

# Journal of Positive Behavior Interventions

<http://pbi.sagepub.com/>

---

## **Choice-Making as Intervention for Public Disrobing in Children With Developmental Disabilities**

Jane I. Carlson, James K. Luiselli, Amy Slyman and Andrea Markowski

*Journal of Positive Behavior Interventions* 2008 10: 86

DOI: 10.1177/1098300707312544

The online version of this article can be found at:

<http://pbi.sagepub.com/content/10/2/86>

---

Published by:

Hammill Institute on Disabilities



and



<http://www.sagepublications.com>

**Additional services and information for *Journal of Positive Behavior Interventions* can be found at:**

**Email Alerts:** <http://pbi.sagepub.com/cgi/alerts>

**Subscriptions:** <http://pbi.sagepub.com/subscriptions>

**Reprints:** <http://www.sagepub.com/journalsReprints.nav>

**Permissions:** <http://www.sagepub.com/journalsPermissions.nav>

# Choice-Making as Intervention for Public Disrobing in Children With Developmental Disabilities

Jane I. Carlson

*Groden Center, Providence, RI*

James K. Luiselli

*May Institute, Randolph, MA*

Amy Slyman

*Vinfen Corporation, Cambridge, MA*

Andrea Markowski

*May Center for Child Development, Randolph, MA*

The authors describe a choice-making intervention with two children who had developmental disabilities and demonstrated public disrobing in school settings. The children also urinated in their clothing, apparently to gain access to new and more preferred apparel. The intervention gave the children a choice to change into high-preference clothes at scheduled opportunities during the day. Evaluated in a multiple baseline design, intervention decreased and eliminated incidents of public disrobing and urinary incontinence with both children. Scheduling acceptable opportunities to change clothes appears to have functioned as an abolishing operation that lessened each child's motivation to disrobe. Clinical implications of these findings are discussed.

**Keywords:** *choice-making; antecedent intervention; developmental disabilities*

People with developmental disabilities sometimes demonstrate behaviors that are socially stigmatizing, that compromise learning, and that may be health threatening (Matson, Laud, & Matson, 2004). A problem such as public disrobing, for example, is highly conspicuous and of great concern to parents and caregivers (Stokes & Kaur, 2005). Managing the problem in community settings can be difficult, possibly leading to social isolation, poor integration with peers, and placement in restricted service facilities (Bigelow, Cutler, Moore, McComb, & Leung, 1988).

Several factors may account for public disrobing. Among people with severe disabilities, the behavior may be the result of poor social awareness and nonresponsiveness to controlling contingencies (e.g., a child or adult who removes clothing in hot weather). Public disrobing also is common in elderly patients with dementia and related neurodegenerative disorders (Black, Muralee, & Tampi, 2005; Fitzsimmons & Buettner, 2002; Ott, LaPane, & Gambassi, 2000). For some individuals, incidence of public disrobing may be sexually motivated, as with exhibitionism or other paraphilias (American Psychiatric

Association, 2000). Finally, a behavior analysis orientation would focus on antecedent events that set the occasion for (provoke) public disrobing and the behavior-contingent consequences that maintain it.

Consistent with contemporary approaches to behavior reduction (Luiselli, 2004), identifying the sources of control over public disrobing is a critical step in formulating an effective intervention. A functional analysis conducted under simulated conditions is the most controlled experimental methodology (Iwata, Dorsey, Slifer, Bauman, & Richman, 1982) but may not be practical in many applied settings. Alternatively, indirect and descriptive methods of functional assessment can produce valid hypotheses about behavior function (Hanley, Iwata, & McCord, 2003). These methods rely on observation, informant interviews, and contextual data for deriving functional relationships.

---

**Authors' Note:** We acknowledge the dedicated efforts of school staff in implementing assessment and intervention procedures. Please address correspondence to James K. Luiselli, May Institute, 41 Pacella Park Drive, Randolph, MA 02368; e-mail: [jluiselli@mayinstitute.org](mailto:jluiselli@mayinstitute.org).

**Editor's Note:** The action editor for this article was Robert L. Koegel.

Concerning intervention research, Waye (1980) treated public disrobing and other problem behaviors in a 16-year-old female diagnosed with Huntington's chorea through a combination of positive reinforcement and time-out. This early case report is the only published description of behavioral intervention targeting public disrobing but is limited because it did not include a preintervention functional assessment, recording of interobserver agreement (IOA), and experimental design. In the present study, we evaluated a choice-making preventive intervention with two children who had developmental disabilities and removed their clothing inappropriately in public places. Both children also displayed urinary incontinence as an apparent corollary (covariant) behavior. Intervention was guided by functional assessment and entailed having the children change into preferred clothing during scheduled opportunities.

## Method

### Participants and Settings

The participants were two children attending separate specialized school settings. Evelyn was a 13-year-old girl diagnosed with autism. She did not speak but was able to communicate through sign language and a system of picture exchange. Evelyn attended a school for children with developmental disabilities 7 hours on weekdays. She and five other students comprised one class at the school, receiving instruction from a primary teacher and two assistants.

Mike was a 5-year-old boy diagnosed with pervasive developmental disorder, not otherwise specified. He communicated in one-word and two-word phrases limited to single requests. He attended a preschool for children with autism 6 hours on weekdays. Mike's classroom included five other students, a primary teacher, and two assistants.

Preceding the study, both participants had a history of public disrobing and urinary incontinence. Evelyn removed her clothes in multiple locations at school and sometimes would urinate on them. When Mike disrobed, he frequently tried to flush the removed clothing items in a toilet. He also would urinate in his pants when fully clothed and seek to flush them. School staff indicated that public disrobing and urinary incontinence disrupted classroom activities and made it difficult to conduct instruction with Evelyn and Mike.

### Measurement

Frequency of public disrobing and urinary incontinence was recorded throughout the 7-hour school day for

Evelyn and the 6-hour school day for Mike. The teachers and assistants who conducted instruction with Evelyn and Mike were responsible for recording the frequency data. *Public disrobing* was recorded any time the participants removed an article of clothing without permission. Removing clothing during a scheduled visit to the bathroom was not considered public disrobing. *Urinary incontinence* was recorded when Evelyn and Mike urinated on their clothes after disrobing or if Mike urinated in his pants when fully dressed. The teachers and assistants recorded data on precoded forms, noting the date, time (to the nearest minute), and events immediately preceding each occurrence of public disrobing and urinary incontinence.

### Interobserver Agreement

To assess IOA, two members of the classroom staff recorded public disrobing and urinary incontinence simultaneously during 25% of baseline days and 25% of intervention days for both participants. IOA was calculated by dividing the smaller recorded daily frequency by the larger recorded daily frequency and multiplying by 100. For Evelyn, IOA averaged 96% (89%–100%) for public disrobing and 92% (90%–100%) for urinary incontinence. For Mike, IOA averaged 97% (88%–100%) for public disrobing and 92% (89%–100%) for urinary incontinence.

### Procedures

Intervention was evaluated in a nonconcurrent multiple baseline design (Carr, 2005; Watson & Workman, 1981).

*Baseline.* Procedures during the baseline phase were those in effect before the study. If the participants attempted to remove an article of clothing, one staff person instructed them to stop. The consequence for actual disrobing was having the participants dress again in the same article of clothing. If Evelyn or Mike urinated on their clothes, or Mike placed his clothes in the toilet, staff members gave them clean and dry clothes that were provided by their parents. Because each participant had a history of disrobing and incontinence, a supply of spare clothing was always available at the schools.

*Functional behavioral assessment.* We conducted interviews with staff members, observed the participants, and reviewed respective baseline data before formulating an intervention plan. These functional assessment results suggested that both Evelyn and Mike demonstrated public disrobing in multiple situations that were not differentiated by activity, time of day, staff person, or instructional

context. Whereas Evelyn had a higher frequency of public disrobing compared to urinary incontinence, Mike exhibited both behaviors at about the same frequency. Evelyn and Mike also regularly requested particular articles of clothing. Evelyn, for example, asked for orange-colored and striped blouses, shorts, Capri-style pants, and athletic wear. She also showed interest in staff members' apparel and enjoyed looking at fashion magazines. Mike was attracted to shirts and pullover jerseys that featured superhero characters such as Spider-Man. The participants' apparent preferences for certain clothes also were endorsed by their parents.

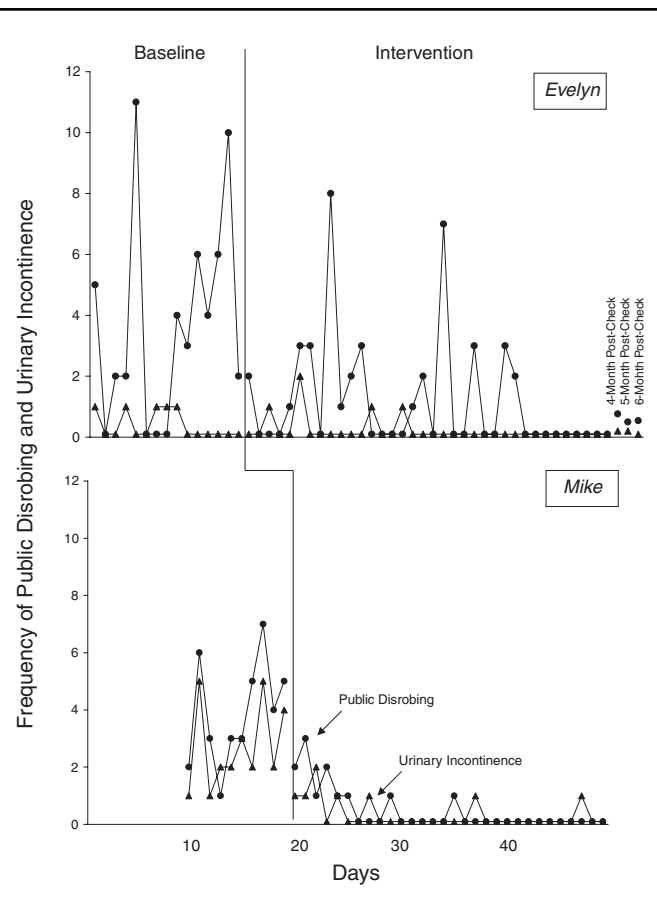
Our resulting behavior hypothesis was that public disrobing and urinary incontinence had a tangible-seeking function. Specifically, we hypothesized that Evelyn and Mike disrobed and urinated inappropriately to gain access to preferred clothing.

**Intervention.** The choice-making intervention allowed the participants to change their clothing at scheduled opportunities in the day. We had staff members identify multiple choice opportunities that could be integrated within Evelyn's and Mike's activity schedules and were easily supervised. With Evelyn, a designated staff person provided five choice-making opportunities: (a) when she arrived at school in the morning, (b) before leaving school in the afternoon, and (c) before or after three activities each day (physical education, snack, lunch). Mike had six choice-making opportunities that occurred (a) when he arrived at school in the morning, (b) before leaving school in the afternoon, and (c) before or after four activities each day (recess, nap, snack, lunch).

If the participants selected to change their clothes when offered, the supervising staff person gave them two choices of the participants' preferred articles of clothing. Evelyn's preferred clothes were purchased with her before initiating intervention, and Mike's preferred clothes were sent from home by his parents. Upon choosing their clothes, the participants were allowed to change into them in a nearby bathroom. Once dressed in the selected clothes, the participants joined the next activity in their school schedules. If they declined the opportunity to change clothing, the participants simply continued with the schedule. Any time Evelyn or Mike disrobed or displayed urinary incontinence during intervention, staff implemented the identical procedures described in the baseline phase.

**Post-check.** We were able to document frequency of public disrobing and urinary incontinence by Evelyn during a post-check phase 4 to 6 months from termination of the study. At this time, intervention procedures remained in effect. Mike left his school setting when the study concluded, and post-check data could not be obtained.

**Figure 1**  
Frequency of Public Disrobing and Urinary Incontinence Recorded Each Day During Baseline and Intervention Phases



Note: The post-check data for Evelyn represent average frequency per day for each month.

## Results

Figure 1 shows the frequency of public disrobing and urinary incontinence recorded each day during the baseline and intervention phases. Evelyn averaged 3.9 incidents of public disrobing per day and 1.1 incidents of urinary incontinence per day at baseline. With intervention in effect, her frequency of public disrobing decreased to an average of 0.4 incidents per day, and urinary incontinence decreased to an average of 0.1 incidents per day. Evelyn did not disrobe or have urinary incontinence during the final 9 days of intervention. Her frequency of public disrobing and urinary incontinence during the 3 months of post-check assessment was an average of 0.6 incidents per day and 0.05 incidents per day, respectively.

Mike averaged 3.9 incidents of public disrobing per day and 2.7 incidents of urinary incontinence per day during the baseline phase. Public disrobing was reduced

to an average of 0.4 incidents per day and urinary incontinence to an average of 0.3 incidents per day with intervention. He did not disrobe during the final 14 days of intervention, and urinary incontinence was absent during the final 2 days of intervention.

## Discussion

An easily implemented choice-making intervention decreased public disrobing and associated urinary incontinence in two children with developmental disabilities. The basis of intervention was the hypothesis that both children disrobed and wet their clothes because the behaviors frequently produced access to preferred clothing items. Mike typically urinated in or on his clothes, the frequency essentially matching the number of times he removed them. The covariation between disrobing and urinary incontinence was less pronounced for Evelyn, who more commonly removed her clothing as a single incident. Nonetheless, giving the children scheduled and predictable opportunities to change their clothes was an effective procedure for application in community school settings.

Choice-making is an antecedent intervention that often is successful in “demand” situations. For example, allowing a student to choose the type and sequence of assignments can reduce problem behavior occasioned by a teacher’s instructional requests (Miltenberger, 2006). In the present study, public disrobing by Evelyn and Mike did not appear to be escape motivated. Instead, the behavior occurred intermittently during the day, perhaps as they tired of the clothes they were wearing or because they observed the clothing of other children. Accordingly, the effect of giving Evelyn and Mike acceptable choices to change their clothes seems to have functioned as an *abolishing operation* that lessened their motivation to disrobe (Friman & Hawkins, 2006; O’Reilly et al., 2006). Our observations of intervention implementation and reports by staff indicated that both participants were compliant with choice requests and routinely selected from the clothing options that were presented to them.

It is critically important that behavior-reduction interventions can be implemented efficiently without being a burden for care providers. In this study, the teachers were able to integrate choice-making opportunities into their school schedules and, in fact, were instrumental in identifying these occasions. They did not report, nor did we observe them having, difficulty conducting interventions with Evelyn and Mike. However, the study could have been improved by performing a formal assessment of procedural integrity. Also, it would have been informative

to systematically fade intervention by gradually decreasing the number of choice-making opportunities scheduled during the day. Unfortunately, we did not record the number of times the participants changed their clothes during intervention. Having these data may have helped establish a fading protocol, for example, systematically reducing daily choice-making opportunities as each participant selected to change his or clothes less frequently. Fading also would have enabled us to evaluate whether behavior reduction persisted without intervention. In addition, the study did not assess generalization of intervention beyond the school settings.

We did not conduct an analog functional analysis preceding the study to document conclusively the purported tangible-seeking function of public disrobing. As noted, preintervention observations did not suggest that the behavior was attention or escape motivated. The outcome from our indirect and descriptive functional assessments did produce a behavior hypothesis and appropriately formulated intervention plan. It is possible, of course, that providing the choice to change clothes decreased disrobing because the therapeutic influence was noncontingent reinforcement (Vollmer & Wright, 2003). Behavior change with noncontingent reinforcement may have resulted through disruption of the response–reinforcer relationship (operant extinction) or, possibly, satiation (Carr & LeBlanc, 2006). Note also that frequency of public disrobing was variable during intervention, particularly with Evelyn, who continued to demonstrate the behavior months later. One explanation is that public disrobing and urinary incontinence had additional functions that were not addressed by the choice-making intervention. Or, again, procedural fidelity by staff may have accounted for the variable outcome.

Intervention with each participant was implemented at specialized schools but could have been applied by service providers in more inclusive settings. For example, one logical extension of this study would be to follow Evelyn and Mike during transition to public school while training staff to implement procedures and document outcomes absent intervention. Unfortunately, we could not conduct such an evaluation and report long-term results.

Acknowledging that choice-making has been used primarily as an intervention for escape-motivated problem behavior provoked by instructional demands (Miltenberger, 2006), this study details a novel application of the procedure. As with other antecedent-based approaches (Luiselli, 2006), we sought to implement a strategy that would prevent the occurrence of seriously challenging behaviors. Although the choice-making intervention did not eliminate public disrobing and urinary incontinence, the behaviors were reduced significantly and to a frequency that enhanced

instruction with both participants. By focusing on prevention, practitioners are able to effect positive change without the requirement of behavior-contingent methods that may be overly restrictive, associated with negative responding during application (resistance, agitation), and difficult to integrate in community settings.

## References

- American Psychiatric Association. (2000). *Diagnostic and statistical manual of mental disorders* (4th ed., text rev.). Washington, DC: Author.
- Bigelow, D. A., Cutler, D. L., Moore, L. J., McComb, P., & Leung, P. (1988). Characteristics of state hospital patients who are hard to place. *Hospital and Community Psychiatry, 39*, 181–185.
- Black, B., Muralee, S., & Tampi, R. R. (2005). Inappropriate sexual behaviors in dementia. *Journal of Geriatric Psychiatry and Neurology, 18*, 155–162.
- Carr, J. E. (2005). Recommendations for reporting multiple baseline designs across participants. *Behavioral Interventions, 20*, 219–224.
- Carr, J. E., & LeBlanc, L. A. (2006). Noncontingent reinforcement as antecedent behavior support. In J. K. Luiselli (Ed.), *Antecedent assessment and intervention: Supporting children and adults with developmental disabilities in community settings* (pp. 147–164). Baltimore: Paul H. Brookes.
- Fitzsimmons, S., & Buettner, L. L. (2002). Therapeutic recreation interventions for need-driven dementia-compromised older adults. *American Journal of Alzheimer's Disease and Other Dementias, 17*, 367–381.
- Friman, P. C., & Hawkins, R. O. (2006). Contribution of establishing operations to antecedent intervention. In J. K. Luiselli (Ed.), *Antecedent assessment and intervention: Supporting children and adults with developmental disabilities in community settings* (pp. 31–52). Baltimore: Paul H. Brookes.
- Hanley, G. P., Iwata, B. A., & McCord, B. E. (2003). Functional analysis of problem behavior: A review. *Journal of Applied Behavior Analysis, 36*, 147–185.
- Iwata, B. A., Dorsey, M. F., Slifer, K. J., Bauman, K. E., & Richman, G. S. (1982). Toward a functional analysis of self-injury. *Analysis and Intervention in Developmental Disabilities, 2*, 3–20.
- Luiselli, J. K. (2004). Behavior support and intervention: Current issues and practices in developmental disabilities. In J. L. Matson, R. B. Laud, & M. L. Matson (Eds.), *Behavior modification for persons with developmental disabilities: Treatments and supports* (pp. 33–54). Kingston, NY: NADD Press.
- Luiselli, J. K. (2006). (Ed.). *Antecedent assessment and intervention: Supporting children and adults with developmental disabilities in community settings*. Baltimore: Paul H. Brookes.
- Matson, J. L., Laud, R. B., & Matson, M. L. (Eds.). (2004). *Behavior modification for persons with developmental disabilities: Treatments and supports*. Kingston, NY: NADD Press.
- Miltenberger, R. G. (2006). Antecedent interventions for challenging behaviors maintained by escape from instructional activities. In J. K. Luiselli (Ed.), *Antecedent assessment and intervention: Supporting children and adults with developmental disabilities in community settings* (pp. 101–124). Baltimore: Paul H. Brookes.
- O'Reilly, M. F., Sigafoos, J., Edrisinha, C., Lacioni, G., Cannella, H., Choi, H., et al. (2006). A preliminary examination of the evocative effects of the establishing operation. *Journal of Applied Behavior Analysis, 39*, 239–242.
- Ott, B. G., LaPane, K. L., & Gambassi, G. (2000). Gender differences in the treatment of behavior problems in Alzheimer's disease. *Neurology, 54*, 427–437.
- Stokes, M. A., & Kaur, A. (2005). High-functioning autism and sexuality. *Autism, 9*, 266–289.
- Vollmer, T. R., & Wright, C. S. (2003). Noncontingent reinforcement as treatment for problem behavior. In W. O'Donahue, J. E. Fisher, & S. C. Hayes (Eds.), *Cognitive behavior therapy: Applying empirically supported techniques in your practice* (pp. 266–272). Hoboken, NJ: John Wiley & Sons.
- Watson, P. J., & Workman, E. A. (1981). The nonconcurrent multiple baseline across individuals design: An extension of the traditional multiple baseline design. *Journal of Behavior Therapy and Experimental Psychiatry, 12*, 257–259.
- Waye, M. F. (1980). Treatment of an adolescent behavior disorder with a diagnosis of Huntington's chorea. *Journal of Behavior Therapy and Experimental Psychiatry, 11*, 239–242.

**Jane I. Carlson** is clinical director of the Groden Center in Providence, Rhode Island. Her interests include developmental disabilities, positive behavior support, and parent training.

**James K. Luiselli** is senior vice president of applied research, clinical training, and peer review at the May Institute in Randolph, Massachusetts. His interests include severe behavior disorders, behavioral medicine, and staff training.

**Amy Slyman** is a behavior specialist at Vinfen Corporation in Cambridge, Massachusetts. Her interests include applied behavior analysis and staff training.

**Andrea Markowski** is assistant program director at the May Center for Child Development in Randolph, Massachusetts. Her interests include organizational behavior management and staff training.