

# A Parent-Oriented Approach to Rapid Toilet Training \*

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## Abstract

The current evaluation assessed the effectiveness of a rapid toilet training procedure for three young males with autism. The evaluation extended the research on rapid toilet training procedures by assessing parents' preference to include two common toilet training components, a urine alarm and positive practice. In addition, we assessed child challenging behaviors during intervention. All parent participants' elected not to use the urine alarm, and one parent elected to discontinue the implementation of positive practice techniques. All child participants engaged in challenging behavior with the initiation of toilet training. The toileting intervention was successful as all three participants increased successful self-initiations for the toilet and decreased accidents across home and clinic settings. All parents provided favorable social validity ratings of the treatment. Findings suggest that clinicians should partner with parents to develop individualized toileting interventions that are appropriate and effective.

**Keywords:** Autism, Rapid toilet training, Social validity, Challenging behavior.

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## Introduction

Successful toileting is a developmental milestone generally achieved within three years of age (Schum, et al, 2002). Successful toileting improves an individual's quality of life as an individual can independently toilet, and it decreases the risk of urinary and bowel problems associated with incontinence (Bakker, Vangool, VanSprundel, VanDerAuwera & Wyendale, 2002; Barone, Jasutkar, & Schneider, 2009). Toileting also provides indirect benefits, such as allowing individuals to fully participate in social activities, and reduces stigmatism associated with incontinence (Cicero & Pfadt, 2002). However, for individuals diagnosed with autism spectrum disorder (ASD), toileting is often significantly delayed or simply not achieved (Williams, Oliver, Allard & Sears, 2003).

Azrin and Foxx (1971) developed one of the most well-known and effective toileting procedures known as the rapid toilet training (RTT) method (Kroeger & Sorensen-Burnworth, 2009). RTT procedures were originally evaluated with nine, institutionalized

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adults with intellectual disabilities. Within four days of the program, toileting accidents decreased to nearly zero, and maintenance probes demonstrated participants maintained toileting success at 140 days post-treatment. The RTT procedure consists of multiple components, including: (a) frequently-scheduled toileting opportunities, (b) increased fluid intake, (c) use of a urine alarm, (d) positive reinforcement for continent voids and for staying dry during scheduled checks, (e) and restitutive overcorrection and punishment contingent upon toileting accidents.

Subsequent adaptations of the RTT procedures have been successfully applied to both children and adults with and without intellectual developmental disabilities, including ASD (Didden, Sikkema, Bosman, Duker, & Curfs, 2001; Foxx & Azrin, 1973; Kircaali-İftar, Ulke-Kurkcuoglu, Cetin, & Unlu, 2009). These adaptations have largely retained the original components of Azrin and Foxx's (1971) RTT procedures but with modification. For example, LeBlanc, Carr, Crosssett, Bennett, and Detweiler (2005) evaluated a RTT toileting program for three children with autism and made several modifications to the original procedures. First, caregivers participated in the toileting program alongside clinicians in order to promote maintenance and generalization of toileting skills in the home setting. In lieu of restitutive overcorrection procedures, Leblanc et al implemented a positive practice procedure that consisted of stating "No wet pants" and quickly guiding participants to the toilet for a brief sit and repeating the procedure four additional times. Also, the researchers conducted functional communication training to facilitate independent requests to toilet. Finally, they employed an intensive sit schedule, but the sit schedule progressively adjusted so that participants were prompted to sit on the toilet less frequently with successful urinations. As a result of the program, all three participants achieved continence that maintained at a 1-month follow-up, and two of the three participants independently requested to toilet.

Despite the success of RTT procedures, researchers have raised concerns regarding the inclusion of components that may be considered restrictive consequences for individuals with developmental disabilities. Caregivers may consider punishment procedures, such as restitutive overcorrection and time-out, unacceptable to use and difficult to implement (Cicero & Pfadt, 2002; Post & Kirkpatrick, 2004). In addition, overcorrection procedures may produce negative emotional side effects in children during toilet training; however, these undesirable side effects are often anecdotally reported and not directly measured (Matson & Ollendick, 1977).

Given concerns with restitutive overcorrection procedures, positive practice techniques have been suggested as a substitute. Positive practice techniques focus on teaching the responses an individual should engage in rather than decreasing inappropriate behaviors, as in restitutive overcorrection (Carey & Bucher, 1983). Researchers have successfully utilized variations of positive practice components during toilet training programs. Cicero and Pfadt (2002) evaluated a toilet training procedure with three children with autism where teachers delivered a brief reprimand and then quickly guided the participants to the toilet for an opportunity to eliminate. Leblanc et al. (2005) implemented a positive practice procedure that consisted of stating "No wet pants" and quickly guiding participants to the toilet for a brief sit and repeating the procedure four additional times. In both evaluations, all participants achieved continence within two weeks of training. Although positive practice techniques may be considered relatively less intrusive than restitutive overcorrection procedures, caregivers may have similar concerns. Positive practice techniques are considered a punishment procedure as they are implemented contingent upon toileting accidents to decrease the future probability of accidents (Kroeger & Sorensen-Burnworth, 2009).

To increase the acceptability of toileting procedures for families, researchers have also recommended eliminating special equipment requirements, such as the urine alarm (Cicero & Pfadt, 2002). Eliminating special equipment from toileting protocols may decrease burdens on the family by eliminating the financial costs of purchasing an alarm as well as providing a simplified toileting program. Urine alarms are often included in toileting programs to alert the trainer that an accident is occurring so that any consequences can be implemented (Azrin & Foxx, 1971). In addition, the alarm sound may also startle the participant and temporarily stop the flow of urine which allows for a subsequent, successful completion of the void in the toilet. It may also help children to discriminate when an accident is occurring by increasing its saliency. However, previous evaluations have successfully toilet trained children without the use of a urine alarm which highlights that urine alarms are not necessary to achieve toileting success (Post & Kirkpatrick, 2004; Simon & Thompson, 2006; Tarbox, Williams, & Friman, 2004).

Numerous toileting programs exist that have been modified to improve both caregiver and child satisfaction while maintaining toileting success; however, caregivers have not typically provided input or exercised control over the treatment procedures during the course of the program. Given that one of the defining features of applied behavior analysis is social significance, it is critical that caregivers validate the goals, procedures and effects of an intervention (Wolf, 1978). Fawcett (1991) suggested a model of applied research that facilitates a genuine collaboration between the researcher and the participant and recommended that, "interventions are designed, adapted, and implemented in collaboration with participants." This model ensures that caregivers' preferences are incorporated at each stage of the treatment process.

Therefore, the primary purpose of the current evaluation was to create an individualized toileting program for families with young children with autism. We based our toilet training protocol upon the Leblanc et al. (2005) rapid toilet training program which focused on caregiver participation. However, we individualized the protocol by allowing caregivers to select the inclusion of toilet-training components, the urine alarm and positive practice component, based upon individual preference. The second purpose of our evaluation was to determine if any problem behaviors occurred with the use of a rapid toilet training model. Finally, we assessed the social validity of the toileting program that had been individualized based on caregiver preference.

## **Method**

### *Participants*

Three children diagnosed with autism spectrum disorder who were currently receiving approximately 30 hours a week of early intervention services at a university-affiliated autism center participated in this study. Participants were previously diagnosed by clinicians independent of the autism center and researchers in this evaluation. All participants' treatment plan included toilet training as a goal.

Peter was 2 years and 6 months old and communicated using 3 to 4 word sentences. He independently requested preferred items and activities. Peter did not have a history of engaging in challenging behavior. He wore diapers throughout the day and occasionally requested to use the bathroom. Clinic staff changed his diapers every 2 hours, but they did not sit him on the toilet during diaper changes. His mother reported attempting to toilet train him, but she did not follow any specialized protocols. Peter's mother and clinic staff served as therapists in the evaluation.

John was 5 years and 10 months old. He primarily used two-word phrases to request preferred items and activities, and also engaged in echolalia. John did not engage in

challenging behavior. John wore diapers throughout the day and never independently requested to use the bathroom. Sits on the toilet were scheduled every 2 hours, but he never voided in the toilet successfully. John's parents reported that they previously attempted to potty train him using procedures based upon Azrin-Foxx's methodology (Foxx & Azrin, 1973); however, they report discontinuing the training and described it as "too intense." John's mother and father, as well as his regular clinic staff, served as therapists.

Elijah was 4 years and 8 months old. He primarily communicated through the Proloquo2go application on an iPad, but he also vocally communicated using either single words or single-word approximations. Elijah had a history of engaging in aggression, specifically hair-pulling, during instructional activities. Elijah wore diapers and clinic staff changed his diapers every 2 hours without any sits on the toilet; however, Elijah's parents sat him on the toilet at home but not on any time-based schedule. Elijah's parents also reported that they previously attempted to potty train him using a set of procedures based upon the Azrin-Foxx methodology (Foxx & Azrin, 1973); however, Elijah began having accidents as the sitting schedule was thinned so they discontinued the toileting procedures. Elijah's mother and clinic staff served as therapists in the evaluation.

#### *Settings and Materials*

*Clinic.* Clinic sessions were conducted in a 7'x7' bathroom which contained a regular-size toilet, a child-size toilet seat adaptor, and a sink. During the time off the toilet, participants were allowed access to any clinic rooms (e.g. classroom or gym) that were within 15 feet of the bathroom.

*Home.* Home sessions were conducted in participants' home bathrooms. Bathrooms contained at least one regular-size toilet, a child-size toilet seat adaptor, and a sink. During the time off the toilet, participants were free to go anywhere in the house.

*Materials.* Both settings contained a bag that included participants' change of clothes, wipes and toilet paper, preferred leisure items, and preferred edible items and beverages.

#### *Response Measurement and Interobserver Agreement*

*Dependent Variables.* Researchers, clinic staff, and/or parents collected data using a pen and paper data collection system. We collected data each day for all waking hours, except during car rides when parents would place a diaper on the child.

We collected frequency data on successful voids (or urinations), toileting accidents, self-initiations, and challenging behavior. A successful urination was defined as any amount urine produced into the toilet; any amount of urination outside of the toilet was scored as an *accident*. Thus, it was possible for a child to have both an accident and success in close succession if the child began to have an accident but continued to then void in the toilet (or vice-versa). A *successful self-initiation* was defined as participants' communicative request to use the bathroom, or if the child entered the toileting area, followed by a successful void. We did not score successful self-initiations if the participant requested to use the toilet, but did not have a successful void.

To assess toileting success, we evaluated the frequency of *accidents* and *percentage of self-initiated success*, which we calculated by dividing the total number of self-initiated successes by all successes and then multiplying by 100 to convert into a percentage. To evaluate any potential negative side effects of the program, we collected data on the frequency of *challenging behavior* which we defined as any instances of crying, screaming, flopping to the ground, throwing items, self-injurious behavior or aggression.

*Interobserver Agreement and Treatment Integrity.* Independent observers collected interobserver agreement (IOA) and treatment integrity measures in home and clinic settings. Clinic staff and parents were trained to collect data approximately one week prior to the initiation of baseline and therefore served as primary data collectors. IOA was collected for at least 30% of days across baseline, toilet training, and follow-up phases. We calculated total IOA each day by dividing the number of agreements by the total number of agreements and disagreements and multiplying by 100. Total agreement was 100% for all three participants across all phases. Total IOA for challenging behavior was 93.7% for Peter, 98.2% for John and 100% for Elijah.

We collected data on treatment integrity to ensure correct implementation of toilet training procedures during the six clinical hours on the first day of intervention and for a minimum of two hours at home on the second day of training. We measured five components: (a) prompting the child to engage in communicative response before each sit or bringing child to the bathroom if he or she self-initiates, (b) prompting child to sit for the duration of the sit or until a successful void occurs, (c) providing moderately preferred items during the sit period, (d) immediately delivering highly-preferred items contingent upon successful void, (e) and implementing positive practice procedures contingent upon an accident, if applicable. Treatment integrity was 100% across both settings for all three participants.

#### *Experimental Design and Procedures*

We used a nonconcurrent multiple baseline across participants to evaluate the effects of the toileting intervention. We collected baseline data for three days for Peter, 6 days for John, and almost 2 months for Elijah. Elijah had an unplanned, extended baseline due to illness and other family factors.

*Parent Interview.* The second author met with parents to create a toileting plan using the brief interview form (see Appendix). We first asked parents to nominate preferred items that may function as reinforcers during the intervention. These items were evaluated in a subsequent preference assessment. Next, we described the toileting intervention and parents decided if they would include the urine alarm and positive practice components or not. None of the parents elected to use the urine alarm. Parents stated that they did not want to include the alarm because: (a) the cost of the alarm was prohibitive, (b) there was concern that the alarm sounds would frighten the child, or (c) the alarm would be unbeneficial as the child was already aware of when they had a void. All parents agreed to implement the positive practice procedures as long as they could elect to discontinue the practice if the child seemed distressed. After the interview, the second author provided data sheets and written instructions on the toilet program.

*Preference Assessment.* We conducted a multiple-stimulus without replacement with edible and leisure items to identify highly-preferred items to deliver contingent upon successful voids during intervention (DeLeon & Iwata, 1996). We conducted three sessions. We began each session by presenting an array of six, equidistant items and delivering the instruction, "Pick one." Once the participant selected an item, we removed that item and represented the stimulus array with the remaining items. We continued representing the array until all items were selected. We identified gummy worms as Peter's highly-preferred item and M & M's® for Elijah. John's parents requested we include a choice of items, so John was presented with his top three items and allowed to select one (i.e. fruit snacks, jelly beans, and M & M's®).

*Baseline.* Consistent with ongoing toileting practices, all children wore diapers during baseline and were changed at least every two hours. In addition, John was prompted to sit at each diaper change. If any participants requested to toilet during baseline, we

immediately escorted them to the bathroom. In addition, we delivered brief praise for successful voids.

*Toilet Training Program.* The current toileting program was based on the procedure described by Leblanc et al. (2005) and consisted of: (a) scheduled sits, (b) reinforcement for successful voids, (c) communication training, (d) increased fluids, and (e) positive practice for accidents. No parents elected to use the urine alarm in this evaluation. All children discontinued wearing diapers except when sleeping and during car rides in the early days of training.

*Scheduled Toilet Sits.* All participants experienced a schedule of prompted toileting sits that progressed over 12 levels. During intersit intervals, participants were allowed to play in a nearby classroom or gym. Participants progressed through the first six levels, one level each hour, on the first day of the program. The exception to this time-based contingency is that participants needed at least one successful void before progressing beyond Level 3; if not, the schedule remained at Level 3 until a successful void was achieved. On days 2 and 3, participants progressed one level each half-day as long as there were at least two successful voids. Progression switched to a performance-based contingency at Level 8; participants had to achieve 80% success for two consecutive days before progressing to the next level in the schedule (see Leblanc et al. 2005 for a full description of the sitting schedule).

We modified the sitting protocol for Peter and changed his sit durations from 5 minutes to 3 minutes at Level 8. We made this modification because Peter consistently had a short latency to a successful void or he did not void at all. In other words, a void was unlikely to occur if it had not occurred within 3 minutes.

The first six levels of the program were implemented in the clinic by parents and clinic staff with researchers present. Clinic staff helped parents to implement the procedure for the first 2 hours, and parents implemented all procedures in the clinic by the third hour of the program. All procedures were implemented by parents in the home environment on days 2 and 3, and researchers visited the home on at least one of these days to assess treatment integrity. All participants returned to the clinic on the fourth day at Level 8.

*Reinforcement for successful void.* Parents or staff provided praise and access to each participant's highly-preferred item contingent upon a successful void (or urination). After a successful void, participants were allowed to get off the toilet and the remainder time of the sit interval was added to the intersit (or recess) interval. If the participant self-initiated to use the toilet, the adult immediately escorted the participant to the bathroom. However, participants only received access to the high-preference item contingent upon a successful void.

*Increased fluids.* Children were provided with free access to a beverage that was nominated as preferred by caregivers. If participants did not independently consume the beverage, we encouraged drinking by offering the cup at least once every 30 minutes.

*Communication training.* Parents and/or clinicians provided a model prompt for the child to request the toilet before walking to the bathroom and again right before they sat on the toilet. We emphasized to parents that prompts should not be given at any other times. The communication response for Peter and John consisted of a vocal request, "Go potty". Elijah's communication response was pressing a symbol of a toilet on his iPad, which produced a voice output of "Go Potty". If Elijah did not press the symbol after the model prompt, the adult physically guided Elijah to press the symbol

*Positive practice.* A positive practice procedure was implemented contingent upon an accident. On the first indication of an accident, the adult immediately stated "No wet

pants” in a firm tone and quickly guided the child to the bathroom. Children undressed themselves with adults’ assistance and sat on the toilet for about 5 seconds. After the brief sit, the adult provided assistance for the participant to redress and then returned participants back to the site of the accident. This procedure was repeated up to four times. The recess time was not reset when the accidents happened. However, the adults immediately stopped implementing positive practice if participants successfully urinated in the toilet and provided access to the highly-preferred item.

Peter’s mother discontinued the practice technique after the first implementation of all five trials and stated that Peter was too distressed by the practice to continue.

*Maintenance.* We assessed maintenance of toileting behavior after participants completed the toilet training program. We collected follow-up data for Peter at approximately four months post-training, at three weeks post-training for John, and at one week post-training for Elijah.

## Results

Figure 1 displays the percentage of successful self-initiated voids and the number of toileting accidents for all three participants through baseline, intensive training, and follow-up phases. The results of Peter’s training are displayed in the top panel of Figure 1. During baseline, Peter would successfully request to use the toilet when undressed before taking a bath in the evening; however, his success was limited to this situation as he still had accidents throughout the day. We initiated toilet training on day 4. Although Peter’s mom elected to use positive practice, she decided to discontinue implementing the procedure after the first implementation and stated that Peter was too distressed by the procedure. The percentage of successful self-initiations increased to 100% by the third day of toilet training and remained at 100% over the course of the toileting training program. Peter completed the toileting program in 13 days. Maintenance probes indicate that Peter continued to self-initiate and had zero accidents up to four months post training.

The middle panel of Figure 1 depicts John’s toileting performance. During baseline, John did not successfully self-initiate and had an average of 3.3 accidents per day ( $SD = 2.2$ ). We implemented toilet training on day 11 and John’s accidents initially increased above baseline levels, likely due to increased fluid consumption. Accidents decreased below baseline levels by day 18 (the eighth day of the program), and John began to self-initiate on day 22 (twelfth day of the program). We examined toileting performance over the last three days of the program, and John had an average of 0.3 accidents ( $SD = .05$ ) and 78.3% ( $SD = 7.9$ ) self-initiated toileting successes. He completed the program in 26 days. A maintenance probe conducted at three weeks post-training indicated that John had 100% self-initiations and zero accidents.

Elijah’s results are displayed in the bottom panel of Figure 1. Before intervention, Elijah did not successfully self-initiate and had an average of 3.3 accidents per day ( $SD = 1.5$ ). Similar to John, Elijah’s accidents increased with the initiation of the toileting program; however, accidents decreased below baseline levels within nine days of the program. Elijah successfully self-initiated on the first day of the program and began to consistently self-initiate by the tenth day of the program. Elijah completed the toileting program within 29 days. On the last three days of the program, accidents decreased to an average of 0.3 ( $SD = 0.5$ ) and successful self-initiations increased to 88.6% ( $SD = 8.4$ ). A follow-up assessment revealed that Elijah had 100% self-initiations and zero accidents at one week post-program completion.

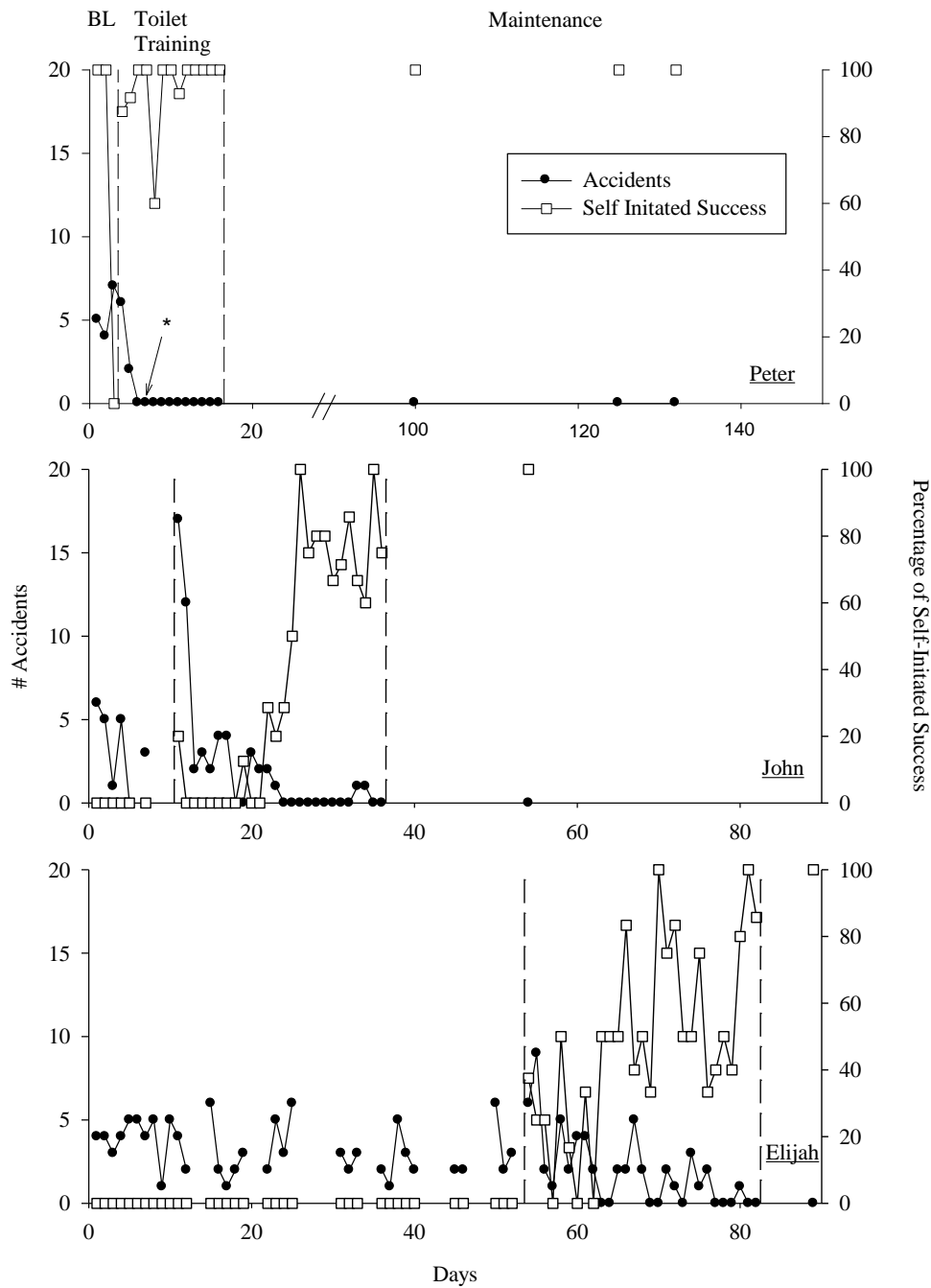
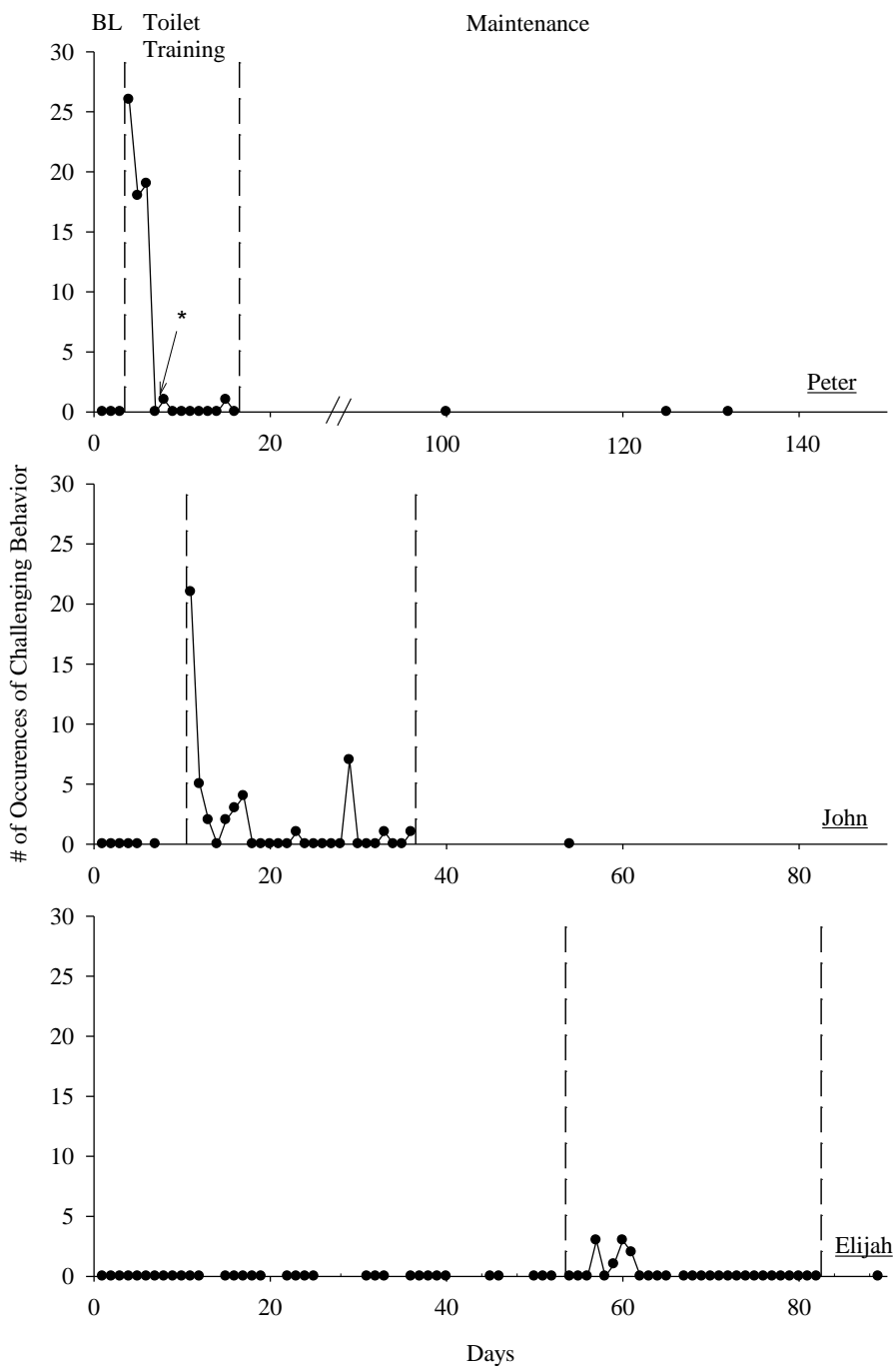


Figure 1. The frequency of toileting accidents and percentage of self-initiated successes for Peter, John, and Elijah. The asterisk denotes the modification of the sitting schedule for Peter.





**Figure 2.** Frequency of challenging behaviors for Peter, John, and Elijah. The asterisk denotes the modification of the sitting schedule for Peter.

Figure 2 shows participants' challenging behaviors during toileting procedures. Peter's challenging behaviors are depicted in the top panel. Peter had zero occurrences of challenging behavior (i.e. crying) during baseline. Challenging behavior was observed with the initiation of toilet training and occurred primarily during toilet sits. On day 4, we decreased the sitting criterion from 5 to 3 minutes, and rates of challenging behavior decreased. Challenging behavior remained at zero during maintenance.

Similar to Peter, John did not engage in challenging behavior (i.e.) during baseline, but engaged in challenging behavior with the initiation of toilet training (middle panel of

Figure 2). John had 21 occurrences of challenging behaviors on the first day of training and an average of 2.7 (SD = 1.6) occurrences of challenging behavior on the second through seventh day of the program. Thereafter, his challenging behavior decreased over the course of the program, and there were zero occurrences during the maintenance probe.

Elijah’s challenging behavior is depicted in the bottom panel of Figure 2. He did not engage in challenging behavior during baseline or the initiation of toilet training. Elijah engaged in an average of 1.8 occurrences (SD = 1.2) of challenging behavior on the fourth through eighth day of toilet training, but challenging behavior returned to zero levels and maintained over the remaining course of the program and during the maintenance probe.

*Social Validity Assessment.* We assessed the social validity of the toileting program by obtaining participants’ parents evaluation of the toileting program using the Treatment Evaluation Inventory-Short Form (TEI-SF; Kelley, Heffer, Gresham, & Elliott, 1989). All three respondents rated the program favorably and the results are summarized in Table 1.

**Table 1.** *Parents’ responses to Treatment Evaluation Inventory – Short Form*

Statement	Responses		
	Peter’s mom	John’s mom	Elijah’s mom
I find this treatment to be an acceptable way of dealing with the child’s problem behavior.	Strongly agree	Strongly agree	Strongly agree
I would be willing to use this procedure if I had to change the child’s problem behavior.	Strongly agree	Somewhat agree	Strongly agree
I believe that it would be acceptable to use this treatment without children’s consent.	Strongly agree	Somewhat agree	Neither agree nor disagree
I like the procedures used in this treatment.	Strongly agree	Somewhat agree	Strongly agree
I believe this treatment is likely to be effective.	Strongly agree	Strongly agree	Strongly agree
I believe the child will experience discomfort during the treatment	Somewhat agree	Strongly agree	Somewhat disagree
I believe this treatment is likely to result in permanent improvement.	Strongly agree	Strongly agree	Strongly agree
I believe it would be acceptable to use this treatment with individuals who cannot choose treatments for themselves.	Strongly agree	Strongly agree	Somewhat agree
Overall, I have a positive reaction to this treatment.	Strongly agree	Strongly agree	Strongly agree

## Discussion

It is critical that practitioners and caregivers jointly develop and implement interventions that are provided for individuals with autism. This coordination affords families with an individually relevant intervention. In addition, professional guidelines for behavior analysts require that behavior analysts include caregivers throughout the development and implementation of interventions process (Professional and Ethical Compliance Code for Behavior Analysts 4.02, Behavior Analyst Certification Board, 2014). The current evaluation extends the research on toilet training individuals with autism by collaborating with caregivers' to develop an individualized intervention protocol.

We first identified components of an established toilet training program (Leblanc et al., 2005) that the literature suggested are nonessential to toilet training success (Cicero & Pfadt, 2002; Post & Kirkpatrick, 2004). Parents decided if they would include those components, specifically, a urine alarm and positive practice techniques, prior to implementing the toilet training intervention. No parents elected to use the urine alarm while all parents elected to use positive practice, although one parent discontinued the use of positive practice after one implementation. Despite these modifications, our results are similar to those reported by Leblanc in that all participants engaged in successful self-initiations and decreased toileting accidents to near zero levels. These results maintained over extended periods of time. Measures of social validity indicate that parents were satisfied with the training procedures as well as the outcomes.

There were several components of the rapid toilet training protocol that we did not modify as previous research suggests that certain components are essential for toilet training success. Greer, Neidert, and Dozier (2016) conducted a component analysis of toilet-training procedures and identified that combining (a) underwear, (b) a dense sit schedule and (c) differential reinforcement produced the greatest success; implementation of individual components was largely unsuccessful. However, Greer did not include communication training in their evaluation, and several participants notably did not engage in self-initiations to toilet. Thus, we advise that the combined components, in addition to communication training, should be retained in any individualized toilet training program.

It should be noted that the sit schedule evaluated in Greer et al. required shorter sit durations and longer intersit intervals (i.e. 3 min sit every 30 min) relative to the durations evaluated in the initial levels of the current study. Additional research is needed to identify the relative effectiveness of different sit schedules on both toileting success and child challenging behavior. Future evaluations should also assess parent preference amongst dense sitting schedules.

The current evaluation extends the literature by assessing the effects of a rapid toilet training program on child challenging behavior. All three child participants engaged in challenging behavior within the beginning days of the toileting program. This may be due to the potential aversive nature of (a) long sits, (b) positive practice, or (c) some other component of the program, such as frequent transitions. We hypothesized that the sit duration was aversive to Peter, so we modified the sit schedule and decreased the sit duration from 5 to 3 min. Although his challenging behavior decreased, we did not systematically evaluate the effects of sit durations on challenging behavior; therefore we cannot conclude that longer sit durations were associated with higher levels of challenging behavior for Peter. These results reveal that caregivers should anticipate some negative side effects with the implementation of rapid toilet training procedures. Future research should assess procedures to mitigate these side effects, such as having the child sit on the toilet for brief durations prior to implementing a rapid toilet training procedure.

One limitation of the current evaluation is that treatment integrity data was only collected in the early stages of the program rather than throughout the intervention (Gresham, 1996). We wanted to ensure that the treatment was implemented accurately and consistently when the implementation was likely to be most difficult. Although integrity was at 100% during these days, we cannot conclude that staff and parents continued to implement procedures with high integrity throughout the program.

This study serves as a model of soliciting parents' participation into a toilet training program for their children. The program was successful and parents were satisfied with the procedures and outcomes. We encourage providers and researchers to create family-centered interventions that allow parents to actively participate in the individualization and implementation of evidence-based programs for their children.



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## **Appendix**

### **Toilet Training Parent Interview Form**

- 1) What are some of your child's favorite items that we can use during toilet training to reward successes? Please identify both leisure items (toys or activities) and edible items.
  
- 2) Is your child aware of being wet or dry? If yes, what does he/she normally do after wetting the diaper?
  
- 3) Urine alarms are often included during toilet training procedures. The alarms provide the benefit of helping the child to notice when s/he has an accident by producing the alarm sound. In addition, once the alarm sounds, the child may stop the flow of urine and this provides an opportunity to take the child to the toilet for him/her to have a successful void. However, some children may find the alarm unpleasant and/or startling. We recommend the use of urine alarms for children who do not seem to notice being wet or dry. Would you like to include this component?
  
- 4) Positive practice techniques are often included during toilet training procedures. This involves having the child repeatedly walk to the bathroom, undress, and briefly sit several times (up to five) if s/he has an accident. The benefit is that this may also stop the flow of urine and provides an opportunity to take the child to the toilet for him/her to have a successful void. However, some children may find these procedures unpleasant. You can elect to include the component or not include the component. If you elect to include the component and think that the child is too uncomfortable with the procedures, we can eliminate it immediately. Would you like to include this component?