

*EVALUATION OF BEHAVIORAL SKILLS TRAINING TO  
PREVENT GUN PLAY IN CHILDREN*

RAYMOND G. MILTENBERGER, CHRISTOPHER FLESSNER, BRIAN GATHERIDGE,  
BRIGITTE JOHNSON, MELISA SATTERLUND, AND KRISTIN EGEMO

NORTH DAKOTA STATE UNIVERSITY

This study evaluated behavioral skills training (BST), in a multiple baseline across subjects design, for teaching firearm safety skills to 6 6- and 7-year-old children. Similar to previous research with 4- and 5-year-olds, half of the children acquired the safety skills following BST and half acquired the skills following BST plus in situ training.

DESCRIPTORS: behavioral skills training, firearm safety, young children

Each year in this country hundreds of children are killed or injured by other children who play with firearms they find in their home or the home of a friend (Centers for Disease Control, 2003a, 2003b). Research shows that when children find guns, they often play with them (Jackman, Farah, Kellermann, & Simon, 2001). However, little research has been conducted to evaluate procedures to teach children skills for preventing gun play. Himle, Miltenberger, Gatheridge, and Flessner (2004) demonstrated that 4- and 5-year-old children learned safety skills (don't touch, get away, and tell an adult upon finding a gun) following behavioral skills training (BST) implemented in small groups, but that the skills did not generalize beyond the training situation. In a subsequent study evaluating individual BST with 4- and 5-year-olds, Himle, Miltenberger, Flessner, and Gatheridge (2004) showed that the procedure was successful for only 3 of 8 children and that in situ training was needed for the procedure to be successful for the other 5 children. Considering the limited success of BST for teaching gun safety skills to 4- and 5-year-old children and the research that suggests

that safety skills training is more successful with older children (e.g., Yeaton & Bailey, 1978), the purpose of the present study was to evaluate BST (with in situ training as needed) for teaching safety skills to 6- and 7-year-old children to see if the training procedure is more effective with older children. This study also evaluated maintenance for a longer period (5 months) than did previous research.

## METHOD

### *Participants and Settings*

Four boys and 2 girls (6 and 7 years old) participated in the study. They were recruited from two summer day-care programs. We sent information letters to parents and enrolled these children in the study after their parents signed consent forms. Assessments took place in a room in the school or the children's homes. Training took place in a different room at the school.

### *Assessment and Target Behaviors*

The children were assessed individually without their knowledge by arranging a situation in which he or she entered a room in which a gun (a disabled handgun obtained from the local police department) had been placed in an obvious location. For assessments in the home, a parent asked the child

---

Address correspondence to Raymond G. Miltenberger, Department of Psychology, North Dakota State University, Fargo, North Dakota 58105 (e-mail: ray.miltenberger@ndsu.nodak.edu).

to go to the room for some reason (“I left a snack on the kitchen counter for you”). For assessments at the school, a researcher who was introduced as a student teacher made up a reason to bring the child to an empty room that was not previously associated with the study (“We’re going to work on a project for 15 minutes”) and then made an excuse to leave the room (“I’ll be right back, I forgot some materials”). A videocamera was placed out of sight in the room (at home and school) to record the child’s behavior upon finding the gun. No one else was present in the room.

The target behaviors and scoring system were the same as in Himle, Miltenberger, Flessner, and Gatheridge (2004) and were as follows: touched the gun (0 points, regardless of whether other target behaviors occurred); did not touch the gun (1 point); did not touch the gun and left the room (2 points); did not touch the gun, left the room, and told the teacher or parent about the gun (3 points). Following the assessment, the child was returned to normal activities without comment by the parent or teacher. If a child left the room and reported the gun, the teacher or parent thanked the child for reporting it.

#### *Interobserver Agreement*

A second observer independently scored 33% of the assessments from videotape across phases. The scores of the first and second observers were compared for each of the target behaviors. Agreement was 100%.

#### *Procedure*

A multiple baseline across subjects design was used to evaluate the effects of BST and in situ training as needed. Follow-up assessment occurred in the home 5 months after training was completed and was conducted without the child’s knowledge in the same fashion as all other assessments.

*Baseline.* One to five baseline assessment

sessions were conducted as described above. No feedback was delivered following the assessment.

*Behavioral skills training.* BST was implemented with each child individually in two 15- to 20-min sessions. After these two training sessions, assessments were conducted; if the child did not score 3 on the assessment, up to two booster sessions were conducted. Initial training sessions and booster sessions consisted of instructions, modeling, rehearsal, and feedback. The trainer first discussed the dangers of playing with guns and described the three safety skills. The child then verbally rehearsed the safety skills. Next, the trainer modeled the skills by putting a real (but disabled) gun in the room, simulating finding the gun, and demonstrating the three safety skills. The trainer and child discussed the safety skills exhibited by the trainer. The trainer then asked the child to demonstrate the skills in a simulated situation. The trainer placed the gun in the room, described a scenario (“Pretend this is your kitchen at home and you find a gun here on the kitchen counter”), and asked the child to show what he or she would do upon finding the gun. After the child demonstrated the behavior, the trainer provided praise for correct behavior and provided further instruction for improvement if needed. The child rehearsed the behavior again until it was correct. The trainer then placed the gun in a variety of locations (on a shelf, in a drawer, etc.), had the child rehearse the behavior, and provided feedback (praise and correction if needed). This process continued until the child practiced the safety skills correctly five consecutive times upon finding the gun in different scenarios.

*In situ training.* If the child did not obtain a score of 3 during an assessment after the initial BST sessions and two booster sessions, an additional assessment session was turned into a training session. Following an assessment session in which the child did not

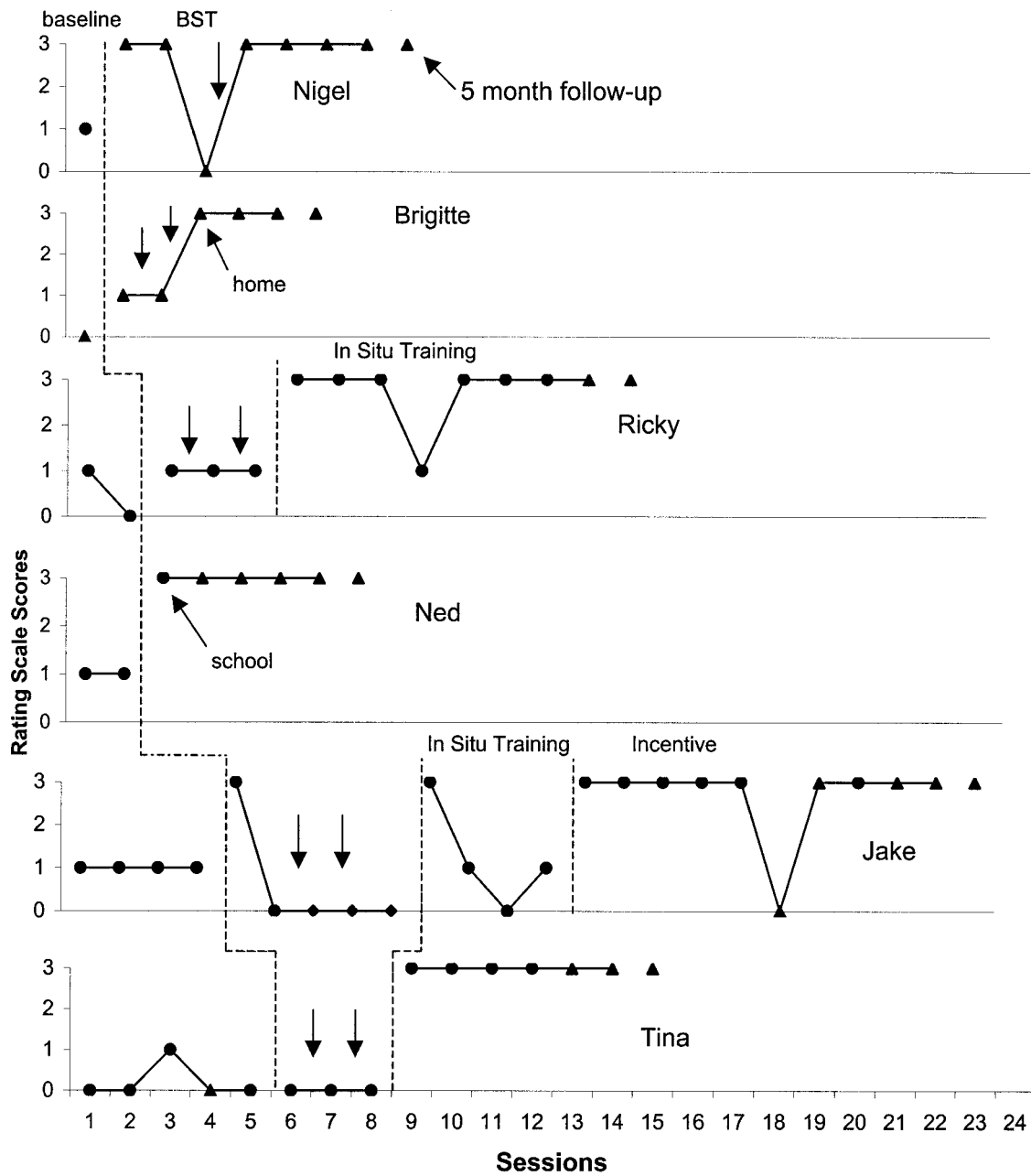


Figure 1. Rating-scale scores for participants across baseline, BST, and in situ training phases. The downward arrows in the BST phase represent booster sessions. The round data points are school assessments, and the triangle data points are home assessments. The last data point for each child is a 5-month assessment.

leave the room and tell an adult about the gun, the trainer (whose presence was not known by the child) entered the room and conducted a BST session. The child first rehearsed the behavior in the assessment sce-

nario until the skills were correctly demonstrated and then successfully rehearsed the behavior in five other scenarios.

*Incentive.* For Jake, who did not exhibit the correct behavior following BST or in situ

training, an incentive phase was added. During in situ training, the trainer entered the room following an assessment and provided a treat if Jake had exhibited the correct behavior (a score of 3).

## RESULTS AND DISCUSSION

Results depicted in Figure 1 show that 3 children (Nigel, Brigitte, and Ned) achieved the criterion score of 3 following BST and that 2 children (Ricky and Tina) did not achieve scores of 3 until in situ training was implemented. Furthermore, an added incentive phase following both types of training was necessary before Jake consistently scored 3. These results were maintained in home assessments that occurred 5 months after training for all children.

The results of this study suggest that BST was not more effective for 6- and 7-year-olds than it was for the 4- and 5-year-olds in the Himle, Miltenberger, Flessner, and Gatheridge (2004) study, with in situ training being necessary for half of the children. This study adds to the small body of research on training skills for the prevention of gun play by showing that BST or BST with in situ training was effective with 6- and 7-year-olds and that the skills generalized to the home setting and were maintained at 5 months following training. The results also suggest that the amount of training needed for the skills to be used in a natural situation varied across children as it did in Himle, Miltenberger, Flessner, and Gatheridge.

One limitation of the current study is that there was only one baseline data point for Nigel and Brigitte. Although we did this to minimize the number of assessments, we could have strengthened the methodology by including more baseline data points. A second limitation is that there were only two home assessments during baseline. Although

our intention was to include home assessments in the training phase to assess generalization, at least one home assessment for each child in baseline would have strengthened the methodology. A third limitation is the appearance that BST promoted gun play for Jake because he started touching the gun in the BST phase. Jake engaged in the correct behavior only after this behavior was reinforced with candy. Future research should continue to investigate the effectiveness and efficiency of safety skills training for the prevention of gun play with an emphasis on training provided by teachers, parents, or others in the child's natural environments and evaluating the generalization of the skills across contexts.

## REFERENCES

- Centers for Disease Control and Prevention, National Center for Injury Prevention and Control. (2003a). *WISQARS: Web-based injury statistics query and reporting system. Injury mortality rates, 1999–2000*. Retrieved October 28, 2003, from <http://webapp.cdc.gov/sasweb/ncipc/mortrate10.html>
- Centers for Disease Control and Prevention, National Center for Injury Prevention and Control. (2003b). *WISQARS: Web-based injury statistics query and reporting system. Nonfatal injury reports*. Retrieved October 28, 2003, from <http://webapp.cdc.gov/sasweb/ncipc/nfirates2001.html>
- Himle, M. B., Miltenberger, R. G., Flessner, C., & Gatheridge, B. (2004). Teaching safety skills to children to prevent gun play. *Journal of Applied Behavior Analysis, 37*, 1–9.
- Himle, M., Miltenberger, R., Gatheridge, B., & Flessner, C. (2004). An evaluation of two procedures for training skills to prevent gun play in children. *Pediatrics, 113*, 70–77.
- Jackman, G. A., Farah, M. M., Kellermann, A. L., & Simon, H. K. (2001). Seeing is believing: What do boys do when they find a real gun? *Pediatrics, 107*(6), 1247–1258.
- Yeaton, W. H., & Bailey, J. S. (1978). Teaching pedestrian safety skills to young children: An analysis and one-year follow-up. *Journal of Applied Behavior Analysis, 11*, 315–329.

*Received December 5, 2003  
Final acceptance August 24, 2004  
Action Editor, Linda Cooper-Brown*