforcement.* The greater the frequency of reinforcement, the greater the strength of the reinforced response. This principle dictated that the reinforcement be given for every instance of correct urination and every instance of the component skills. Only when the habit and skills were firmly established was the reinforcement frequency decreased (see *Fading of Prompts and Reinforcements* below).
Graduated guidance. For each of the component skills, the trainer instructed the child as to what to do, then manually guided the child through the proper movements if the child did not initiate the movement himself. The manual guidance was graduated at any given moment such that no more guidance was used than was necessary for the movement to be carried out. This Graduated Guidance technique, described in detail in Azrin and Foxx (1971), Foxx and Azrin (1972); Foxx and Azrin (1973a; 1973b), served the purpose of teaching the child the correct movements as well as motivating him to respond quickly to instructions.

Verbal instruction. The child was instructed to carry out the correct toileting in a detailed manner that specified each movement such as putting the fingers beneath the briefs and toward the back of the hips rather than simply instructing him to go to the toilet or to lower his pants. The Graduated Guidance ensured immediate completion of the skill in the rare event that the instructions were not understood or were ignored. The reinforcers at the completion of the act encouraged the child to carry out the act at the next opportunity whether that act had been carried out as a result of instructions or of the Graduated Guidance.

Imitation. Imitation is a proven method of teaching details of a skill and was used in addition to verbal description. Directed imitation was used to teach the child how to toilet and to learn the positive benefits of doing so. The child was given a hollow doll that could be filled with water through the mouth and would release the water through a hole between its legs. The trainer taught the child to perform all of the toileting skills and procedures with the doll that were being used with the child such as praising and feeding the doll, lowering and raising its pants and allowing it to urinate in the potty-chair. This directed imitation was conducted continuously between the child’s own practice trials at the start of training until the child had learned the component toileting skills.

Dry pants check. The objective of the training was not to educate the child to urinate frequently and correctly but to do so at whatever frequency was necessary to insure dry pants. To teach this awareness of his appearance the trainer inspected the child’s pants about every 5 min, having the child himself touch his pants, and reinforcing the child if the pants were dry. The fluids were given as part of this reinforcement and thereby fulfilled the double function of increasing the frequency of urination as well as being a reinforcer.

Negative reinforcement for accidents. To discourage accidents, the trainer reprimanded the child when he wet his pants. The trainer also omitted the reinforcers at the next dry-pants check, and omitted any social interaction with the child for about 5 min (time-out from positive reinforcement). Also serving as a negative reinforcer was the requirement that the child himself change into dry pants which was done at the end of the time-out period so that wet pants would be associated with loss of social interaction. The final element of the negative reinforcement was a required period of practicing rapidly the complete act of toileting (described below under ‘Positive Practice’). The trainer closely observed the child's pants, expression and posture so as to detect an accident immediately and to impose the negative reinforcers immediately.

Prompted practice trials. To provide practice in toileting and to associate urination in the potty chair with reinforcement, the child was instructed to toilet himself about every 10 min. He was allowed to sit on the potty-chair for about 5 min during each trial until one or two urinations occurred during the first minute after seating himself. This short latency urination was interpreted to mean that the child was bladder trained. Thereafter, he was required to be seated for only about 1 min during each trial.
**Positive practice.** A period of required practice in toileting was used as an educational tool as well as a negative reinforcer. After the verbal reprimand had been given for an accident, the trainer required the child to practice going to the potty-chair from various locations in the house for a total of 10 rapidly conducted trials. During each trial, the child went to the chair, lowered his pants, seated himself for about 2 sec, stood up, raised his pants and then moved to another location. As described in detail elsewhere (Foxx and Azrin, 1972, 1973a, 1973b; and Azrin, Kaplan and Foxx, 1973), this period of Positive Practice was educative but also negatively reinforcing because of the effort required.

**Verbal and symbolic rehearsal.** An objective of the procedure was to create a desire by the child to remain dry in order to please his parents, family, and friends. Yet, the limitations of the training situation precluded the possibility of having these “significant others” actually present and participating. As a substitute, this social reinforcement was arranged symbolically by telling the child, as part of the reinforcement, that each of these persons would be delighted at his success. A list of these significant individuals was obtained prior to the training and included favored television or story-book characters as well as real persons. To insure the child’s involvement, the child was asked to reply to questions about this symbolic reinforcement such as “What will Santa Claus (or Mickey Mouse, or Daddy, or Mommy, or your brother Bobby) say about your dry pants?”

**Fading of prompts and reinforcers.** The detailed instructions and continuous reinforcement for each component skill were given at the start of training but then withdrawn as the child progressed. The instructions on the Practice trials were successively omitted for each component act that was conducted at least once without instructions. The instruction to initiate a practice trial was omitted entirely once the child initiated and carried out one entire practice trial without any prompts having been given. Also, after this unprompted toileting, reinforcers for correct toileting were given only intermittently, and then discontinued entirely as were also the dry-pants inspections. The critical point in training was the first occasion of toileting with no need for instructions. Typically, only an additional half-hour or hour was needed thereafter with no instructions during that time and with the reinforcement for dry pants given only once or twice. Thus, the trainer was functioning primarily as an observer after the first unprompted toileting.

**Post-training attention.** The primary motivation desired for maintaining the toileting habit was the pleasure of the child’s parents and family. To insure this motivation after training, the parent inspected the child’s pants before each meal or snack and at naptime and bedtime and praised the child for having dry pants. If an accident occurred, the parent reprimanded the child, made him change his pants, and required him to practice going to the toilet (Positive Practice). No reminders to toilet were given. This scheduled attention to the child’s appearance was conducted only for a few days after training and then discontinued once the child had no accidents.

**RESULTS**

**Reduction of accidents**

Figure 1 shows the number of accidents before and after training for the 34 children. The mothers had recorded the number of accidents by counting the number of times the child had to be changed each day during the week preceding and following training. Following training, the parents were contacted every month for 4 months by telephone or by a personal visit from one of the trainers. Prior to training, the children averaged about 6 accidents
DRY-PANTS TOILET TRAINING

PRE TRAINING

TOILET TRAINING (X = 4 HOURS)

POST-TRAINING

N = 34 CHILDREN

Fig. 1. The effect of the 'Dry Pants' toilet training procedure on the frequency of toileting accidents, both bladder and bowel, of 34 normal children. The toilet training period is shown as an interruption in the curve and required an average of 4 hr per child. The 'Pre-Training' data point represents the children's accident rate per day during the week prior to training. Data points are given for the first 7 days after training and monthly thereafter. Each datum point is the average number of accidents per day per child.

per day per child. Within the first post-training week, accidents had decreased by 97 per cent to 0.2 accidents per day per child, or about one per week. This near-zero level of accidents endured during the entire four month follow-up period and applied to bowel movements as well as urinations. A within-subject comparison of the children's pre- and post-training accidents by the Wilcoxon Matched-Pairs Signed Ranks Test (Siegel, 1956) showed a significant ($p < 0.01$) reduction of accidents for the very first day after training and for each month of the post-training period.

Training time. The mean training time was 3.9 hr; the median time was 3.5 hr and the range was one-half hour to 14 hr. Training was considered complete when the child toileted himself completely and with no prompts. The older children, aged 26–36 months, were trained in a training time of about 2$\frac{1}{2}$ hr. The 20–25 month old group had a mean training time of about 5 hr.

Parent reaction. Most of the parents, although hopeful, were somewhat skeptical about the favorable outcome of training program, possibly because of their own unsuccessful experiences in attempting to train their children. Upon seeing their child independently toilet himself, raise and lower his own pants, carry the plastic pot into the toilet and empty the contents into the toilet stool, flush the toilet and replace the plastic pot, the parents characteristically expressed disbelief pleasure. These parents were eager to suggest friends and relatives whose children might also benefit from the training procedure. It was found that the only parent who did not express pleasure over the rapidity which his child was trained had bet a friend $100.00 that his child would not be trained in one day. Ironically, this child was trained in about one-half hour. Although the child did not have an accident for 2 months after training, we discovered on the 3-month follow-up that the child had been...
returned to diapers for no apparent reason other than the economic consideration of the wager.

Reaction of the children. Most of the children reacted to the training program as if it were a very pleasant experience, hugging and kissing the trainer. The high density of positive reinforcement in the form of hugs, praise, candies, applause, smiles, treats, and the undivided attention of the trainer undoubtedly contributed to the children's pleasant attitude during the training program. Several features of the program seemed especially pleasurable to the children including playing with the doll, emptying the potty and flushing the toilet.

A few of the children initially reacted negatively to the attempts to toilet train them. These children were generally “problem children” who resisted most efforts by the parents and also actively resisted the toilet training attempts by their parents despite being physiologically and psychologically ready for training. Typically, these few children engaged in a temper tantrum at the start of training but cooperated thereafter when this initial reluctance was overcome by providing them with immediate graduated guidance whenever they failed to respond to a request. The typical comment by the mothers of these problem children was that the child had become more cooperative and pleasant in his general conduct after the toilet training.

Bedwetting. None of the children were given specific training for bedwetting (enuresis). Yet, the mothers of 10 children (about 30%) reported that their child stopped wetting at night during the entire first week immediately following the daytime training. Follow-up checks showed that all 10 of these children continued to stay dry at night during the 4-month follow-up period.

DISCUSSION

The results showed that the training program was an effective method of training normal children to toilet themselves without any prompting. All 34 children were trained. Training was accomplished rapidly requiring an average of only 4 hr per child and only about 2 hr for children older than 26 months. The accidents quickly decreased to a near zero level and remained near zero during the 4-month follow-up. Bowel training and bladder training were accomplished concurrently with no need for a differential training procedure. An incidental benefit was that bedwetting (enuresis) was also eliminated for about one-third of the children. Successful training was achieved even for children as young as 20 months, for problem children who resisted any type of training and for children who did not speak. The training program appeared to be a pleasant experience for the children.

The present results demonstrate that toilet training is not a futile exercise; training can be achieved by intensive learning procedures, as was also indicated by recent reinforcement studies (Madsen et al., 1969; Mahoney et al., 1971). Consequently, one can no longer defend an attitude of fatalistic permissiveness on the grounds that bladder and bowel control cannot be hastened. A permissive attitude would still be justified if the training effort produced an enduring negative emotional attitude. The results showed the converse: the children who were negative prior to training were described as more pleasant and cooperative after training. Permissiveness does seem justified for the average child under 19 months of age. The present results showed that all normally responsive children over 19 months of age could be trained in a few hours but greater difficulty should be expected with younger children as indicated by the present finding that the younger children required more training time. Since normal toileting requires locomotive skills, manual dexterity, and maturation of
the bladder and bowel muscles, little gain would occur from training prior to the emergence of these skills. Also, the present method relies heavily on verbal, instructional, and symbolic procedures and should not be so rapidly effective with children who are not verbally and socially responsive. Overall, we suggest that training be deferred until a child is 20 months of age since the training effort for the average child below that age might counterbalance the convenience of having him trained.

REFERENCES


