

Teaching Pairs of Preschoolers with Disabilities to Seek Adult Assistance in Response to Simulated Injuries: Acquisition and Promotion of Observational Learning

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Abstract

The purpose of this study was to investigate the effects of direct training and observational learning on the acquisition, generalization, and maintenance of the first-aid skill "seeking adult assistance when injured" for three pairs of preschool children with disabilities (three target learners and three observational learners). A multiple probe design across pairs of participants was used. All 6 participants acquired the first-aid skill; more importantly, their responding generalized to playground and home situations and maintained at high levels during the follow-up probes conducted up to 8 weeks after training. The skill acquisition shown by the observational learners occurred without direct training in approximately the same number of trials as that required for the target learners. These results suggested that the intervention was an effective and efficient instructional procedure for teaching preschool children with disabilities basic first-aid skills.



A critical first-aid skill for preschoolers is getting help from an adult when injured (Collins, Wolery, & Gast, 1991, 1992). This skill is critical to teach since the highest frequency of accidents occurs among preschoolers aged 1 to 4 (American Academy of Pediatrics, 1989). Young children appear to be highly susceptible to injury due to developmental limitations in managing stressful or dangerous situations (Mori & Peterson, 1986). It is safe to assume that young children with disabilities are at an increased risk for injury due to their skill deficits (e.g., motor, communication, problem solving, adaptive living) as well as health problems (e.g., seizures) (Marchand-Martella, 1994). Unfortunately, only one study has targeted preschoolers with disabilities for first-aid training (Christensen, Marchand-Martella, Martella, Fiechtl, & Christensen, 1993). Christensen et al. (1993) provided individual training to four children. Each child demonstrated rapid acquisition and mastery of the targeted first-aid skill. In addition, the children's performance generalized to novel settings.

First-aid instruction might be more feasible in preschool settings working with children in groups using strategies that promote observational learning. Interestingly, observational learning may actually result in a more efficient instructional situation (Keel & Gast, 1992). That is,

children may acquire skills quicker when taught directly (i.e., reduce direct teaching time) or not require direct teaching at all after observing someone who received training.

A number of investigations have examined observational learning in small group arrangements for children with disabilities using discrete tasks (e.g., Alig-Cybriwsky, Wolery, & Gast, 1990; Ault, Wolery, Gast, Doyle, & Martin, 1990), as well as chained tasks (e.g., Griffen, Wolery, & Schuster, 1992; Schoen, Lentz, & Suppa, 1988). Results from these studies suggest that observational learning does occur in small group instructional arrangements with a variety of tasks. Unfortunately, none of the investigations reported that the observational learners acquired all the targeted behaviors, and only three studies involved preschool children.

A number of variables have been identified that could be manipulated to promote observational learning. These include teacher cues to secure student attention to the task (i.e., attentional prompts), student responses to indicate attention to the task (i.e., attentional responses), teacher prompts to secure student attention to critical features of the task (i.e., stimulus prompts), and consequent events following student's responses (i.e., positive and corrective feedback for attending) (Doyle, Gast, Wolery, Ault, & Farmer, 1990; Wolery, Cybriwsky, Gast, & Boyle-Gast, 1991). A handful of studies have examined the effects of some of these variables on observational learning (e.g., Alig-Cybriwsky et al., 1990; Wolery et al., 1991). Interestingly, the results showed increased observational learning, but even in these studies observational learners did not fully acquire the skill. Thus, more research is needed to examine the variables that might promote more effective observational skill acquisition.

The purpose of this study was to extend the research on: (a) teaching preschool children with disabilities first-aid skills, and (b) promoting observational learning on a chained task. In particular, this study investigated the effects of direct training and observational learning on the acquisition, generalization, and maintenance of the first-aid skill "seeking adult assistance when injured" for three pairs of preschoolers with disabilities.

Method

Participants

Six preschool children attending one of two self-contained classrooms for preschoolers with disabilities in a local elementary school served as participants (see Table 1). They ranged in age from 3 to 5 years and were qualified for special education preschool services in the state of Utah under the classification of either Developmental Delay or Other Health Impairment. None of the participants had received previous first-aid training.

Screening procedures. The procedure for selecting participants for inclusion in this study included the following. First, the classroom teachers identified children for possible inclusion based on their availability and need for first-aid instruction (i.e., lacking ability to "seek adult assistance when injured"). Second, an assessment of imitation, a prerequisite skill identified as necessary and important for observational learning (Bailey

Table 1
Participant Characteristics

	Gender	Target/Observ. Learner	Age	Impairments
Group 1				
Andy	Male	Target	5	Moderate to significant delays in speech, adaptive behavior, & social skills; wore glasses
Lynn	Male	Observ	5	Mild to moderate delays in speech, fine motor, and social skills
Group 2				
Mary	Female	Target	3	Mild to moderate delays in speech, adaptive behavior, motor, & social skills; significant visual impairment; wore glasses
Sarah	Female	Observ	4	Mild to moderate delays in adaptive behavior & social skills; visual impairment (20/40) but did not wear glasses
Group 3				
Levi	Male	Target	3	Mild to moderate delays in speech, adaptive behavior, fine motor, & social skills
Dave	Male	Observ	5	Mild to moderate delays in speech, adaptive behavior, motor, & social skills; took seizure-control medication

& Wolery, 1992; Browder, Schoen, & Lentz, 1986-87), was individually administered to each child. The imitation assessment included a verbal and motor component. The verbal component involved instructing the child to repeat 10 different one-word phrases following the trainer (e.g., "dog," "ball," "hand"). The motor component included 10 different one-step actions that the child was instructed to watch the trainer do and then do by himself (e.g., touch head, hold hands up, pat legs). Six children who demonstrated high performance on this imitation assessment were chosen as participants. The participants were then matched into pairs. Andy and Lynn (Group 1) were paired because they were the only participants included from Classroom A. Group 2 (Mary and Sara) and Group 3 (Levi and Dave) were matched based on their gender. Each member of the pair was randomly assigned as either the target learner (receives direct training) or the observational learner (observes direct-training of target learner).

Settings

All baseline and training sessions were conducted in the bathroom area of the classrooms. This area was chosen because it was part of the participants' classrooms, yet it was separated from the teacher, the instructional aides, and the rest of the children. The generalization probes were conducted on the playground at school and outside each participant's home.

Materials

Simulated cuts and blood were used since it was not feasible to wait until a child was injured before initiating training. The simulated materials were manufactured by Simulaids TM, a company that makes simulated injuries and other first-aid supplies for use in first-aid training programs for health-care professionals. Two-way tape was used to adhere the injuries to the skin, and simulated blood was placed on top of the injury. The size of all cuts was kept constant at 1/2 in. (1.27 cm) in length. The injuries were placed alternately on the back of the children's left and right hands across sessions.

The only first-aid supply used was paper towels, which were provided on every other session during baseline and intervention conditions. The participants were taught to use a clean cloth (i.e., paper towel) when it was available, since this is the method of choice as indicated by the American National Red Cross (1988). When a clean cloth was not available, a functionally equivalent procedure (i.e., covering the injury with one's hand) was taught as compared to not covering the injury at all.

Dependent Variable and Measurement

Severe cuts were used as the injuries. Severe cuts refer to incised wounds that occur when body tissue is cut by knives, rough edges, broken glass, or other sharp objects, in which bleeding may be rapid and

heavy (American National Red Cross, 1988). The dependent variable was measured by counting the number of task-analyzed steps completed correctly for "seeking adult assistance when injured" for the target and observational learners.

Task analysis. The task analysis of the first-aid skill used in this study yielded a chain of behaviors that included six steps: (a) cover injury (no pressure applied) with clean cloth, paper towel, or hand; (b) elevate injury above the heart; (c) seek a supervising adult; (d) continue to cover the injury while seeking a supervising adult; (e) continue to elevate the injury while seeking a supervising adult; and (f) show or tell a supervising adult about the injury.

Observation and Recording Procedures

A graduate student in special education served as the instructor for the baseline and intervention sessions and as the secondary rater for the generalization probe sessions. A doctoral-level observer served as the primary rater for the generalization probe sessions and as the secondary rater for the baseline and intervention sessions. Each individual also collected data on the implementation of the independent variable during intervention sessions conducted by the other person.

The instructor learned to record the first-aid skill in a previous investigation (Marchand-Martella, Martella, Christensen, Agran, & Young, 1992). Training for the observer consisted of instructions and demonstrations of appropriate and inappropriate skill performance for treating severe cuts and was conducted by the instructor. Training ended when the observer obtained 100% interobserver agreement with the instructor for three consecutive sessions on the number of steps completed on each of three trials.

In addition, the instructor taught the observer to record step-by-step performance of the implementation of the independent variable. This training involved watching a video tape and recording the instructor's appropriate and inappropriate intervention implementation during role-play scenarios. After each practice session, the instructor's and observer's data sheets were compared; the instructor provided feedback to the observer on correct and incorrect scoring. Three consecutive sessions at 100% accuracy were required before training ended.

Experimental Design and Conditions

A multiple probe design across three pairs of participants was used to assess the effects of training on the performance of the first-aid skill by target and observational learners (Tawney & Gast, 1984).

Baseline (target and observational learners). Each learner (both target and observational) was assessed individually. A simulated cut with blood placed on top was adhered to the back of the child's hand. The instructor cued the first-aid sequence by saying, "Pretend I am not here. You cut yourself. Show me how to take care of it." During the sessions when the paper towels were available, they were placed near the child clearly

within view (i.e., on the floor). The instructor recorded the child's behavior and did not provide positive or corrective performance feedback. At the end of the session, the child was praised for working hard and received a small reward (e.g., sticker, plastic watch) for participating.

Direct training (target learners) and observational learning (observational learners). The training procedure for target learners included three stages: instructor model, practice with feedback, and independent test. The observational learners watched their peers during the practice with feedback stage and were assessed on their skill performance during the independent test.

1. *Instructor model (target learners).* During this stage of training, the instructor placed a simulated injury on her own hand (alternating between left and right across sessions) and told the child that she was injured and was going to take care of it (i.e., "I cut myself. Watch me take care of it."). Paper towels were present on every other session and placed near the instructor clearly within the child's view (i.e., on the floor). The instructor modeled Step 1 of the task analysis (i.e., "cover wound with cloth, paper towel, hand") with the paper towel when provided and with her hand otherwise. Steps 2 through 5 were subsequently modeled. For Step 6 (i.e., "show or tell a supervising adult"), the instructor alternately approached one of the classroom staff members (teacher or instructional aides) and said "I cut myself and I need help" as she showed her hand with the cut on it.

2. *Practice with feedback (target and observational learners).* During this stage of training, both learners were present. The target learner was instructed to practice the skill by taking care of his or her own injury (i.e., child was provided the following instructional cue by the instructor--"Pretend I am not here. You cut yourself. Show me how to take care of it"). The procedures outlined in baseline remained the same, except the instructor provided the child with positive and corrective feedback while the observational learner watched. A 10-sec latency for the child to respond was allowed. If the child did not correctly complete the first step after this time, the instructor provided corrective feedback by using a specific "need" statement and modeling (e.g., "You need to cover the cut with a paper towel like this"). Following this demonstration, the instructor told the child to try again (e.g., "Show me what you need to do").

Immediate praise in which the instructor described the critical feature of the first-aid step followed each correct response (e.g., "great job covering the cut with your hand"). If the child told the instructor that he or she was hurt on Step 6 (i.e., "show or tell a supervising adult"), the instructor provided corrective feedback (e.g., "Pretend I am not here. You need to talk with ____").

After the cut and blood were placed on the target learner's hand, the observational learner was cued to watch the target learner (i.e., "You need to watch ____"). When necessary, the observational learner was prompted by the instructor to emit a specific verbal and motor attentional response (e.g., "Say hurt and touch his hurt hand."). The instructional cue was then given to the target learner (i.e., "Pretend I am not here. You cut yourself. Show me how to take care of it.").

While the target learner completed the first-aid skill, the instructor collected data on the observational learner's attending behavior and provided him with positive and corrective feedback. The observational learner's attending was recorded as appropriate (i.e., marked YES) or inappropriate (i.e., marked NO) for each of the task-analyzed steps. Appropriate attending was defined as the observational learner's eyes directed at the target learner without moving in another direction for more than 3 sec. In addition, when the target learner moved from one area to another, the observational learner followed within 5 feet at all times.

When the observational learner demonstrated appropriate attending, the instructor praised the child (e.g., "Nice watching_____"). When the observational learner demonstrated inappropriate attending, the instructor told the child what to do using a general "need" statement (e.g., "You need to watch_____." or "You need to follow_____").

3. *Independent test (target and observational learners)*. Following training each day, the children were tested on a simulated cut. First, the target learner was tested in isolation. Then, the observational learner was tested in isolation. On sessions when paper towels were provided in the first two stages of training (i.e., instructor model and practice with feedback), they were also provided during the last stage of training. Each child was instructed to practice taking care of his or her injury, but this time feedback was not provided. The instructor once again followed the procedures outlined in baseline. The mastery criterion was independently completing 100% of the steps for three consecutive sessions.

Generalization probes (target and observational learners). Generalization probes were conducted before baseline (P1); after baseline (P2); after reaching skill mastery in training (P3); and 2, 4, and 8 weeks following the intervention (follow-up). These probes were conducted at two locations (school playground and outside at home) for each participant. All conditions were the same as in baseline, except that paper towels were not provided.

On the 2-week follow-up generalization probe at home, the instructor met with the parents of each child. The parents were instructed to observe their child discreetly as he or she completed the probe with the observer. Following the probe, the instructor specifically described and provided examples of the six task-analyzed steps for the first-aid skill to the parents. A checklist was then given and explained to the parents. The parents were asked to complete and return the checklist if a real injury involving blood occurred with their child during the following year.

Interobserver Agreement

Interobserver agreement was calculated using a point-by-point agreement method for each step of the task analysis. The percentage of agreement was calculated by dividing the number of agreements by the number of agreements plus disagreements and multiplying by 100 (Tawney & Gast, 1984). The interobserver agreement data were collected for approximately 20% of the sessions across conditions. The mean interobserver agreement percentages ranged from 83.3% to 100% across target-

learners and sessions and 75% to 100% across observational learners and sessions.

Verification of Independent Variable

Data were also collected on the instructor's delivery of specified instructional behaviors. These included: (a) modeling the first-aid procedure (i.e., completing 100% of the steps correctly) for the target learners; (b) conducting the practice with feedback stage (i.e., appropriate use of instructional cues, positive and corrective feedback, and prompts for specific attentional responses) with the target and observational learners; and (c) conducting the independent test (i.e., appropriate use of instructional cues) with the target and observational learners.

Percentages were determined by dividing the number of appropriate instructional behaviors by the number of inappropriate plus missed instructional behaviors and multiplying by 100. Data verifying the independent variable were collected during approximately 20% of the intervention sessions. The following agreement percentages were obtained: (a) 100% for modeling during the instructor model stage; (b) for the practice with feedback stage of training, 100% appropriate cues, praise, corrections, and prompts were exhibited by the instructor, while the observer provided 100% appropriate cues and prompts, 94.4% appropriate praise, and 83.3% appropriate corrections; and (c) 100% for appropriate cues exhibited by both the instructor and observer during the independent test.

Results

Baseline

Figures 1 and 2 display the number of task-analyzed steps that the target and observational learners completed correctly for seeking adult assistance when injured. None of the six children produced any correct responses during the baseline condition.

Direct Training and Observational Learning

Groups 1 and 3 exhibited immediate and rapid acquisition of the first-aid skill during the intervention. They averaged five sessions to achieve mastery (range = 4 to 7 sessions). Group 2 also acquired the skill, but required additional time.

Mary's (Group 2) performance during training was stable by the seventh session of the intervention. During practice with feedback, Mary consistently completed five of the task-analyzed steps correctly. Typically, she did not begin Step 1 following the instructional cue. After providing corrective feedback (i.e., verbal prompt with model when necessary) for Step 1, Mary correctly completed the rest of the steps. During the independent test, she also made no response after the instructional cue. Since no feedback was provided, Mary did not have an opportunity to complete any of the task-analyzed steps correctly. It appeared as though

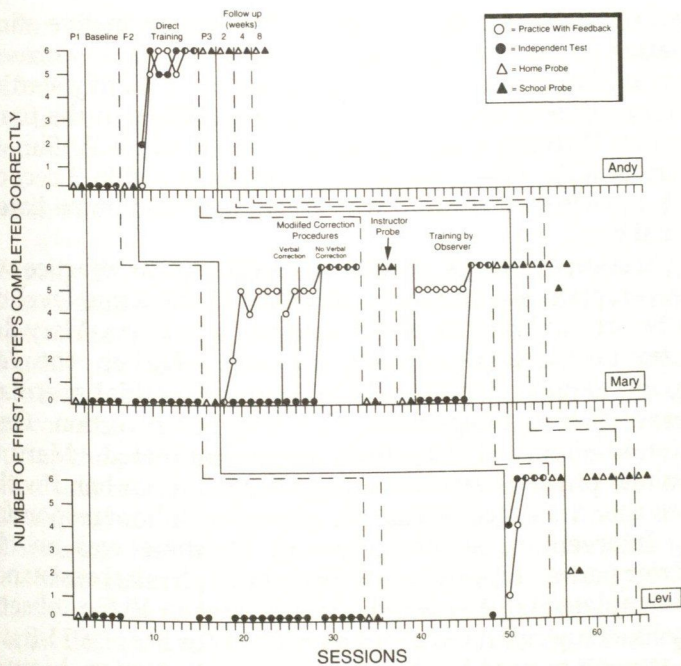


Figure 1. The number of steps completed correctly for the first-aid skill "seeking adult assistance when injured" across target learners.

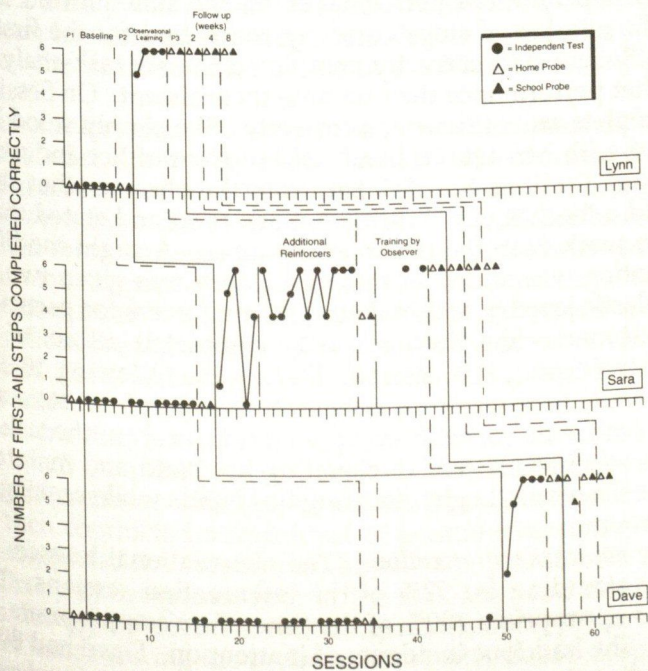


Figure 2. The number of steps completed correctly for the first-aid skill "seeking adult assistance when injured" across observational learners.

the corrective feedback was serving as the discriminative stimulus for the skill rather than the instructional cue. Therefore, the corrective feedback given to Mary during training was modified slightly starting on the eighth intervention session. Mary was provided with the first instructional cue (i.e., "Pretend I am not here. You cut yourself. Show me how to take care of it."). When she did not respond within 3 sec, corrective feedback (i.e., verbal correction) was given, followed immediately by the instructional cue.

During Session 8, Mary's performance during the practice with feedback stage dropped slightly, then returned to the same level of performance as before. In both the eighth and ninth sessions, Mary did not respond after the second instructional cue. Rather, she responded following the verbal correction. This confirmed initial speculation that Mary's responding was dependent on the verbal correction. On the 10th intervention session, verbal correction was eliminated. Mary was provided minimal physical assistance (e.g., touching her hand with a slight push) 3 sec after the instructional cue when she did not respond.

During Intervention Sessions 10 and 11, there was no change in Mary's performance. However, the amount of physical assistance she required to complete Step 1 was minimal for Session 10 (i.e., observer's finger gently touching her hand), and decreased for Session 11 (i.e., observer's hand moving toward her hand). By the 12th session, Mary correctly completed the six task-analyzed steps for both intervention stages (i.e., practice with feedback and independent test). Mary achieved mastery on the 14th session of the intervention.

Sara's (Group 2) initial performance on the skill showed a rapid increase in the number of steps correctly completed for the first-aid skill. By Session 3, Sara had correctly completed the six task-analyzed steps. However, her performance then became inconsistent. On Session 4, Sara did not complete any of the steps correctly. She simply stood looking at the observer with her injured hand held in front of her and made no response. Before Sessions 4 and 5, Sara told the observer that she did not want to find a teacher. On Session 6, Sara cried and stated that she did not want to work with the observer anymore. A slight modification of the intervention was added at this time. Sara was given two small objects (i.e., plastic jewelry and makeup) as reinforcers for participating instead of just one. She then correctly completed all six of the task-analyzed steps during this session. During the following 10 sessions of the intervention, Sara was very cooperative and did not state an unwillingness to work. She correctly completed four to six of the task-analyzed steps. Sara was inconsistent in elevating her hand and maintaining the elevation or she would begin elevating her hands while seeking a teacher in the classroom.

Observational learners' attending. The observational learners exhibited appropriate attending for 92% of the intervention sessions. Lynn's attending was appropriate 100% of the time. Sara's appropriate attending was 93.8%. She had four incidents of inattention. Dave had 80% appropriate attending throughout the intervention with three incidents of inattention.

Comparison of acquisition for target and observational learners. In Group 1, the observational learner (Lynn) acquired mastery three sessions before the target learner (Andy). In Groups 2 and 3, the observational learners (Sarah and Dave) acquired mastery after the target learners (i.e., Sarah--two sessions after Mary; Dave--one session after Levi).

Generalization Probes

P1. During the generalization probes completed at home and at school before baseline, none of the steps were completed correctly by any of the target or observational learners.

P2. During the generalization probes completed at home and at school at the end of baseline and before training, none of the steps were completed correctly by any of the target or observational learners.

P3. During the post intervention generalization probe, Groups 1 and 3 completed all six of the task-analyzed steps correctly at both sites. Mary (Group 2) did not complete any of the steps correctly in either the home or school settings. She made no response within 10 sec after the first or second instructional cue. Instead, Mary just stood looking at the observer with the injured hand held in front of her and made no response.

A reversal design was employed to analyze the discrepancy between Mary's performance during the independent test with the instructor and the generalization probe with the observer. The instructor conducted a second post intervention probe in both the home and school settings. Mary correctly completed all six steps at both sites. The observer then conducted a third post intervention probe with Mary. Once again, Mary did not complete any of the steps correctly at either site. Thus, it appeared that the discriminative stimulus for Mary's responding was the instructor.

Additional intervention sessions were then implemented with Mary, which included the following modifications: the observer delivered the intervention and Step 1 (i.e., Instructor Model) of the training procedure was withdrawn from the intervention. Mary's skill performance during the modified intervention was similar to her initial intervention performance with the instructor. She consistently made no response following the instructional cue. After minimal physical assistance was provided for Step 1, she correctly completed the rest of the steps. During the independent test, Mary also made no response following the instructional cue. The amount of physical assistance required slowly decreased (i.e., from observer's finger touching her hand to observer's hand moving toward her hand) over the next five sessions. On the eighth session of the modified intervention with the observer, Mary achieved mastery. The observer then conducted a fourth set of postintervention probes. Mary correctly completed the six steps of the task analysis at both sites.

Sara (Group 2) completed four of the task-analyzed steps correctly at both sites during the postintervention generalization probe. She did not elevate her hands during the probe at either site. Sara's drop in skill performance appeared to be a maintenance issue, due to the variability in her responding throughout most of the intervention. Therefore, an addi-

tional independent test was conducted by the instructor. Sara correctly completed the six steps of the task analysis in the classroom. The observer then conducted an independent test with Sara to determine if her drop in performance was controlled by situations in which the instructor was present. Once again, she correctly completed each of the task-analyzed steps.

Sara's high skill performance on the independent test with both the instructor and observer indicated that the previous generalization probe might have been spurious. (Perhaps due to the extremely cold weather at the time of the probe, it was possible that Sara rushed through the steps to get back inside.) Therefore, a second postintervention probe was conducted with Sara, in which the six steps were completed correctly at both sites.

Follow-up probes. During the 2-week follow-up generalization probe, Groups 1 and 2 completed each of the steps correctly at both sites. Levi (Group 3) completed two steps correctly at both sites. In both situations, Levi failed to cover and elevate the injury. Rather, he simply held the injured hand away from his body as he found an adult to show. Two additional generalization probes were conducted with Levi during the following week to determine whether his response on the first follow-up probe was skill deterioration or a result of other factors, such as cold weather conditions. In each of these probes, Levi correctly completed the six task-analyzed steps at both sites.

Dave (Group 3) completed five of the task-analyzed steps correctly on the playground at school. He initially elevated the injury, but dropped his hands when he went into the classroom to show a teacher. During the probe outside at home, Dave correctly completed the six task-analyzed steps.

During the 4-week follow-up generalization probes, each participant completed all steps correctly at both sites.

During the 8-week follow-up generalization probe, Andy (Group 1), Sara (Group 2), and Group 3 correctly completed the six task-analyzed steps at both sites. Lynn (Group 1) completed five steps correctly outside at home. He initially elevated the injury, but dropped his hands when he went into the house to show his mother. During the probe on the playground at school, Lynn correctly completed the six task-analyzed steps.

Mary (Group 2) correctly completed the six task-analyzed steps during the probe outside at home. She completed five steps correctly during the school playground probe, which was accidentally conducted without her glasses (i.e., Mary's glasses were broken that day). Mary failed to respond following the instructional cue and the observer inadvertently provided her with minimal physical assistance for Step 1. She then correctly completed the remaining steps of the task analysis. A second school probe was conducted the following week in which Mary was wearing her glasses and corrective feedback was not provided. She correctly completed the six task-analyzed steps at this time.

Discussion

In this investigation, 6 preschool children with disabilities learned to obtain adult assistance through either direct training or observation of a peer receiving that training. The results of this study suggest that the intervention increased the number of steps completed correctly for the first-aid skill "seeking adult assistance when injured" for all the participants (i.e., target and observational learners). In fact, 4 of the participants (Groups 1 and 3) acquired the skill in a relatively short period of time. More importantly, the skills generalized for all the participants to nontrained settings (school playground and home). In addition, the skill was maintained by all the participants with high accuracy (i.e., completing five to six steps correctly) over an 8-week period following the intervention.

This investigation represents a contribution to the limited literature on teaching young children basic first-aid skills by using preschool children with disabilities. Only two studies have targeted preschool children for first-aid training. The first investigation (Mori & Peterson, 1986) taught 30 preschoolers without disabilities in small groups how to treat a badly cut hand. The second investigation (Christensen et al., 1993) individually taught four preschoolers with disabilities to seek adult assistance when injured. It is important to teach preschool children with disabilities first-aid skills, given the results of the surveys conducted by Collins et al. (1991, 1992) and the high frequency of accidents that occur among this age group of children (American Academy of Pediatrics, 1989; Mori & Peterson, 1986).

This investigation also represents a contribution to the literature on observational learning in two areas. First, this study extends the limited literature on observational learning with preschool children with disabilities. Only three studies have involved preschool children with disabilities. In the first investigation (Schoen et al., 1988) eight preschoolers were taught how to wash their faces and get a drink from a water fountain. In the second investigation (Schoen & Sivil, 1989) eight preschoolers were taught how to make a snack and get a drink. The third investigation (Alig-Cybriwsky et al., 1990) focused on sight word acquisition by preschoolers. Second, while a number of investigations involving children with disabilities (ages 2 to 18 years) provide evidence that some observational learning occurs during small group instruction (Alig-Cybriwsky et al. 1990; Ault et al., 1990; Doyle et al., 1990; Griffin et al., 1992; Keel & Gast, 1992; Schoen et al., 1988; Schoen & Sivil, 1989; Wolery et al., 1991), this study suggests that through careful instructional programming, learning skills via observation might occur as rapidly as learning skills that are taught directly. Several variables included but not manipulated in this study may be critical to produce this result. These include: attentional prompts, specific motor or verbal attentional responses, feedback to the observational learners on their attention, and descriptive verbal feedback to target learners that focuses the observers' attention to critical features of the task. Additional research is needed to

determine how these procedures might enhance skill acquisition by peer observers.

An interesting result in this investigation involved the similarities in the target and observational learners' skill acquisition rate. In Groups 1 and 3, the target learners acquired the first-aid skill rapidly. Similarly, rapid acquisition of the first-aid skill was demonstrated by the observational learners in these groups. In Group 2, Mary (target learner) consistently needed correction initiating the first-aid sequence, while Sara (observational learner) experienced motivation and some skill acquisition difficulties. It is possible that Mary's reticence to begin the first-aid sequence contributed to Sara's motivation and skill acquisition difficulties. Future research should investigate whether the rate of skill acquisition by the observational learner is affected by the amount or type of feedback given to the target learner and the number of incorrect responses made by the target learner.

An important aspect of any simulation instructional program is asking the question, "Will the individual respond appropriately when the appropriate conditions are present in the real environment?" (Spooner, Stem, & Test, 1989). The mothers of two participants, Lynn and Sara, completed a checklist on real injuries. Lynn's mother completed the checklist when Lynn got a deep scratch with some bleeding across his chest by a sharp metal object in their kitchen. This injury occurred approximately 2 weeks after Lynn completed the intervention. She reported that Lynn used his hand and arm to cover the scratch, and kept it covered until he found her. Lynn showed his mom the scratch, then said he was hurt and needed some medicine. Thus, Lynn correctly completed all of the task-analyzed steps that were applicable (i.e., Steps 2 and 5 were not applicable, since the injury could not be elevated). Sara's mother completed the checklist when Sara received a deep cut on the index finger of her right hand while she was playing in their yard. This injury occurred approximately 8 weeks after Sara completed the intervention. She reported that Sara did not cover the injury, but kept it elevated until she found her. Sara showed her mom the cut, then said she was hurt and needed help. Thus, Sara correctly completed four of the task-analyzed steps for the first-aid skill. These findings add support to the generalization data reported by Marchand-Martella and Martella (1990) and Spooner et al. (1989).

Although there are a number of benefits in this investigation, several caveats exist, including methodological, content, and observational learning issues. The following pertain to methodological issues. First, an issue of stimulus control arises when one views Mary's data. Mary would not perform the requisite behaviors for the observer during the P3 generalization probe. The instructor conducted the next probe and Mary exhibited correct performance at school and at home. Then, the observer conducted another probe; again, Mary exhibited zero level performance. This series of manipulations indicated that the instructor was serving as an S^D for Mary's appropriate responses. Following this probe, the observer conducted training; on the seventh session, he became an S^D for appropriate behavior (he delivered praise for correct performance and

tangibles for participation). The observer continued to conduct the next four probes (through follow-up); therefore, we have decreased confidence in Mary's ability to respond in the presence of someone not involved in training.

Second, the observer was present during training sessions for interobserver agreement purposes and served as the primary rater for all generalization probe sessions. Therefore, the observer may have served as a cue for the target and observational learners' performance. However, many adults were present in the classroom including teachers, instructional aides, and parent volunteers, which may lessen the degree to which this observer influenced the children's performance.

Third, probing after daily training is a weaker test of learning than probing before daily training. Future investigations should explore this training alternative.

Fourth, long-term follow-up generalization probes (i.e., beyond 8 weeks) were not conducted due to the limited time available to conduct this study. Future research should investigate maintenance of the participants' performance over longer time periods.

Fifth, data on treating real injuries was only obtained on two participants, both of whom were observational learners. Future research should include more of this important generalization assessment across all participants when permissible.

Finally, only 6 participants were used in this investigation, which limits the external validity of the findings. Thus, replication across additional participants is warranted. Obtaining adult assistance for severe cuts was taught because of the severity of these injuries. However, participants were not taught to obtain help for other injuries (e.g., burns, bee stings, abrasions, nose bleeds). Training for other injuries is a content issue that future research should address.

The following issues deal with observational learning. In this study, variables to promote observational learning were included in training; however, their individual and combined effects were not examined. Future research should investigate the effects of these and other variables in enhancing observational learning. It would also be interesting to examine observational learning under different training conditions, such as directly training each group member on a different injury, training more complex behaviors, training with groups larger than two children, and training using different group configurations (e.g., two to two, cooperative tasks).

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