AN EVALUATION OF AN INTENSIVE TOILET TRAINING MODEL

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The current evaluation assessed the effectiveness of an intensive toilet training procedure for three young boys with autism. The evaluation extended the work of LeBlanc et al. (2005) by assessing parents’ preference to include the usage of urine alarm and positive practice. In addition, we collected descriptor data on challenging behaviors. All three parent participants’ elected not to use the urine alarm and one parent elected to discontinue the implementation of positive practice techniques. Researchers chose a nonconcurrent multiple baseline across participants design to evaluate the effects of the intervention. All three child participants’ increased successful self-initiations for the toilet and decreased accidents across home and clinic settings. Findings suggest that clinicians should partner with parents to develop individualized toileting interventions that are acceptable and effective.
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for all participants.
INTRODUCTION

Autism spectrum disorder (ASD) is a developmental disorder characterized by difficulties in social interaction and communication as well as repetitive and restricted behaviors (American Psychiatric Association, 2013). In addition to these characteristic deficits, ASD is also associated with deficits in adaptive behaviors (Volkmar, Sparrow, Goudreau, & Cicchetti, 1987). Adaptive behaviors are skills required for an individual to successfully function in daily life. Adaptive behaviors are correlated with an individual’s ability to live independently.

Williams, Oliver, Allard, and Sears (2003) found that one adaptive behavior that was often a concern in young children with autism was toileting skills. Children with autism are often delayed at the age of successful toilet training even when compared to children with other developmental disabilities. They reported that average age in which a child was successfully toileting was 3.3 years for children with autism in comparison to 2.5 years for children with other developmental disabilities.

Diaper usage can be beneficial for caregivers and children as it allows families mobility and participation in social activities when children are not yet toilet trained. However, extended use of diapers may diminish personal hygiene, self-confidence and increase physical discomfort, stigmatism, risk of later problems with bladder control, and restriction to participate in social activities (Cicero & Pfadt, 2002; Joinson, Heron, Gontard, Butler, Emond, & Golding, 2009; Kircaali-Iftar, Ülke-Kürkçüoğlu, Çetin, & Ünlü, 2009; Kroeger & Sorensen-Burnworth, 2009; Tarbox, Williams, & Friman, 2004). Extended diaper use for children with autism is also problematic because the diaper can become a discriminative stimulus for urination and children may become resistant to toilet-training procedures. That is, the diaper may gain stimulus control
Teaching independent toilet skill can improve the quality of life for children with autism and their families. Families may benefit from decreased cost of purchasing diapers while children learn to communicate their physical needs and decrease the risk of disease associated with diaper wearing (Simon & Thompson, 2006).

Several procedures have been developed for treatment of urinary incontinence including components such as video modeling (Bainbridge & Myles, 1999; Keen, Brannigan, & Cuskelly, 2007), water prompting (Hagopian, Fisher, Piazza, & Wierzbicki, 1993), and scheduled sittings (Post & Kirkpatrick, 2004). One of the most well-known and successful toileting procedures was developed by Azrin and Foxx (1971) and is known as the “intensive toilet training” method. The procedure includes the following components: frequently-scheduled toileting opportunity, increased fluid intake, use of urine alarm, positive reinforcement for successful urination, and restitutional overcorrection and one-hour timeout from preferred items or activities contingent upon accidents. This combination of procedure has produced rapid success for individuals, with many individuals achieving toileting success within one day. Originally, this method was used for adults with mental retardation. Then the same procedures with or without modifications also have been implemented successfully with about 200 typically developing children (Azrin & Foxx, 1974), six children with severe intellectual disability and Angelman syndrome in which five out of six children remaining accident-free at 2.5 year follow-up (Didden, Sikkema, Vosman, Duker, & Curfs, 2001) and two children with autism (Kircaali-İftar et al., 2009).

One limitation of previous research is the lack of reported response maintenance or generalization across setting. This is important as individuals with autism often have difficulties...
in generalizing acquired skills across different environments and persons (Kroeger & Sorensen, 2010; Lovvas, 1987). For that reason, it is important to program for generalization by involving multiple teachers, parents, and training across environments, such as a clinic and home environment (Stokes & Baer, 1977).

Kroeger and Sorensen (2010) identified parent training as a critical component for the child’s successful continence during training as well as maintenance. Some studies (e.g., Kroeger & Sorensen, 2010; LeBlanc, Carr, Crossett, Bennett, & Detweiler, 2005) include parent training components in the procedure in order to promote generalization. In the Kroeger and Sorensen (2010) study, which involved a parent training component, the two participants did not self-initiate and had between 20% and 100% of voids as accidents during baseline phase; however, at 6 month and 3 year follow-up, they remained accident free and had between 90% and 100% of voids as self-initiation at different locations such as school, public library and grandparents’ house.

LeBlanc et al. (2005) implemented an intensive toilet training based on the Azrin and Foxx (1971) procedures for three children with autism via an outpatient clinical model. Toilet training was initiated on a Friday in a clinical setting and parents were required to participate in the toilet training. This allowed parents to observe correct implementation of the procedures for the first portion of the day and then practice implementation of the procedures for the second half of the day. Trained staff members were paired with parents to provide support, promote fidelity of implementation, and resolve any questions the parents might have. Following training on Friday, parents continued to implement the training package at home. Two out of three participants in the study maintained accident free and self-initiation at follow-up. The third
participants lost her self-initiation skill because her parents kept providing frequent prompt for
bathroom usage.

Despite the success of intensive toilet training procedures, there have been concerns over
the years about the inclusion of components that may be considered restrictive consequences for
individuals with developmental disabilities. Procedures such as restitutio

nal overcorrection or
time-out contingent upon accidents might be unacceptable to use and difficult to implement for
caregivers (Cicero & Pfadt, 2002; Kircaali-İftar et al., 2009; Post & Kirkpatrick, 2004). With
restitutional overcorrection, contingent upon an accident, the individual is required to perform a
behavioral sequence of dressing, cleaning self and cleaning the environment to bring it to a better
state than before the accident. According to Brazelton, Christophersen, Frauman, Gorski, Poole
and Stadler (1999), this procedure can create a physical abuse environment to the individual
when he is with an unsupervised caretaker. Due to that reason, researchers have made some
modifications to increase the social validity of these procedures. For example, modifications of
the Azrin and Foxx (1971) have included removing the overcorrection component (Cicero &
Pfadt, 2002; Post & Kirkpatrick, 2004), adding fading procedures (Cicero & Pfadt, 2002), and
combining transfer of stimulus control procedure (Taylor, Cipani, & Clardy, 1994). Then to
avoid restitutio

nal overcorrection’s aversiveness, researchers tried to replace it with positive
practice overcorrection (Averink, Melein, & Duker, 2005; LeBlanc et al., 2005). With positive
practice, contingent on an accident, the individual is required to perform the appropriate
behaviors repeatedly (e.g., going to the bathroom, undressing, and sitting on the toilet for four
times).

Positive practice overcorrection and the use of urine alarms are two components that
may have aversive properties for the child, yet are still commonly recommended during toilet
training.
training procedures (Averink et al., 2005; Leblanc et al., 2005; Vermandel, Weyler, Wachter, & Wyndaele, 2008). In recent years, some research has shown some successes with toilet training without the overcorrection component (Cicero & Pfadt, 2002; Kroeger & Sorensen, 2010; Post & Kirkpatrick, 2004; Simon & Thompson, 2006). Other researchers have omitted the use of urine alarms while still achieving toileting success (Cicero & Pfadt, 2002; Post & Kirkpatrick, 2004; Simon & Thompson, 2006; Tarbox, Williams, & Friman, 2004). Both Cicero and Pfadt (2002) and Post and Kirkpatrick (2004) did not include either overcorrection component or urine alarm and they still achieved great results. However, there was only one boy participated in Post and Kirkpatrick (2004) study. They only use scheduled sit to prompt the child using the bathroom but they did not teach him how to communicate his physical need to the parent. In Cicero and Pfadt (2002) study, two of their participants were successfully toilet trained following 10 days of toilet training and the third participant was successfully toilet trained by day 15. They only implemented the procedure at school and did not collect data in other settings. Neither of these two studies had follow-up data. Therefore, the generalization of the children’s toilet skills in these studies is questionable.

In addition to the two components, overcorrection and urine alarm, the intensive sitting schedule (e.g. sitting for 10 minutes with a 5 minute recess) may create a challenge for some children. This may be heightened for children with autism who may show intolerance to novelty in routine and stimulus conditions (American Psychiatric Association, 2013). Noncontingent delivery of moderately-preferred items during sits is often provided to enrich the environment.

For all of the above reasons, it is very important to create a child and parent-oriented toilet training procedure. Brazelton et al. (1999) mentioned that child-oriented approach could teach the child independent toileting skills without them experiencing major problems such as
challenging behaviors on sitting. Also, the child readiness is not enough for the training; the parents have to be ready and make a commitment to toilet training as well. Toilet training takes a lot of time and emotional and physical energy not only from the child but also from the child’s parents (Anderson, Jablonski, Thomeer, & Knapp, 2007). Making sure the parents understand what are involved in the procedure and letting them decide which component they want to use for their child’s toilet training can help parents understand their important roles in the child’s training and be more comfortable with the procedure since they already know what to expect.

The purpose of the current evaluation was to create an individualized toileting program for young children with autism based upon participants’ preference for the inclusion of the urine alarm and positive practice components. In addition, we collected data on the frequency of challenging behaviors that occurred throughout the training, with special attention focused on the beginning of the training when the schedule required relatively long sits with brief intervals. We also included a subjective measure and asked parents of two of our participants to rate what they perceived as the intensity of challenging behavior during the procedures. Thus, the current study is a replication and extension of the procedures presented by LeBlanc et al. (2005) study.

Therefore, the procedure in this study was child and parent-oriented.
METHODS

Participants

Three children diagnosed with autism spectrum disorder who were currently receiving early intervention services at a local, university-affiliated autism center participated in this study. Participants were diagnosed by clinicians independent of the clinic where they received the behavioral treatment. Prior to the study, parents expressed interests in toilet training for their children to the child’s case managers.

Peter was 2 years 6 months old when he participated in the study. He could communicate with 3 to 4 word sentences and could request preferred items and activities independently. He also had some basic social and play skills. He could engage in some pretending play with adults and peers. Before participating in the study and through baseline phase, he wore diapers throughout the day and never independently requested to use the bathroom in the clinic. Clinic staff changed his diapers every 2 hours but they did not sit him on the toilet during diaper changes. He had no prior experience with the toilet training procedures His mother and clinic staff served as therapists in the evaluation.

John was 5 years 10 months old. He used short phrases to request preferred items and activities, and also engaged in echolalia. He could complete the toilet routine with some assistance from the clinic staff. Prior to the study and through baseline phase, John wore diapers all day. Sits on the toilet were scheduled every 2 hours and he never urinated in the toilet successfully. John’s parents reported that they previously attempted to potty train him using procedures based upon the Azrin and Foxx’s methodology; however, they reported discontinuing the training and described it as “too intense.” Both of his father and mother participated in the toilet training and his regular clinic staff served as therapists.
Elijah was 4 years 8 months old. He primarily communicated through Proloquo2go on the Ipad but also used single-word approximations (e.g., buh for ball) and some single words (e.g. tickle). Elijah had generalized imitation and could also follow simple instructions. Prior to the study and through baseline, Elijah wore diapers and clinic staff would check and change his diapers every 2 hours. Elijah’s parents also reported that they previously attempted to potty train him using a set of procedures based upon Azrin and Foxx’s procedures; however, Elijah began having accidents as the sitting schedule was thinned so they discontinued the procedures.

Settings and Materials

Clinic

Clinic sessions were conducted in a 7’x7’ bathroom, which contained a toilet and a sink. During the time off the toilet, participants could either spend their time in the classroom, in the gym, or a small individual therapy room.

Home

All home bathrooms contained at least one toilet and a sink. During the time off the toilet, participants were free to go anywhere in the house.

Materials

A bag containing participants’ personal extra clothes, diapers, and wipes were kept in the bathroom. Prior to the current evaluation, we identified highly-preferred items for each participant; highly preferred items (e.g., toys and edible) were also kept in a small bag in the bathroom. In addition, the child had access to a cup filled with fluid that the parents reported as preferred by the child (e.g. apple juice). Each child used a child toilet-seat adaptor that was placed on top of the seat of the adult-sized toilet. Therapists and parents collected data using pen and paper data collection system.
Response Measurement

Dependent variables. Researchers, clinic staff, and/or parents collected data through all waking hours for participants. The data sheets during baseline and maintenance are shown in Appendix A. The data sheet used during the toilet training intervention is shown in Appendix B.

Dependent variables were frequency of self-initiations, prompted urination, and challenging behavior. A success was defined as a continuous stream of urine in the toilet for at least 1 second. An accident was defined as a visible spot of urine on the underwear or on the floor which was greater than 2 inches in diameter. It was possible for a child to have both an accident and success in close succession if the child began to urinate outside of the toilet but continued to then void in the toilet. Self-initiation was defined as participants’ request to use the bathroom or walk to the bathroom and then successfully urinate in the toilet without any prompt. Requests were individually defined for each participant. Prompted urination was defined as anytime the adults sat the child on the toilet as scheduled and the child successfully urinated in the toilet during sit. Researchers also collected data on the frequency of challenging behavior. We defined challenging behaviors as crying, screaming and kicking for Peter, crying for John, and pulling others’ hairs, biting, and pinching for Elijah. John and Elijah’s parents were asked to rate the severity of the behaviors on a scale from 1 to 4 with 1 as no challenging behavior; 2 as low Levels of challenging behavior; 3 as moderate Levels of challenging behavior, and 4 as severe Levels of challenging behavior.

The main dependent variable was percentage of success which we calculated by dividing the number of successes by the sum of successes plus accidents and then multiplying by 100 to convert into a percentage. To compare with the percentage of success, we also calculated the
percentage of accidents by dividing the number of accidents by the sum of successes plus accidents and then multiplying by 100.

*Interobserver agreement.* Interobserver agreement (IOA) data were collected by one of the researchers, three graduate students and one undergrad student across home and clinic. Clinic staff and participants’ parents collected the primary data. IOA was collected across baseline, intensive training, and follow-up for at least 30% of toilet sits during each day, which is equal approximately 2.5 hours of observation each day. The percentage of IOA was calculated by dividing the number of agreements on each occurrence of successful urination and accidents by the total number of agreements and disagreements and multiplying by 100. The percentages for interobserver agreement were 100% for all three participants across all phases.

*Treatment integrity.* We collected data on treatment integrity (see Appendix C) to ensure correct implementation of toilet training procedures on the first and second day of training. We measured five components: prompting the child to engage in communicative response before each sit or bringing child to the bathroom if he or she self-initiates, prompting child to sit for the duration of the sit or until a successful urination occurs, providing moderately preferred items during the sit period, immediately delivering highly-preferred items contingent upon successful urination, and implementing positive practice procedures contingent upon an accident. All clinic staff and parents for all three participants implemented all of the components correctly. On the second day, two researchers came to participants’ house for at least 2 hours to collect treatment integrity and IOA. The percentage of session in which treatment integrity was collected is 100% between researchers.
Experimental Design

A nonconcurrent multiple baseline across participants was chosen to evaluate the effects of the intervention. The design minimizes potential confounds of maturation with age and history of exposure to behavioral therapy.

Procedures

After parents expressed their interest in potty training for their children, the researcher interviewed the parents (see Appendix D). The researchers were interested in determining if the child was aware of being wet or dry. If parents reported that the child demonstrated discomfort when the diaper was wet (such as trying to remove his own diaper) or indicated to the parents that he was wet (such as vocalizing, “I pee”) then the researcher suggested that the parents could elect to use the urine alarm or not since the child already possessed the skill of distinguishing wet vs. dry undergarments. If the child never indicated when wet, we strongly suggested for parents to use the alarm although it was not a requirement to participate. The urine alarm may serve two functions: to increase the saliency of having a wet undergarment by producing an alarm sound when the child is wet and potentially serve as a punisher by producing the alarm sound contingent upon wet pants and making the child startle and stop the urine flow. All parents were provided the choice to use the alarm based upon reports of their child indicating when wet. All parents chose not to use the urine alarm.

We also provided information about the positive practice procedure. We explained that the procedure allowed the child to practice the correct behavior of walking to the toilet when there was a need to urinate; however, the procedure might contain an aversive component by having the child repeatedly practice the skill up to four times as suggested in the Leblanc et al. (2005) study. We summarize parent’s response to the interview in Table 1.
Finally, we asked parents to nominate items that the child prefers to use during toilet training. Nominated items were included in addition to items previously identified as high-preferred items during previous assessments in the clinic. After the interview, researchers explained the procedure in details for parents. When the parents agreed to participate in the study, consent forms for both parent and the child’s participation were signed (see Appendix E and Appendix F). In addition, parents received data sheets and written instructions for the upcoming toilet training procedures.

Baseline Phase

After the interview and consent forms were signed, researchers collected baseline data. Baseline data were collected 3 days for Peter, 6 days for John, and almost 2 months for Elijah. Elijah had an extended baseline data due to family’s members’ sickness and cancellation close to previous dates in which we planned to initiate training. There were no changes in the participants’ routine in the clinic and at home. All participants wore diaper all day during baseline phase. For Peter and Elijah, staff members and parents checked their diapers every two hours and changed the diaper when it was dirty. They were not required to sit on the toilet everytime the diaper was changed. For John, staff members and parents also checked his diaper every two hours. However, he was asked to sit for 3 minutes or until the urination occurred whenever they visited the bathroom.

Preference Assessment

Researchers conducted a multiple-stimulus without replacement preference assessment to identify the preferred items to deliver contingent upon successful urination (DeLeon & Iwata, 1996). We identified highly-preferred (HP) items as the item that each participant selected first in an array. For Peter, we identified gummy worms as a highly-preferred item. Anecdotally,
John’s preferences frequently changed so we included a choice of various items during the intervention. Elijah’s most preferred edible was M&Ms.

**Intensive Toilet Training Treatment Components**

The study replicated the procedure in Leblanc et al. (2005), so the treatment components also consisted of a sitting schedule, consequences for successful urinations and self-initiations, increased fluids consumption, communication training, and positive practice for accidents if parents elected to use the procedure. However, this study did not use the urine alarm since all of the parents chose not to use it.

**Sitting Schedule**

During intervention, the sitting schedule (see Table 2) included 12 Levels with increasing intersit intervals (time off the toilet) across subsequent Levels. The initial sitting schedule required the child to sit for 10 minutes with a 5 minute recess. On the first day, the schedule progressed by a Level each hour until the participants reached Level 6. The schedule remained at Level 6 for the remainder of the first day. The only exception is that participant would remain at Level 3 until there was at least one successful urination as described in the Leblanc et al. (2005) study. However, all participants in the evaluation had one success by this point so this rule was not implemented. On the second day, participants started on Level 6 and moved to Level 7 at noon. The third day was the same as the second day and participants completed Level 7 and 8. Once the participants reached Level 8, they progressed to the next Level by meeting 80% success for two consecutive days. That is, the schedule changed from a time-based criterion to a performance-based criterion. We started out with the time-based criterion so that the children had more opportunities to success and contact the contingency between urinating in the toilet and receiving highly-preferred items for successes. Once the child had learned about
the contingency, we changed it to performance-based criterion to fade out the prompt for urination in the toilet and to encourage self-initiation. During intersit intervals, participants were allowed free access to preferred items and activities, excluding those identified as highly-preferred and delivered contingent upon success. During sits, participants were provided with access to moderately preferred activities. For Peter, his mom read books to him during his sit. For both John and Elijah, they had access to watch video or play games on an Ipad. Clinic staff used the timer to keep track of the time. Peter’s and Elijah’s parents used their phone for timing and John’s parents chose to use the kitchen timer. All participants wore their underwear during waking hours except when they were in the car.

Programmed Consequences for Successful Urination

When the participants urinated successfully in the toilet, parents and staff provided praise and access to preferred items. After a successful urination, participants were allowed to get off the toilet and the remainder time of the sit interval was added to the intersit (or recess) interval.

Programmed Consequences for Self-Initiation

Upon participant’s request for using the bathroom, the adult took the participant immediately to the bathroom. However, participants only received access to preferred items if they urinated successfully after self-initiation. The adult also restarted the timer for the next recess duration after a successful self-initiation.

Increased Fluids

Parents brought participants’ favorite juice and participants were allowed free access during the first day of treatment. After the first day, the participants were prompted to drink water. If participants did not independently consume the drink, we encouraged drinking every hour by offering the cup.
**Communication Training**

Communication training was implemented immediately before each scheduled sit. Participants were prompted to request the bathroom when it was time to walk to the bathroom and again right before they sat on the toilet. Communication topographies for Peter and John consisted of a vocal request, “Go potty”. An adult modeled the response and prompted the participants to vocally imitate the request (e.g. “Say, go potty.”). Elijah’s communication topography was pressing the icon of “Go potty” in the Proloquo2go on his Ipad. The adult provided most-to-least prompt for him to choose the correct icon for requesting.

**Positive Practice**

Positive practice was implemented every time an accident occurred. Contingent on the first visible wet spots on participant’s underwear, the adult immediately stated “No wet pants” in a neutral voice tone and quickly took the participant to the bathroom. Participants were required to undress themselves with adults’ assistance and sat on the toilet for about 3 seconds. After the sit, the adults provided least-to-most prompt for the participants to put pants on. Then they quickly took the participants back to the place where the accident occurred. 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. Following successful urination, participants received access to preferred edible.

**Day 1: Clinic**

All treatment components were implemented starting the first day. The parents were required to come in to the clinic one Friday from the normal drop off time to the normal pick up time. One of the researchers implemented the procedure for the first 2 hours and instructed the
parents through the entire procedure. Parents observed and practiced taking data during the first 2 hours. Then they gradually began to implement the procedure with the researcher’s feedback. All parents were able to implement the protocol independently by the end of the day. The participants were at Level 6 when they left the clinic. They remained at Level 6 for the rest of the day. Parents could contact researchers for consulting during the evening.

*Day 2 and 3: Home*

Parents continued implementing the procedure at home over the weekend. Researchers visited the home for 2 hours on the second day to provide any needed support and encouragement, collect IOA data, and treatment integrity data. Researchers were also available by phone on both days to answer parents’ questions.

*Day 4 and Ongoing: Clinic and Home*

All participants were at Level 8 when they returned to clinic. One of the researchers trained the staff until they could independently implement the procedure. All of the training components were in effect.

*Follow-up*

We continued to assess toileting behavior after participants completed all twelve Levels of the toilet training procedures. For Peter, follow-up data were collected one full day each week for 3 weeks. We collected his follow-up data 4 months after his completion of the training. For John, follow-up data was collected one full day 2.5 weeks after his completion of training. For Elijah, follow-up data was collected one full day a week after his completion.
RESULTS

Figure 1

Figure 1 shows the percentage of voids that were successful or unsuccessful (an accident) for all three participants through baseline, intensive training and follow-up phases.

The results of Peter’s training are shown in the top panel of Figure 1. During baseline, Peter’s percentage of success ranged from 0 to 30%. He had some successful self-initiations at home, typically around bath time; however, the majority of voids were incontinent voids. Following implementation of toilet training procedures, Peter reached 100% successes for urination in the toilet on Day 3 of training. We modified the protocol for Peter and changed his sit durations from 5 minutes to 3 minutes during prompted sits since he tended to immediately void or not void at all. In other words, the response was unlikely to occur if it had not occurred within 3 minutes. Peter successfully completed the toilet training procedures within 13 days. We collected maintenance data at about three and a half month follow up period and his percentage of successes remained at 100%. The middle panel of Figure 1 shows John’s percentage of successes accidents. During baseline, John wore diapers and was prompted to sit on the toilet every two hours. On average, his percentage of success was about 26% during the scheduled sits. We implemented toilet training and John had more successes than accidents on Day 3 of training. By Day 14, John was 100% successful, except for Day 23 and 24. According to his mom’s report, he had one accident on Day 23 when waiting in line at the zoo and another accident on Day 24 when avoiding the electronic hand dryer in the bathroom at the park. Before the start of the training, John’s parents reported to his case manager that he had a history of avoiding any loud noises from the vacuum. John successfully completed the toilet training procedures within 26 days. We collected follow-up data in both the home and clinic.
environments at two and a half weeks after training and his percentage of successes also remained at 100%.

Elijah’s results are shown in the bottom panel of Figure 1. Before the treatment was implemented, he was not prompted to use the toilet but his clinic staff and parents changed his diaper every 2 hours. Elijah had no success prior to intervention. Similar to John’s pattern of responding, Elijah had more successes than accidents on Day 3 of training. Elijah progressed through the remainder of the training and successfully completed the training protocol after 29 days. At one week follow-up, Elijah’s percentage of successes also maintained at 100%.

Figure 2

Figure 2 shows each participant’s number of successful self-initiations comparing to the number of prompted urinations. Peter successfully self-initiated successfully within 9 days of training. However, his successful self-initiations ranged very high, average about 10 self-initiations per day. This might be because he had limited experience on the potty, especially with bowel movements, and he was still learning to void completely at one sitting. At about three and a half month follow-up, he continued to independently request to use the bathroom without any prompts. John’s results are shown in the middle panel. He did not have any successful self-initiation at baseline John began to independently request to use the bathroom on Day 8 of training. Beginning with Day 16, the majority of his successes were self-initiated. At two and a half week follow-up, John also continued to successfully request to use the bathroom. The bottom panel shows Elijah’s results. Elijah’s successful self-initiation varied. After 26 days of training, the majority of successes were self-initiated. At one week follow-up, Elijah had 2 successful self-initiations and one prompted success.
Figure 3

Figure 3 shows participants’ challenging behaviors during sit on the toilet. The researchers did not take baseline data for challenging behavior during sit since Peter and Elijah were not prompted to sit on the toilet in clinic and John was very compliant to sit on the toilet according to his case manager’s reports. On Day 1, Peter engaged in 26 occurrences of challenging behaviors while sitting on the toilet. He attempted to get up many times while crying. On Day 4, rates of challenging behavior decreased. However, he engaged in challenging behavior on Day 5 during a prompted sit. We decreased the criterion to sit on the toilet from 5 to 3 minutes. Originally, we did not include parents’ rating on challenging behavior. We decided to add the rating after Peter’s training. For that reason, we did not have Peter’s mom rating on his challenging behaviors. John engaged in 21 occurrences of challenging behaviors on day 1 of training. His challenging behaviors significantly decreased after Day 1. On average, he maintained one incident per day from Day 2 to Day 28. After day 29, his challenging behavior decreased to zero Level except for 2 more incidents on two separate days. His mom rated his challenging behaviors between 1 and 2. Elijah did not engage in challenging behavior while sitting on the toilet. His highest frequency of challenging behaviors was 3 per day for Day 4 and 7. His parents consistently rated his challenging behaviors at Level 1.

Figure 4

Figure 4 shows participants’ bowel movements for each day. If there was a successful bowel movement, the researchers provided praise and access to a preferred item. However, there were no additional contingencies places on accidents as bowel movements were not targeted in this study due to the relatively infrequent nature of the response. In order to assess whether generalization from voids to bowel movements occurred, we also collected bowel movements
data on initiations, prompts and accidents. During baseline, Peter had two bowel movement accidents in three days. He started to self-initiate on the first day of training and remained self-initiating for the rest of the training and follow up. John had two accidents and three prompted bowel movements in 5 days baseline. He did not have any bowel movement accidents since Day 7 of the training and started to self-initiate on Day 17 of the training. At two and a half week follow-up, John did not have any bowel movements on that day. Elijah only had 2 self-initiations for bowel movement and had at least one bowel movement accident per day for most of the training day and at follow-up. All of his bowel movement accidents occurred in the diapers.

Social Validity Assessment

After follow-up data was collected, participants’ parents were asked to evaluate the procedure. Researcher used the same Treatment Evaluation Inventory-Short Form (TEI-SF; Kelley, Heffer, Gresham, & Elliott, 1989) in the Leblanc et.al (2005) article. The TEI-SF included a rating scale for nine statements about the procedure. Parents had five options: strongly disagree, somewhat disagree, neither agree or disagree, somewhat agree or strongly agree to choose from for each statement. Peter’s mom rated strongly agree for 8 out of 9 statements. John’s mom rated strongly agree for 5 out of 9 statements. Elijah’s mom rated strongly agree for 6 out of 9 statements. The results of social validity assessment are shown in Table 3.
DISCUSSION

We implemented an individualized toilet training procedure for three young children with ASD by replicating the LeBlanc et al. (2005) study. The results suggest that all three children acquired toileting skills when the procedures were implemented. In addition, one participant maintained the skill up to four months after the intervention had been terminated. All participants engaged in successful self-initiations for the toilet at the end of training. Finally, measures of social validity indicate that parents were satisfied with the training procedures themselves as well as the outcomes. This study has several implications for clinicians and parents implementing toilet training procedures.

First, this evaluation provides additional support that intensive behavioral toileting procedures are effective with children with autism spectrum disorders. Furthermore, these procedures can be implemented largely by parents with the support of behavioral staff. This evaluation is an extension of previous studies (Kroeger & Sorensen, 2010; LeBlanc et al., 2005) by assessing parent’s preference for components to include in training. This is particularly important to ensure that parents are given an active voice as part of the treatment planning process for their children.

Although all participants achieved success with the current procedures, the rapidity of success varied across participants. Peter achieved the quickest success in that he had zero accidents and independent requests for the toilet beginning with the third day of the procedure. In contrast, the other two participants took longer training time. John achieved similar success after 13 days except for day 23 and 24 as reported above. For Elijah, it was after 22 days, except for one accident on day 26. Peter had the least amount of exposure to the overcorrection
component since his mom elected to discontinue the procedures after the first practice trial. At three and a half month follow-up, Peter still maintained independent toileting requests.

Both Peter and John also demonstrated an increase in successful bowel movements subsequent to providing training on urination. At the end of training, Peter and John successfully self-initiated for bowel movements. These data suggest that for some children, bowel training is achieved along with urination training without additional intervention components. In contrast, Elijah only had two successes for bowel movements. His parents report that he often had bowel movements in the diaper during the car ride (participants continued to wear diaper in car rides and when asleep during training). It is possible that the diaper gained discriminative stimulus and set an occasion for him to have bowel movements. Researchers and clinicians may need to consider separate procedures for individuals who are not bowel trained at the end of an urination training procedures.

We collected data on challenging behaviors throughout training for all three participants. Elijah engaged in low rates of challenging behavior. On the other hand, Peter and John engaged in relatively high rates of challenging behaviors during the beginning of the training with the highest frequency of challenging behaviors during sit on the first day. Although they engaged in challenging behavior such as crying, the parents generally rated the severity of the challenging behavior as low or moderate. It is possible that frequent sitting on the toilet is aversive to some children and prevent them from using the toilet appropriately. For that reason, during toilet training, parents and practitioners should closely monitor on the occurrence of challenging behavior during sits on the toilet to make any necessary adjustments for the child.

Participants’ progress in the current evaluation was slower than the participants’ trainings in LeBlanc et al. (2005). This may be because the participants in the study did not use the urine
alarm. Researchers in the present study let the parents elect to use or not use the urine alarm. Future researchers should continue to allow parents to provide input into their child’s treatment plans. The results of the current study will provide more information to parents when making a decision. Parents may not want to include the use of procedures such as the urine alarm or positive practice; however, electing not to use these procedures may slow progress.

Future researchers should evaluate the use of positive practice and urine alarm in toilet training procedures. More research could help parents and practitioners to decide which components they should include in toilet training procedures.

Future research may also identify methods to reduce the aversive quality of prompted sits during intensive toilet training. One direction for future research is to implement a graduated exposure procedure to sitting prior to initiation an intensive toilet training procedure. Of course, if frequent prompted sits are unacceptable to a child, alternative toilet training procedures that require less frequent sits may be preferable. Finally, future research should continue to develop and evaluate procedures to increase successful bowel movements. Overall, the result of the present study suggests that the current procedures are effective and acceptable.
<table>
<thead>
<tr>
<th>Participant</th>
<th>Urine Alarm</th>
<th>Positive Practice</th>
<th>Preferred items</th>
<th>Aware of being wet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peter</td>
<td>No</td>
<td>Yes, but</td>
<td>Books, Elmo, gummy worm, lollipop</td>
<td>Yes. Say “Elmo wet” after first exposure</td>
</tr>
<tr>
<td>John</td>
<td>No</td>
<td>Yes. Will adjust depends on how he reacts</td>
<td>Jelly bean, Fruit snacks, Cheetos, M&amp;M, Ipad</td>
<td>Not sure if he is aware. But he stays dry throughout the night</td>
</tr>
<tr>
<td>Elijah</td>
<td>No</td>
<td>Yes. Will adjust depends on how he reacts</td>
<td>M&amp;M, fruit snacks, marshmallow, raisins, Ipad</td>
<td>Yes. Try to take the diaper and all the clothes off.</td>
</tr>
</tbody>
</table>
Table 2

*Levels of Schedules Toileting Sits*

<table>
<thead>
<tr>
<th>Level</th>
<th>Schedule</th>
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<tbody>
<tr>
<td>1</td>
<td>10 min sit on the toilet, 5 min off the toilet</td>
</tr>
<tr>
<td>2</td>
<td>10 min on, 10 min off</td>
</tr>
<tr>
<td>3</td>
<td>5 min on, 15 min off</td>
</tr>
<tr>
<td>4</td>
<td>5 min on, 25 min off</td>
</tr>
<tr>
<td>5</td>
<td>5 min on, 35 min off</td>
</tr>
<tr>
<td>6</td>
<td>5 min on, 45 min off</td>
</tr>
<tr>
<td>7</td>
<td>5 min on, 60 min off</td>
</tr>
<tr>
<td>8</td>
<td>5 min on, 90 min off</td>
</tr>
<tr>
<td>9</td>
<td>5 min on, 2 hours off</td>
</tr>
<tr>
<td>10</td>
<td>5 min on, 2.5 hours off</td>
</tr>
<tr>
<td>11</td>
<td>5 min on, 3 hours off</td>
</tr>
<tr>
<td>12</td>
<td>5 min on, 4 hours off</td>
</tr>
</tbody>
</table>
Table 3

*Parents’ Responses to Treatment Evaluation Inventory – Short Form*

<table>
<thead>
<tr>
<th>Statement</th>
<th>Peter’s mom</th>
<th>John’s mom</th>
<th>Elijah’s mom</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.  I find this treatment to be an acceptable way of dealing with the child’s problem behavior.</td>
<td>Strongly agree</td>
<td>Strongly agree</td>
<td>Strongly agree</td>
</tr>
<tr>
<td>2.  I would be willing to use this procedure if I had to change the child’s problem behavior.</td>
<td>Strongly agree</td>
<td>Somewhat agree</td>
<td>Strongly agree</td>
</tr>
<tr>
<td>3.  I believe that it would be acceptable to use this treatment without children’s consent.</td>
<td>Strongly agree</td>
<td>Somewhat agree</td>
<td>Neither agree nor disagree</td>
</tr>
<tr>
<td>4.  I like the procedures used in this treatment.</td>
<td>Strongly agree</td>
<td>Somewhat agree</td>
<td>Strongly agree</td>
</tr>
<tr>
<td>5.  I believe this treatment is likely to be effective.</td>
<td>Strongly agree</td>
<td>Strongly agree</td>
<td>Strongly agree</td>
</tr>
<tr>
<td>6.  I believe the child will experience discomfort during the treatment.</td>
<td>Somewhat agree</td>
<td>Strongly agree</td>
<td>Somewhat disagree</td>
</tr>
<tr>
<td>7.  I believe this treatment is likely to result in permanent improvement.</td>
<td>Strongly agree</td>
<td>Strongly agree</td>
<td>Strongly agree</td>
</tr>
<tr>
<td>8.  I believe it would be acceptable to use this treatment with individuals who cannot choose treatments for themselves.</td>
<td>Strongly agree</td>
<td>Strongly agree</td>
<td>Somewhat agree</td>
</tr>
<tr>
<td>9.  Overall, I have a positive reaction to this treatment.</td>
<td>Strongly agree</td>
<td>Somewhat agree</td>
<td>Strongly agree</td>
</tr>
</tbody>
</table>
Figure 1. Percentage of successes and accidents for all of the participants.
Figure 2. Number of successful self-initiations and prompted urinations for all of the participants.
Figure 3. Frequency of participants’ challenging behaviors.
Figure 4. Number of bowel movement (BM) initiation, accident and prompted for all participants.
APPENDIX A

BASELINE AND MAINTENANCE FORM
Tracking sheet

Directions:

- Write a Y or N to indicate if your child had an accident outside of the toilet sit.
- Write a $U$, $BM$, or $N$ at each Prompted Toilet Sit ($U =$ urinates, $BM =$ bowel movement, $N =$ none)
- Write any notes you think are relevant.

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<tbody>
<tr>
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<td>3:00 pm</td>
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</table>
APPENDIX B

DATA SHEET FOR RECORDING SUCCESSES AND ACCIDENTS
## Data sheet during training

<table>
<thead>
<tr>
<th>Day 1</th>
<th>Level</th>
<th>Self Initiate</th>
<th>Sitting on Toilet</th>
<th>Problem Behavior during Sit?</th>
<th>Urine</th>
<th>BM</th>
<th>Recess</th>
<th>Accident during Recess?</th>
<th>Problem Behavior During Recess?</th>
<th>Parent rating of problem behavior (1-4)</th>
<th>Number of accidents</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>Y or N</td>
<td>10 min</td>
<td>Y or N (#)</td>
<td>Y or N</td>
<td>Y or N</td>
<td>15 min</td>
<td>Y or N</td>
<td>Y or N</td>
<td></td>
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<tr>
<td>2</td>
<td>2</td>
<td>Y or N</td>
<td>10 min</td>
<td>Y or N (#)</td>
<td>Y or N</td>
<td>Y or N</td>
<td>25 min</td>
<td>Y or N</td>
<td>Y or N</td>
<td></td>
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</tr>
<tr>
<td>3</td>
<td>3</td>
<td>Y or N</td>
<td>5 min</td>
<td>Y or N (#)</td>
<td>Y or N</td>
<td>Y or N</td>
<td>35 min</td>
<td>Y or N</td>
<td>Y or N</td>
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<tr>
<td>4</td>
<td>4</td>
<td>Y or N</td>
<td>5 min</td>
<td>Y or N (#)</td>
<td>Y or N</td>
<td>Y or N</td>
<td>45 min</td>
<td>Y or N</td>
<td>Y or N</td>
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<tr>
<td>5</td>
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<td>Y or N</td>
<td>5 min</td>
<td>Y or N (#)</td>
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<td>5 min</td>
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APPENDIX C

TREATMENT INTEGRITY FORM
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<tr>
<th>Component</th>
<th>Trial # 1</th>
<th>Trial # 2</th>
<th>Trial # 3</th>
<th>Trial # 4</th>
<th>Trial # 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Prompts child to engage in communicative response before each sit OR</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td></td>
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</tr>
<tr>
<td>1. Immediately brings child to the bathroom after s/he self-initiates</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
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<tr>
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<tr>
<td>2. Therapists prompts child to sit for the duration of the sit (or until a successful urination occurs)</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
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<tr>
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<tr>
<td>3. Therapist provides moderately preferred items during the sit period</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
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<td></td>
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</tr>
<tr>
<td>4. Therapist immediately delivers highly-preferred items contingent upon successful urination</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
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<td>N/A</td>
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<tr>
<td>5. Therapist implements positive practice procedures contingent upon an accident</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
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Interview Form

1.) What are some of your child’s favorite items that we can use during toilet training to reward successes?

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 show indication of 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 not include the component or you can elect to include the component and if you find that the child is too uncomfortable with the procedures, we can eliminate it immediately. Would you like to include this component?
APPENDIX E

PARENTS’ CONSENT FORM FOR PARENT PARTICIPATION
Before agreeing to participate in this research study, it is important that you read and understand the following explanation of the purpose, benefits and risks of the study and how it will be conducted.

**Title of Study:** Evaluation of Brief Toilet Training Model

**Student Investigator:** Dai Doan, B.S., University of North Texas (UNT) Department of Behavior Analysis

**Supervising Investigator:** Karen Toussaint, Ph.D., BCBA, University of North Texas Department of Behavior Analysis; Faculty.

**Purpose of the Study:** You are being asked to participate in a research study which involves evaluating a brief toilet training package that will teach young children with autism to ask to go to the toilet and eliminate on the toilet instead of diapers.

**Study Procedures:** Prior to the training, you will be asked to meet with Dr. Karen Toussaint, supervising investigator or Dai Doan, student investigator, to discuss the treatment components which include: (a) a sitting schedule for sitting on the toilet, (b) arranging reinforcement delivery for self-initiations and successful eliminations, (c) providing increased fluids, (d) prompting the child to communicate to use the toilet, and (e) positive practice for accidents. We will also practice data collection during this time.

After reviewing, we will schedule a Friday to begin toilet training in the clinic. On the scheduled Friday, the investigators will implement the procedure with your child directly while you observe the process for the first two hours of the day. Then, you will be asked to conduct the training program with the support of the investigators. After Friday at the clinic, you will continue to implement the procedure over the weekend. Dai Doan, student investigator will go to your home on Saturday and Sunday for a two-hour period each day to collect data and help with any troubleshooting regarding to the training. Home visits will only occur the first Saturday and Sunday of the toilet training intervention. The estimated time for participation is a total of 3 – 4 weeks: 1-2 weeks will include data collection prior to the intervention and 2 weeks of the toilet training intervention.

**Foreseeable Risks:** The potential risks involved in this study are minimal. It is possible that your child and you will experience discomfort during the sitting on the toilet and positive practice for accidents. However, this study seeks to minimize any discomfort by identifying your child’s preferred items and activities and providing those preferred items during the toilet sits and after the child has a successful void in the toilet.
**Benefits to the Subjects or Others:** We expect the project to benefit you by providing you the necessary techniques to train your child to use the toilet successfully and eventually to self-initiate using the bathroom.

**Compensation for Participants:** There is no compensation for your participation.

**Procedures for Maintaining Confidentiality of Research Records:** All data collection sheets and materials will only contain either participant initials or pseudonyms. No names are present on any data collection sheets. There will be a list of participants names that correspond with pseudonyms/participant initials and this list will be kept in a locked filing cabinet in the primary investigator’s office. Data sheets will also be kept in a locked file drawer in the investigator’s office at Kristin farmer Autism Center. Only the investigator and key personnel will have access to personally identifiable information. Confidentiality for all participants will be protected by using pseudonyms or participant initials in all documents, publications, or presentations that result from these activities. Thus, the confidentiality of your individual information will be maintained in any publications or presentations regarding this study.

**Questions about the Study:** If you have any questions about the study, you may contact Dr. Toussaint at telephone number 940-369-5371 (at the University of North Texas). You may also email Dr. Toussaint at Karen.Toussaint@unt.edu.

**Review for the Protection of Participants:** This research study has been reviewed and approved by the UNT Institutional Review Board (IRB). The UNT IRB can be contacted at (940) 565-4643 with any questions regarding the rights of research subjects.

**Research Participants’ Rights:**

Your signature below indicates that you have read or have had read to you all of the above and that you confirm all of the following:

- *Karen Toussaint, Susan Nichols or Dai Doan* has explained the study to you and answered all of your questions. You have been told the possible benefits and the potential risks and/or discomforts of the study.
- You understand that you do not have to take part in this study, and your refusal to participate or your decision to withdraw will involve no penalty or loss of rights or benefits. The study personnel may choose to stop your participation at any time.
- You understand why the study is being conducted and how it will be performed.
• You understand your rights as a research participant and you voluntarily consent to participate in this study.
• You have been told you will receive a copy of this form.

Printed Name of Parent or Guardian / Printed Name of Child

____________________________________________________
Signature of Parent or Guardian                                       Date

For the Student Investigator or Designee:
I certify that I have reviewed the contents of this form with the subject signing above. I have explained the possible benefits and the potential risks and/or discomforts of the study. It is my opinion that the participant understood the explanation.

______________________________________                              ____________
Signature of Investigator or Student Investigator            Date
APPENDIX F

PARENTS’ CONSENT FORM FOR CHILD’S PARTICIPATION
University of North Texas Institutional Review Board

Informed Consent Form and Authorization to Use and Disclose Health Information for Research

Before agreeing to participate in this research study, it is important that you read and understand the following explanation of the purpose, benefits and risks of the study and how it will be conducted. Signing this form also gives permission for use and disclosure of your child’s health information as part of this research study.

Consent Form for Child Participation

Title of Study: Evaluation of Brief Toilet Training Model

Investigator: Dai Doan, B.S., University of North Texas Department of Behavior Analysis.

Principle Investigator: Karen Toussaint, Ph.D., BCBA, University of North Texas Department of Behavior Analysis; Faculty.

Purpose of the Study: You are being asked to allow your child to participate in a research study which involves evaluating a brief toilet training package that will teach young children with autism to ask to go to the toilet and eliminate on the toilet instead of diapers. We are interested in whether this training package will help your child using the toilet successfully after the weekend of the training and beginning to self-initiate within approximately two weeks of toilet training.

Study Procedures: Your child will be asked to attend sessions conducted daily for about 3-4 weeks. Your child will participate in session with his/her parents/guardians and the investigator at the clinic on the first scheduled Friday. His/her parents and investigator will help your child to follow the sitting schedule for sitting on the toilet and to go through positive practice for accidents. The investigator will come to your house on the following Saturday and Sunday for a two-hour period each day to collect data and help with any troubleshooting regarding to the training. In addition, your child will participate in session with you at home daily until the end of the study or until he/she successfully self-initiate to use the bathroom.

During sessions, we will teach your child how to void on the toilet successfully and how to request to use the bathroom. Your child will learn how to use the toilet and self-initiate successfully.

Foreseeable Risks: The potential risks involved in this study are minimal. The potential risks involved in this study are minimal. It is possible that your child will experience discomfort during the sitting on the toilet and positive practice for accidents. However, this study seeks to minimize any discomfort by using empirically-supported instructional methods and by providing participants with highly-preferred items during the sitting on the toilet and success voiding in the toilet.
Benefits to the Subjects or Others: We expect the project to benefit your child by allowing him/her to void on the toilet successfully and to request to use the bathroom by himself/herself.

Compensation for Participants: There is no compensation for your child’s participation.

Procedures for Maintaining Confidentiality of Research Records: All data collection sheets and materials will only contain either participant initials or pseudonyms. No names are present on any data collection sheets. There will be a list of participants names that correspond with pseudonyms/participant initials and this list will be kept in a locked filing cabinet in the primary investigator’s office. Confidentiality for all participants will be protected by using pseudonyms or participant initials in all documents, publications, or presentations that result from these activities. Thus, the confidentiality of your child’s information will be maintained in any publications or presentations regarding this study. Data sheets will be kept in a locked file drawer in the principal investigator’s office at Kristin Farmer Autism Center, located at 490 S I-35e in Denton Texas. Only the investigator will have access to personally identifiable information.

If you decide that you don’t want your child to participate in the study, your child’s services at Kristin Farmer Autism Center will not be affected in any way. You may withdraw from the study at any time without any consequences.

Use and Disclosure of Health Information: If you sign this document, you give permission to the case manager at the clinic in which your child currently receives services to use or disclose (release) your health information that identifies you for the research study described in this document.

Health Information to be Used or Disclosed: The health information that we may use or disclose (release) for this research includes a review of the all information in the medical record, in particular, the results of the diagnostic tests, relating to Autism Spectrum Disorders.

Who may use or disclose the information: The health information listed above may be used by and/or disclosed (released) to Karen Toussaint and key personnel involved in this study.

Who may receive the information: Kristin Farmer Autism Center is required by law to protect your health information. By signing this document, you authorize Kristin Farmer Autism Center to use and/or disclose (release) your health information for this research. Those persons who receive your health information may not be required by Federal privacy laws (such as the
Privacy Rule) to protect it and may share your information with others without your permission, if permitted by laws governing them.

Expiration of the authorization: This Authorization expires at the end of the research study.

Right to revoke authorization: Please note that you may change your mind and revoke (take back) this Authorization at any time, except to the extent that the Kristin Farmer Autism Center has already acted based on this Authorization. To revoke this Authorization, you must write to: Kristin Farmer Autism Center at 490 S I-35E Denton, Tx 76205.

Questions about the Study: If you have any questions about the study, you may contact Karen Toussaint at Karen.toussaint@unt.edu or 940-369-5371.

Review for the Protection of Participants: This research study has been reviewed and approved by the UNT Institutional Review Board (IRB). The UNT IRB can be contacted at (940) 565-3940 with any questions regarding the rights of research subjects.

Research Participants’ Rights:

Your child’s participation in the survey confirms that you have read all of the above and that you agree to all of the following:

- *Karen Toussaint or Dai Doan* has explained the study to you and you have had an opportunity to contact him/her with any questions about the study. You have been informed of the possible benefits and the potential risks of the study.
- You understand that your child does not have to take part in this study, and your refusal to participate or your decision to withdraw will involve no penalty or loss of rights or benefits. The study personnel may choose to stop your participation at any time.
- You understand why the study is being conducted and how it will be performed.
- You understand your child’s rights as a research participant and you voluntarily consent to allow your child to participate in this study.
- You understand you will be provided a copy of this consent form.

________________________________
Printed Name of Parent or Guardian
Signature of Parent or Guardian                                               Date

**For the Investigator or Designee:** I certify that I have reviewed the contents of this form with the parent or guardian signing above. I have explained the possible benefits and the potential risks and/or discomforts of the study. It is my opinion that the parent or guardian understood the explanation.

Signature of Investigator or Designee                                               Date
REFERENCES


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