

Behavioral Skills Training to Improve the Abduction-Prevention Skills of Children with Autism

Katherine Ledbetter-Cho^{1,2} · Russell Lang^{1,3} · Katy Davenport¹ · Melissa Moore¹ · Allyson Lee¹ · Mark O'Reilly² · Laci Watkins² · Terry Falcomata²

Published online: 3 May 2016

© Association for Behavior Analysis International 2016

Abstract A concurrent multiple baseline across participants design evaluated the effects of behavioral skills training (BST) on abduction-prevention skills of four children with autism. Across phases, confederates presented four types of abduction lures: (a) simple requests, (b) appeals to authority, (c) assistance requests, and (d) incentives. During baseline, lures resulted in children leaving with confederate strangers. During intervention, BST targeted a three-step response (i.e., refuse, move away, and report) and the abduction-prevention skills of all participants improved. Improvements generalized to novel settings and confederates and were maintained at 4 weeks.

There is currently limited research on abduction-prevention pertaining to individuals with ASD. BST can be used to teach abduction-prevention skills to individuals with ASD. BST can be effective at teaching appropriate responses to multiple types of abduction lures. The effects of BST on multiple responses to multiple types of lures can generalize across settings and people and maintain over time.

Keywords Autism · Intervention · Safety skills · Abduction · Kidnapping

The National Incidence Study of Missing, Abducted, Runaway, and Thrownaway Children (NISMAART-2) estimated 58,200

children are abducted by nonfamily members annually in the USA (Finkelhor, Hammer, & Sedlak, 2002). Approximately 50 % of children with autism elope from safe places, increasing abduction risk (Anderson et al., 2012). In addition to reducing risk of abduction, children who have acquired abduction-prevention skills may also be more likely to avoid sexual abuse. Gunby, Carr, and LeBlanc (2010) used behavioral skills training (BST) involving instruction, modeling, role-play, and feedback to teach abduction-prevention skills to children with autism. Gunby and Rapp (2014) extended that work by including a variety of abduction lures (e.g., offering candy, asking child for help). Recently, Bergstrom, Najdowski, and Tarbox (2014) provided a further extension by assessing generalization across environments and abductors. Bergstrom et al. (2014) suggested future research should include a variety of lure types in baseline and assess for maintenance of the target response across lures. The current study aimed to replicate and extend previous research by addressing those suggestions.

Method

Participants and Settings

Participants included four boys with autism who attended a university-based autism clinic. Conner was also diagnosed with Jacobsen syndrome. Participants were selected because their parents identified stranger safety skills as a treatment priority. Conner, Cowan, Ty, and Avery, ages 10, 10, 9, and 12, respectively, could communicate vocally in complete sentences, follow multiple step instructions, and identify individuals in photographs as either strangers or familiar people (Gunby et al., 2010). None of the participants had received instruction in abduction-prevention skills prior to the study.

✉ Russell Lang
ruslang@txstate.edu

¹ Clinic for Autism Research Evaluation and Support, Texas State University, San Marcos, TX, USA

² University of Texas at Austin, Austin, TX, USA

³ Texas State University, 601 University Drive, San Marcos, TX 78666-4684, USA

Abduction probes were conducted in various locations on a university campus (e.g., outside on grounds, cafeteria) during baseline, post-training, and follow-up sessions. Locations selected to assess generalization across settings were probed in baseline. BST was implemented in a university-based autism clinic.

Data Collection and Interobserver Agreement

Observers used the three-point safety rating from previous abduction-prevention research (e.g., Bergstrom et al., 2014) to measure a three-part target response: (a) vocally declining to leave with a stranger, (b) immediately moving away from the stranger, and (c) informing a familiar adult (e.g., therapist) of the incident at first opportunity. Participants could receive a score from 0 to 3 with one point awarded for each step of the response. Consistent with previous research, observers scored a 0 if the participant took three steps with the stranger and scored a 3 if the participant left the area and reported the incident to a familiar adult even if they did not vocally decline.

Prior to abduction probes, observers positioned themselves in locations not visible to the participant. Independent observers scored responses, with an exact match constituting agreement. Interobserver agreement was calculated for 70 % of probes by dividing number of agreements by number of agreements plus disagreements and multiplying by 100 and was 100 % across participants.

A concurrent multiple baselines across participants with BST, post-training, and follow-up phases were used to demonstrate experimental control and evaluate generalization across settings and maintenance at 4 weeks.

Abduction Probes Confederate strangers never before seen by participants delivered one of four lure types during each probe (25 of 40 were male). Lure types included (a) simple requests (e.g., “Hey, let’s go,”), (b) appeals to authority (e.g., “Your mom told me to pick you up,”), (c) assistance requests (e.g., “I hurt my arm, can you help me carry this?”), and (d) incentive (e.g., “Come play with my iPad®”). Each stranger only conducted one probe per participant. During abduction probes, the therapist stated a reason to leave (e.g., “I need to go to the bathroom”) and walked around a corner to a place where the participant could still be covertly observed. Next, the confederate waited between 30 s and 2 min before approaching and delivering a lure.

Baseline A minimum of four abduction probes (at least one probe per lure type) were conducted per participant. During baseline, if the participant began to leave with the confederate, the confederate made an excuse to stop (e.g., “Sorry, I forgot I have to meet my friend”). This was done to reduce likelihood of reinforcing the behavior of leaving with a stranger.

Behavioral Skills Training BST sessions lasted 5 to 8 min and were conducted individually by therapists in the clinic. The therapist first explained why it is unsafe to go with strangers (e.g., “You could get hurt.”) and then reviewed the three steps to take when lured (i.e., say no, run away, tell someone you know). The participant was then asked to restate steps and was verbally prompted until all steps were restated. Next, the therapist played a 30-s video demonstrating an adult correctly performing the safety response when lured by a stranger. The adult actor never served as a confederate stranger.

Following video modeling, the therapist informed the participant that it was “time to practice” and they walked to a new location where an abduction probe was presented as in baseline. Such walks were commonly used as breaks during the children’s typical clinical sessions. Contingent on a correct three-step response (a score of 3), verbal praise was provided (e.g., “Thanks for telling me! Are you okay?”). If the participant earned less than a score of 3, the therapist emerged from her covert location and provided corrective feedback (e.g., “You need to say ‘no’ and come tell me.”). Only the first attempt was graphed, but probes were repeated until the three-step response occurred. Participants required one to two repetitions to emit the correct response. Mastery criterion in training phase was a first attempt score of 3 for each of the four lure types (Gunby et al., 2010).

Independent observers assessed the treatment fidelity of BST sessions using a yes/no checklist that included seven training components (e.g., “Was the video played?”). Two independent observers scored treatment fidelity during 50 % of training sessions and agreement was calculated (same method as dependent variable) and was 100 %.

Post-Training and Generalization After participants reached mastery criterion in BST phase, post-training probes identical to baseline were conducted. Probes designed to assess for generalization across setting were conducted in locations probed in baseline but not utilized during training. Starting with probe 18, we added a contingency-specifying instruction with reinforcement for Connor which remained through duration of the study. Specifically, Connor was told that if he completed the target response (score of 3), he would receive access to a preferred item (Bergstrom et al., 2014). After participants scored a 3 for each lure type, probes were discontinued for 4 weeks.

Follow-up Four weeks following mastery in the post-training phase, participants received each of the abduction lures in probes identical to previous phases, with the exception of Cowan whose family moved for reasons unrelated to the study.

Following data collection, parents completed a survey to assess intervention and target behavior acceptability. The

survey contained four statements with a five-point Likert-type scale ranging from strongly disagree to strongly agree. Three parents returned the survey anonymously. Respondents strongly agreed that the abduction-prevention skill was important and that BST was an acceptable approach. One parent indicated strong agreement and two parents reported that they agreed (rated five and four on Likert scale, respectively) with the statement that their child was safer. One also noted that improved safety was difficult to quantify.

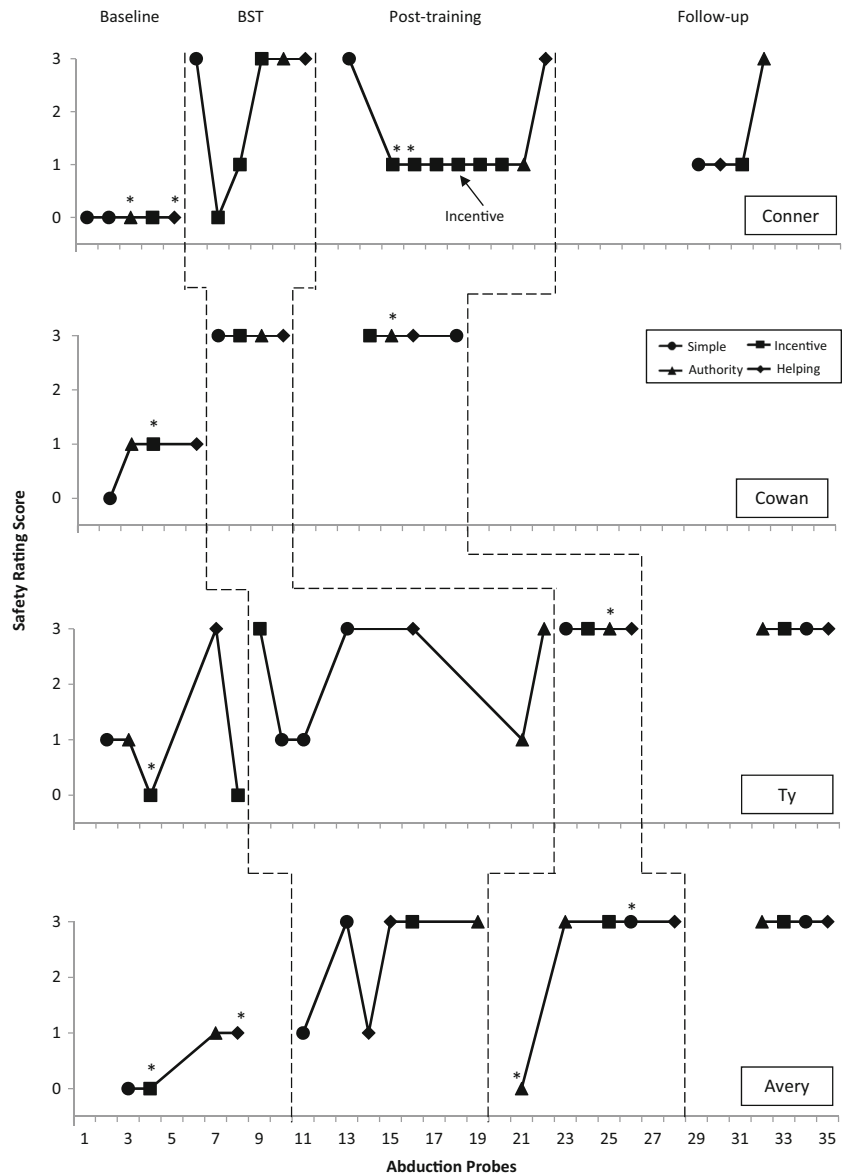
Results and Discussion

Figure 1 depicts participants' performance. During baseline, Conner consistently went with strangers, earning scores of 0

across lure types. During training, Conner met mastery criterion in six BST sessions. After earning a score of 3 during the first post-training probe, Conner continued to vocally decline to go with the strangers, but told the stranger he was going to wait for his therapist. Despite the addition of instructions and preferred item contingency in session 18, Conner continued to score 1 until the last post-training session score of 3. Although Conner did not reach mastery criterion, he advanced to post-training phase due to study time limitations and to determine if the improvement that did occur (i.e., learning to say 'no' as opposed to leaving with strangers) would maintain. At follow-up, Conner scored a 1 for three lures and a 3 for the final lure.

Cowan agreed to leave with the stranger during the first baseline probe but subsequently refused, scoring a 1. Cowan

Fig. 1 Safety rating scores during abduction probes across baseline, BST, post-training, and 4-week follow-up phases. Generalization probes across settings are indicated by *asterisks*



met mastery criterion in four BST sessions and continued to score 3 during post-training probes.

Ty's performance during baseline ranged from 0 to 3; however, he left with the stranger following both incentive lures. Ty met mastery criterion in seven BST sessions. During post-training probes, he engaged in the correct response to each lure type. Ty maintained the correct response in follow-up probes.

During baseline, Avery left with the stranger following the first two abduction probes and refused during the last two baseline probes. He met mastery criterion in six training sessions. Avery left with the stranger during the first post-training abduction probe but scored 3 during the next four. Interestingly, a single exposure to the authority lure in the post-training condition occasioned an increased score despite absence of feedback. Avery maintained a 3 score during follow-up probes. All participants generalized the response across one or more settings, possibly due to training of sufficient exemplars and programming of common stimuli (Stokes & Baer, 1977).

These results replicate research demonstrating that BST can be effective in teaching abduction-prevention skills to children with autism (Bergstrom et al., 2014; Gunby et al., 2010) and extended the literature by (a) probing the different lure types in baseline, (b) evaluating generalization across settings, (c) measuring maintenance at 4 weeks, and (d) assessing social validity. Although previous research has addressed these areas in part, no single previous study has measured the safety response following all four of these lure types in baseline, post-training, generalization, and maintenance and then measured social validity.

Although results indicated that the intervention package was effective in teaching safer responses to abduction lures, limitations warrant consideration. First, although Conner refused to go with strangers following training and maintained this skill during the follow-up phase, he did not consistently emit the entire safety response. Though parents reported satisfaction, failure to move away from strangers remains a safety concern and future studies might conduct booster sessions in an attempt to improve performance (Beck & Miltenberger, 2009; Miltenberger et al., 2009).

Additionally, although the response was maintained 4 weeks, previous research suggests safety skills deteriorate approximately 3 months post-treatment (Johnson et al., 2005). Clinicians may wish to routinely probe for performance of safety skills and implement BST sessions as necessary to boost performance.

Further, the extent to which acquisition of the three-step response would actually reduce the likelihood of abduction is unknown. Successfully avoiding abduction may require a more diverse response class as well as the ability to discriminate specific environmental conditions that predict when one response might enjoy a higher probability of success over

another. For example, in a crowded area, it may be preferable to simply yell, "You are a stranger and I will not go with you" repeatedly rather than leave the area which could result in being followed to a less populated location. Future research aimed at teaching additional abduction-prevention behaviors and discrimination training aimed at identifying elements of the environment that could predict the response most likely to avoid abduction in a given context would seem warranted. Nevertheless, the skill taught here is nearly identical to the target skill taught to typically developing children in curricula designed for the same purpose and adaptations to the teaching procedures (i.e., BST) for children with autism is an important research extension (Beck & Miltenberger, 2009).

Finally, it is possible that children might begin emitting the safety response following a stranger's benign and appropriate greeting following this abduction-prevention training (Gunby & Rapp, 2014). Clinicians should communicate this possibility to parents and consider discrimination training toward this goal should the issue emerge. Future research should empirically evaluate participants' behavior in response to strangers who present no threat of abduction.

Acknowledgments No funding was received to support this manuscript.

Compliance with Ethical Standards

Conflict of Interest The authors declare that they have no conflict of interest.

Ethical Approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

Informed Consent Informed consent was obtained from all individual participants included in the study.

References

- Anderson, C., Law, J. K., Daniels, A., Rice, C., Mandell, D. S., Hagopian, L., et al. (2012). Occurrence and family impact of elopement in children with autism spectrum disorders. *Pediatrics*, *130*, 870–877. doi:10.1542/peds.2012-0762.
- Beck, K. V., & Miltenberger, R. G. (2009). Evaluation of a commercially available program and in situ training by parents to teach abduction-prevention skills to children. *Journal of Applied Behavior Analysis*, *42*, 761–772.
- Bergstrom, R., Najdowski, A. C., & Tarbox, J. (2014). A systematic replication of teaching children with autism to respond appropriately to lures from strangers. *Journal of Applied Behavior Analysis*, *47*, 861–865. doi:10.1002/jaba.175.
- Finkelhor, D., Hammer, H., & Sedlak, A. J. (2002). Nonfamily abducted children: national estimates and characteristics. In *NISMART: National Incidence Studies on Missing, Abducted, Runaway, and*

- Thrown-away Children*. Washington, DC: U.S. Department of Justice.
- Gunby, K. V., Carr, J. E., & LeBlanc, L. A. (2010). Teaching abduction-prevention skills to children with autism. *Journal of Applied Behavior Analysis, 43*, 107–112. doi:10.1901/jaba.2010.43-107.
- Gunby, K. V., & Rapp, J. T. (2014). The use of behavioral skills training and in situ feedback to protect children with autism from abduction lures. *Journal of Applied Behavior Analysis, 47*, 856–860. doi:10.1002/jaba.173.
- Johnson, B. M., Miltenberger, R. G., Egemo-Helm, K., Jostad, C. M., Flessner, C., & Gatheridge, B. (2005). Evaluation of behavioral skills training for teaching abduction prevention skills to young children. *Journal of Applied Behavior Analysis, 38*, 67–78. doi:10.1901/jaba.2005.26-04.
- Miltenberger, R., Gross, A., Knudson, P., Bosch, A., Jostad, C., & Breitwieser, C. B. (2009). Evaluating behavioral skills training with and without simulated in situ training for teaching safety skills to children. *Education and Treatment of Children, 32*, 63–75. doi:10.1353/etc.0.0049.
- Stokes, T. F., & Baer, D. M. (1977). An implicit technology of generalization. *Journal of Applied Behavior Analysis, 10*, 349–367. doi:10.1901/jaba.1977.10-349.