

The sensory experience of toilet training and its implication in intervention in autism: a case study

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Abstract

This presentation looks into, through case studies, toilet training in children with autism who fails to progress through traditional operant conditioning methods. These individuals often are severely impacted on the spectrum, and are cognitively challenged. Through understanding the pathway- body and mind- that governs our ability to gain control over the bladder and bowel and the manner in which the pathway is impacted in disease, we will be better prepared for toilet training. The sensory perspective, is one such approach as it identifies the source of the deficit so that a cleared picture emerges and hence coming closer to independence in toileting.

Toilet training in the resistant cohort

- Currently, a combination of the Azrin & Foxx method (1971) and operant conditioning are considered the standard protocol for toilet training children with developmental and intellectual disabilities including individuals with autism.
- Although programs that have been adapted to children with physical disabilities have resulted in successful toilet training in most cases, there is a considerable proportion of individuals with autism who have reached adulthood without being accomplished in bladder and bowel control.
- These individuals often reside in the spectrum of non-verbal with lower cognition levels (Dalrymple & Ruble, 1992) and exhibit not only incontinence but are challenged with abnormality in toileting such as encopresis, enuresis and fecal smearing.
- Toilet training is commonly delayed in Autism spectrum disorders (ASD). Dalrymple and Ruble (1992) surveyed 100 parents of clients with ASD (mean age = 19.5 years) and reported that 22% of them did not have full success with toileting. Research studies on toileting in autism have been scarce and are mainly single case studies (Kroeger & Sorensen, 2010).

Sensory processing rarely researched in toilet training in autism

- Children with ASD exhibiting sensory processing issues often lack bladder and bowel control. This can impact family routines.
- Most notably, the families of children with ASD tended to avoid social participation more so than families with typically developing children (Bagby et al., 2012).
- Gray (1994) reports that social withdrawal is often a coping strategy for families with children on the autism spectrum who display inappropriate toileting behavior.

Analysis of Sensory Constructs Related to Toileting in Children with ASD

- Under-responsiveness: not aware of wet or stool diapers, not notice when hands are dirty or messy
- Over-responsiveness or sensory sensitivity: overwhelmed by tactile inputs from underpants (or touch feelings of underwear edges), smell of urine, sight of fluorescent lights in bathroom, cold feel of toilet seat, loud noise associated with flushing, etc.
- Sensation seeking: playing water, urine or stool in the toilet, playing water at the sink, turning on and off the lights in the bathroom, flushing toilet repeatedly

All of these sensory processing difficulties may make toilet training a challenge.

Task Analysis of Toileting in Children with ASD

- Social Interaction and Imitation: interest in watching others perform certain tasks, then imitating "go potty", in children with ASD less responsive to social rewards such as praise of "good job" for successful toileting might be a challenge.
- Communication: ability to express a need to go to the bathroom. Boswell & Gray (2012) in TEACCH indicate the importance of having a communication system for children with ASD to initiate the toilet sequences, such as signaling that he needs to go to the bathroom; and have a back up plan in place when in a unfamiliar environment. Such plan may include an evaluation of the environmental contexts and incorporating "teachable moments" to teach the child how to use systematic communication tools, such as objects, pictures, or words to communicate in other settings.

Task analysis in toilet training continued...

- Tasks in bathroom include: obtaining and using supplies, clothing management – undressing and dressing, maintaining toileting position, transferring to & from toileting position, cleaning body & maintaining posture & balance during cleaning, caring for menstrual needs (Christiansen & Matuska, 2004).
- Teaching and practicing toilet hygiene: children with ASD who also exhibit tactile sensitivity may avoid hand-over-hand assistance to turn the water on and off at the sink during hand-washing (Kern, Wakeford & Aldridge, 2007; Dunn, 1997). With compromised motor planning and eye-hand coordination, the movement of turning on and off of light and water, or holding on the handle to flush toilet would be daunting for the children with ASD.
- Change in routines associated with toileting: taking away diapers, wearing underpants.
- Caregiving: there are certain caregiving stresses associated with toileting (Dalrymple & Ruble, 1992). When a child is toilet trained, financial and time benefits arise, such as money savings of diapers and wipes; available time from assisting toileting for caregivers to engage in other daily tasks (Lee, 2010).

Training Methods

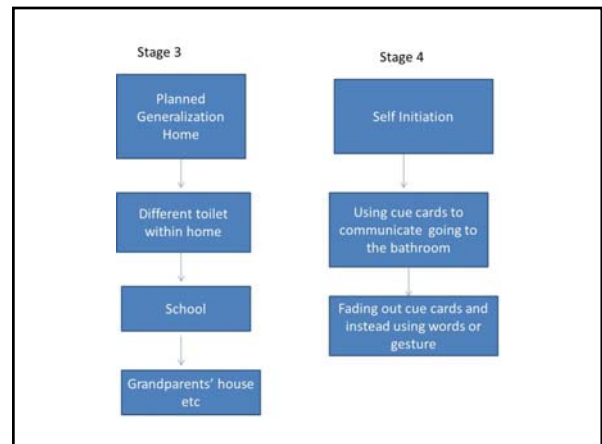
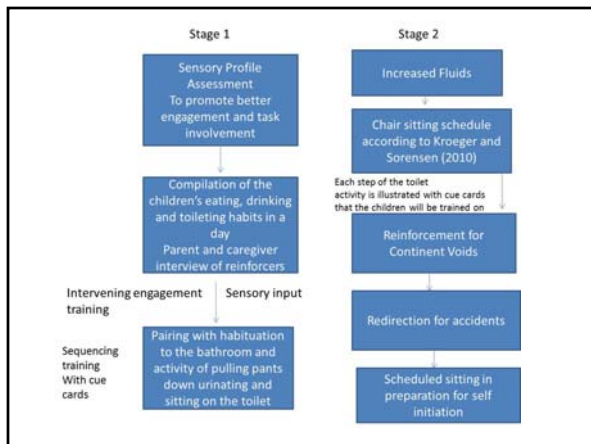
according to Azrin and Fox (1971)

Table 1: Protocol for Voiding

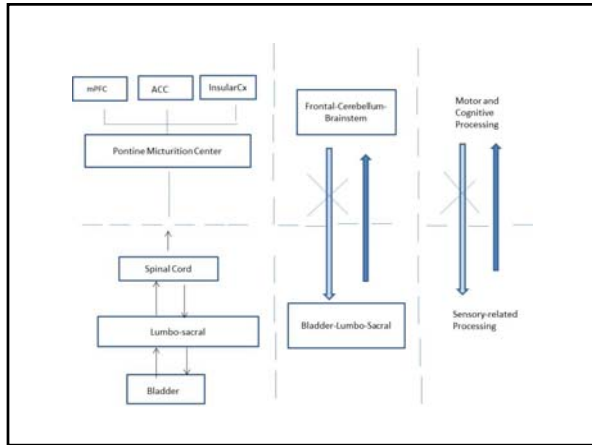
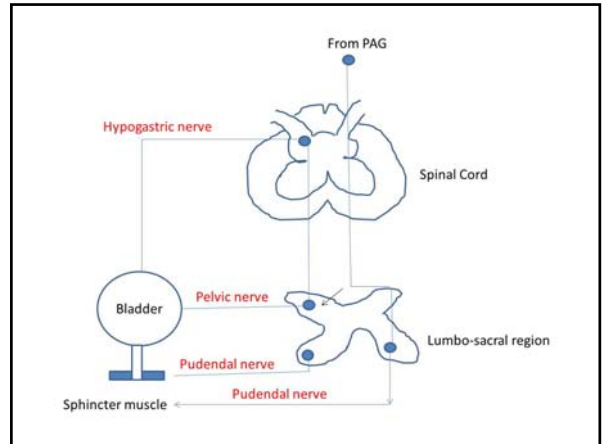
- Stage 1: Introduction to toilet through multi-media education, such as Elmo potty video, toilet training songs, Elmo coloring book, toilet training stories
- Stage 2: 5 minutes on the toilet engaged in favorite activity, such as watching DVD, playing Lego®, or favorite toys
- Stage 3: Extend to 10 minutes on the toilet engaged in favorite activity
- Stage 4: 15 minutes uninterrupted toilet sitting while engaged in favorite activity
- Stage 5: Hydrate with water every 15 minutes followed by routine 15 minutes toilet sitting

Table 1: Protocol for Voiding continued....

- Stage 6: Toilet sitting for 15 minutes duration, without favorite activity, intervened with 15 minutes break. This is the scheduled 15 minutes on toilet and 15 minutes off toilet
- Stage 7: Toilet sitting for 15 minutes noting successful voids and reinforcing with praise and 2 minutes of favorite activity as reinforcer and a break
- Stage 8: When voiding is independent and successful, breaks are introduced into the 15 minutes toilet sitting and 15 minutes break routine extending the time of break



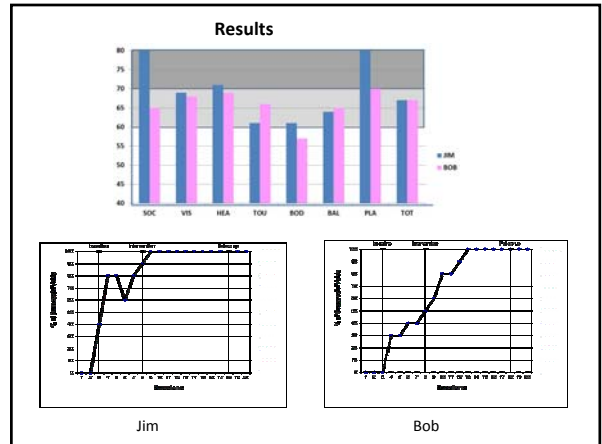
Neurobiology



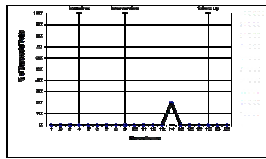
Looking at sensory profile

Area of Assessment	Raw Score		T-Score		Percentile	
	Jim	Bob	Jim	Bob	Jim	Bob
Social Participation	38	25	80**	65*	>99	93
Vision	23	21	69*	68*	97	96
Hearing	20	18	71**	60*	98	97
Touch	17	21	61*	66*	86	95
Body Awareness	17	14	61*	57	86	76
Balance & Motion	19	20	64*	65*	92	93
Planning/Ideas	35	25	80**	70**	>99	97.5
Total	104	103	67*	67*	95.5	95.5

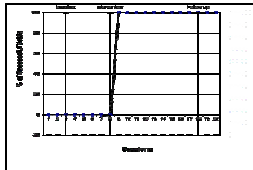
T-Score of 40-59 indicates "typical performance"
 *T-Score of 60-69 indicates "some problems"
 **T-Score of 70-80 indicates "definite dysfunction"



Achieving Independence in the resistant cohort



Jim



Bob

Sensory Profile Measure

Factor Summary		
Category	Raw Score - Jim	Raw Score - Bob
Sensory Seeking	61/85*	58/85*
Emotional Reactive	46/80**	34/80**
Low Endurance/Tone	37/45*	44/45
Oral Sensory Sensitivity	24/45**	32/45*
Inattention/Distractibility	16/35**	15/35**
Poor Registration	24/40**	27/40**
Sensory Sensitivity	15/20*	16/20
Sedentary	10/20*	8/20**
Fine Motor/Perceptual	8/15*	12/15

Sensory Profile continue

Section Summary		
Sensory Processing		
Category	Raw Score - Jim	Raw Score - Bob
Auditory Processing	19/40**	16/40**
Visual Processing	30/45*	35/45
Vestibular Processing	43/55**	47/55*
Touch Processing	73/90	75/90
Multisensory Processing	24/35*	22/35**
Oral Sensory Processing	34/50**	41/50*
Modulation		
Category	Raw Score - Jim	Raw Score - Bob
Sensory Processing Related to Endurance/Tone	32/45**	44/45
Modulation Related to Body Positioning/Movement	40/50*	40/50*
Modulation of Movement Affecting Activity Level	19/35*	14/35**
Modulation of Sensory Input Affecting Emotional Responses	10/20**	11/20**
Modulation of Visual Input Affecting Emotional Responses and Activity Level	13/20*	16/20
Behavior and Emotional Responses		
Category	Raw Score - Jim	Raw Score - Bob
Emotional/Social Responses	15/85*	43/85**
Behavioral Outcomes of Sensory Processing	15/30**	15/30**
Items Indicating Thresholds for Response	13/15	13/15

Jim has **Probable Difference** scores in the following areas:

Modulation Difficulty in Visual Processing: occasionally prefers to be in the dark; has difficulty putting puzzles together (as compared to same age children); has a hard time finding objects in competing backgrounds (for example, shoes in a messy room, favorite toy in the junk drawer); occasionally looks carefully or intently at objects/people (such as stares); has trouble staying between the lines when coloring or when writing.

Modulation Difficulty in Touch Processing: doesn't seem to notice when face or hands are messy (low registration); has difficulty standing in line or close to other people (tactile sensitivity); expresses discomfort at dental work or tooth brushing (for example, cries or fidgets); avoids getting messy (such as in paste, sand, finger paint, glue, tape).

Multisensory Processing: has difficulty paying attention; walks on toes. Modulation Related to *Body Position and Movement*: fears falling or heights; seems accident-prone; hesitates going up or down curbs or steps (for example, in cautious, stops before moving).

Modulation of Movement Affecting Activity Level: Low Endurance/Tone; spends most of the day in sedentary play (for example, does quiet things); becomes overly excited during movement activity.

Jim has **Probable Difference** scores in the following areas:

Modulation of Visual Input Affecting Emotional Responses & Activity Level: avoids eye contact; watches everyone when they move around the room; doesn't notice when people come into the room.

Emotional/Social Responses: has trouble "growing up" (for example, reacts immaturely to situations); has definite fears; has difficulty making friends (for example, does not interact or participate in group play); doesn't have a sense of humor.

Sensory Seeking: enjoys strange noises/seeks to make noise for noise's sake; seeks out all kinds of movement activities.

Jim has **Definite Difference** scores in the following areas:

Auditory Hypersensitivity: responses negatively to unexpected or loud noises (for example, cries or hides at noise from vacuum cleaner, dog barking, hair dryer); has trouble completing tasks when the radio is on.

Seeking Vestibular Inputs: seeks all kinds of movement and this interferes with daily routines (for example, cannot sit still, fidgets); occasionally rocks in desk/chair/on floor.

Oral Motor Hypersensitivity and Dyspraxia: avoids certain tastes or food smells that are typically part of children's diets; will only eat certain tastes (such as rice, fish & chicken); picky eater, especially regarding food textures.

Jim has Definite Difference scores
in the following areas:

Modulation Related to *Endurance/Tone*: cannot lift heavy objects; shows poor endurance & tires easily.

Modulation of Sensory Inputs Affecting *Emotional/Social Responses and Daily Performance*: such as *Poor Registration* and *Oral Sensory Sensitivity*; does perceive body language or facial expressions (for example, unable to interpret).

Behavioral Outcomes due to Challenges in Sensory Processing: such as Emotionally Reactive and Inattention/Distractibility

Conclusion:

The resistant group may benefit from
delivering sensory needs in conjunction with traditional
toilet training protocol.