A WATER-PROMPTING PROCEDURE FOR THE TREATMENT OF URINARY INCONTINENCE

Louis P. Hagopian, Wayne Fisher, Cathleen C. Piazza, and
John J. Wierzbicki

Kennedy Krieger Institute and Johns Hopkins University School of Medicine

Based on clinical observations of a naturally occurring phenomenon, a water-prompting procedure was used to facilitate toilet training with a 9-year-old boy with profound mental retardation. Other frequently used toilet-training procedures were either ineffective or were associated with increased self-injury. The water-prompting treatment package may increase continence by eliciting and reinforcing urination under specific stimulus conditions.

DESCRIPTORS: behavioral pediatrics, incontinence, prompting, self-injury, toilet training

A variety of procedures have been successful for the treatment of urinary incontinence (e.g., Azrin & Foxx, 1971). However, in cases in which commonly used methods fail, it may be helpful to use clinical observations of naturally occurring phenomena to develop alternative treatments. In this case, a water-prompting procedure was used to treat primary incontinence in a profoundly retarded boy for whom other treatments were problematic or unsuccessful. Water prompting was selected based on the observation that the client regularly urinated when placed in warm bath water.

METHOD: Rick, a 9-year-old boy with profound mental retardation, was admitted to an inpatient unit for the treatment of severe self-injurious behavior (SIB). Because toilet training was identified as an important goal by Rick's mother, an intensive treatment program for incontinence was also undertaken. Data were collected on continent urinations (in the toilet), incontinent urinations (not in the toilet), and on SIB (body slamming, head banging, and knee biting) during toileting. Percentage of continent urinations was determined by dividing the number of continent urinations by the total number of urinations (continent and incontinent).

During the first treatment—reinforcement—Rick received social praise and edibles for continent urinations and minimal attention during changing after incontinence (i.e., no verbal interaction and minimal physical interaction). Toileting sits occurred every half hour during waking hours and were terminated following urination or after 15 min. The second treatment, reinforcement with overcorrection, involved reinforcement for continent urinations and overcorrection for incontinence. Due to increased agitation and SIB, this treatment was discontinued. The third treatment, reinforcement (for continent urinations) and differential reinforcement of other behavior (DRO) for SIB, was similar to the first. However, sits were reduced to 5 min every half hour, SIB was blocked (the therapist positioned his or her hands to prevent SIB and gently moved Rick's hands away), and a 5-s DRO for attempted SIB was implemented using music as the reinforcer. The final treatment involved the addition of water prompting to the reinforcement and DRO for SIB. Water prompting involved slowly pouring approximately 5 oz of lukewarm water over the client's genitalia for 3 to 5 s immediately after he was seated on the toilet.

A multielement design was used to assess the efficacy of water prompting. Prior to implementing the procedure for an entire day, four to eight control and water-prompted probe trials were conducted intermittently (after approximately 3 weeks, they were conducted daily). For water-prompted probe trials, water prompting was implemented. For control probe trials, the therapist followed the steps used during the water-prompted trials, although no water was in the cup. For all probe trials, reinforcement was delivered following a successful void, defined as urination occurring within 10 s after prompting. Probe trials, which were conducted during the reinforcement and DRO for SIB treatment phase, were separated from nonprobe trials in the calculation of the daily percentage of continent urinations. The percentage of successful voids was calculated by dividing the number of successful voids by the total number of probe trials. On 47% of the trials, two independent observers simultaneously recorded whether urination occurred. Occurrence and nonoccurrence agreement coefficients were 100%.

RESULTS AND DISCUSSION: The percentage of continent urinations per day across treatments are depicted in the top panel of the figure. During reinforcement, 17% of urinations were continent, and SIB averaged 45.3 occurrences per hour. Although reinforcement with overcorrection increased continent urinations to 53%, SIB also increased to 106.1 per hour. During reinforcement and DRO for SIB, SIB decreased to 12.6 per hour; however, continent urinations decreased to 25%. When water prompting with reinforcement was implemented, the percentage of continent urinations increased to 84%, and SIB remained relatively low (14.9 per hour). Daily incontinent urinations were reduced to an average of 3.3 with water prompting and reinforcement (average daily incontinent urinations were 7.7 during reinforcement and DRO for SIB). For probe trials, Rick averaged 64% successful voids during water-prompted trials and 7% during control trials (see bottom panel of the figure).

In sum, (a) reinforcement for continent urinations was not effective when used alone; (b) reinforcement with overcorrection increased continent urinations, but was associated with increased SIB; and (c) water prompting with reinforcement increased continent urinations while SIB remained low. The relatively low rates of SIB exhibited during the latter two interventions may have been due to the DRO component, although functional control was not demonstrated. Another possible cause for increased SIB during the second treatment may have been the use of overcorrection and lengthier sits.

Unfortunately, the lack of follow-up data for this client limits the conclusions one can make regarding the long-term clinical significance of this treatment. Although the physiological mechanism of water prompting is not clear, one possibility

is that the warm water may cause relaxation of the external sphincter muscle, which initiates urination (Coe, 1987). Behaviorally, the water-prompting treatment package may have helped Rick discriminate between the appropriate and inappropriate conditions for urination by reliably eliciting and reinforcing urination under specific stimulus conditions (i.e., sitting on the toilet). The results suggest that this procedure may be useful for toilet training individuals with profound retardation who have not responded well to commonly recommended interventions.

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Requests for reprints can be addressed to L. Hagopian, Neurobehavioral Unit, The Kennedy Krieger Institute, 707 N. Broadway, Baltimore, Maryland 21205. Received January 18, 1993; final acceptance August 12, 1993; Action Editor, Jack Finney.