Video Modeling to Teach Social Safety Skills to Young Adults with Intellectual Disability

Corrine E. Spivey and Linda C. Mechling
University of North Carolina Wilmington

Abstract: This study evaluated the effectiveness of video modeling with a constant time delay procedure to teach social safety skills to three young women with intellectual disability. A multiple probe design across three social safety skills (responding to strangers who: requested personal information; requested money; and entered the participant’s personal space) and replicated across three participants was used to evaluate the effectiveness of the intervention and participants’ abilities to generalize the skills to in vivo community settings and across novel stimuli. Results indicate that the three participants learned and generalized their ability to verbally respond to perpetrators’ requests for money and personal information, but did not generalize their ability to physically respond to perpetrators entering their personal space.

Teaching personal safety skills to persons with intellectual disability is recognized as an important area of instruction (Dixon, Bergstrom, Smith, & Tarbox, 2010; Kim, 2010; Mechling, 2008). With increased independence and fading of adult supervision in community environments come increased safety risks (Purrazzella & Mechling, 2013) and concerns about these safety risks may interfere with caregivers willingness to support community independence (Purrazzella & Mechling, 2013; Taylor, Hughes, Richard, Hoch, & Rodriguez-Coello, 2004) if proper instruction is not provided. Personal safety skills addressed in the research with students with moderate intellectual disability have included: pedestrian and street crossing safety (Batu, Ergenekon, Erbas, & Akmanaglu, 2004; Branhman, Collins, Schuster, & Kleinert, 1999; Coles, Strickland, Padgett, & Bellmoff, 2007; Collins, Stinson, & Land, 1993; Matson, 1980; Page, Iwata, & Neef, 1976); fire and inclement weather safety (Coles et al.; Mechling, Gast, & Gustafson, 2009; Padgett, Strickland, & Coles, 2006; Self, Scudder, Weheba, & Crumrine, 2007); seeking help when lost in the community (Hoch, Taylor, & Rodriguez, 2009; Purrazzella & Mechling, 2013; Taber, Alberto, Hughes, & Seltzer, 2002; Taber, Alberto, Seltzer, & Hughes, 2003; Taylor et al., 2004); social safety skills - abduction prevention and responding to lures of strangers (Collins, Hall, Rankin, & Branson, 1999; Collins, Schuster, & Nelson, 1992; Gast, Collins, Wolery, & Jones, 1993; Gunby, Carr, & LeBlanc, 2010; Mazzucchelli, 2001); protection against abuse and victimization (Khemka, 2000; Khemka, Hickson, & Reynolds, 2005); home accident prevention and household safety (Collins & Griffen, 1996; Collins & Stinson, 1994-1995; Feldman & Case, 1999; Jones & Collins, 1997; O'Reilly, Green, & Braunling-McMorrow, 1990; Summers et al., 1992); and first aid skills (Christensen, Lignugaris/Kraft, & Fiechtl, 1996; Gast & Winterling, 1992; Ozkan, 2013).

Even though personal safety skills may not be used on a daily basis, they are critical when the need for their use occurs (e.g., escaping from a house fire, not walking in front of a moving vehicle). Although their use is critical, infrequent occurrence is of concern when teaching trials must be limited while waiting on natural opportunities to occur in order to practice the skills (Mechling, 2008). Further, practice of some personal safety skills (e.g., crossing dangerous pedestrian intersections) in a safe environment, prior to in vivo instruc-
tion, may be necessary. It is also recognized that personal safety skills must be generalized across settings and situations where they will be encountered and that programs need to evaluate generalization in natural settings if using simulation for instruction (Mechling 2008). In a recent review of the literature, Kim (2010) found that few studies used in-vivo assessment to measure generalization of personal safety skills to real life, community-based, situations and therefore, similarly to Dixon et al. (2010) recommended that more in-vivo assessments of generalization be used to evaluate effectiveness of instructional programs that target personal safety skills.

Interestingly, in spite of their recognized importance, few studies exist which have been conducted in the past 10-15 years to teach personal safety skills (Dixon et al., 2010; Kim, 2010, Mechling, 2008) and training of these skills appears to be a neglected area of instruction (Kim). Of particular interest is the application of new technologies that were not available in the late 1900s and early 2000s when the majority of the reported research occurred. One such technology is use of video instruction. Although limited in its evaluation to teach personal safety skills, use of video instruction provides a means to create realistic teaching scenarios in a simulated environment (Branham et al., 1999; Gunby et al., 2010; Mechling et al., 2009; Purrazzella & Mechling, 2013; Tiong, Blampied, & Grice, 1992).

Video technology is a possible way to provide realistic examples of unsafe stimuli (Mechling 2008) and multiple views of situations that cannot be efficiently created in real life situations (Self et al., 2007). For example, while it may be time consuming to travel to multiple pedestrian intersections for in vivo instruction, video models can provide a variety of scenarios with repetitive teaching trials per scenario. The purpose of the current study was to evaluate use of video modeling to teach social safety skills. Social safety skills for this study were defined as reactionary measures to escape from or end a dangerous situation when it was occurring (Mechling, 2008) and the skills included responding to strangers who: a) requested personal information; b) requested money, and; c) entered the participant’s personal space (e.g., sat too close on a public bus). In addition, a second important research question addressed by the study was whether participants would generalize the skills to naturally occurring scenarios in the community.

The current study further evaluated generalization of social safety skills to real life scenarios without the instructor or any adult, familiar to the participant, being present. In the limited number of studies evaluating generalization of personal safety skills, none were identified in which the researcher or familiar adult was not present. Without this measure, Summers et al. (2011) recognized the uncertainty of whether participants would respond safely without the presence of the investigator and Purrazzella and Mechling (2013) recommended that participants in future studies should travel alone, with no familiar adult present, to evaluate use of a smartphone when lost in the community.

The primary research questions for the current study were: 1) Will video modeling be effective in teaching social safety skills to three young adults with intellectual disability? and; 2) Will participants generalize their behaviors to real life scenarios without the accompaniment of a familiar adult?

Method

Participants

Three females with mild to moderate intellectual disability participated in the study. All were enrolled in a county-funded school system transition program for young adults. The program had three locations and the participants attended the program located on a university campus. Participants were identified by their teacher as students who traveled alone using public transportation and were or would be competitively employed, thus increasing their potential risk for facing socially dangerous situations. Teresa and Lacy had previous experience with video technology and had participated in a prior study evaluating video prompting to complete leisure skills (Ivey, Mechling, & Spencer, 2015).

Teresa was 21 years and 9 months old with a diagnosis of moderate intellectual disability and cerebral palsy with left hemi-plegia. Her full scale IQ score on the Wechsler Intelli-
gence Scale for Children – Fourth Edition (WISC-IV; Wechsler, 2003) was 45. Measures for adaptive behavior skills could not be located in her permanent record. She read store flyers and simple grocery lists when shopping in the community and used picture and context cues to aid her reading. She cooked with familiar text-based recipes and prepared simple foods without recipes. She recognized buses and their arrival and departure times. She wrote her first and last name in cursive letters and wrote 3-4 word sentences describing her duties while working on spelling words exceeding one syllable. Teresa completed job applications and used a visual model for writing answers to questions such as providing personal references. She used a calculator to add multiple purchases and used the next dollar strategy when paying for items over $10. She was considered a leader in her school program and other students looked up to her. Along with being a leader, she needed reminders that she was a student and not an authority figure to other students. She did not always recognize consequences of her decisions such as trusting others and interacting with males. She was learning to be more responsible for herself and getting to bed and waking up on time in order to get to her job at a hair salon. She carried emergency contact numbers and a bus card with route numbers. She also had contact numbers in her cell phone. She enjoyed social gatherings with peers and independently took the city bus to her job and to her mother’s place of employment.

Lacy was 21 years and 11 months old with a diagnosis of intellectual disability and ADHD. Her full scale IQ score was 54 on the Wechsler Intelligence Scale for Children – Fourth Edition (WISC-IV; Wechsler, 2003). Her composite score on the Adaptive Behavior Assessment System – Second Edition (Harrison & Oakland, 2000) was 72. She read and followed a daily agenda, read restaurant menus, safety signs, grocery store signs, bus schedules and familiar recipes for meal preparation. She used a computer to locate sale advertisements and read newspaper articles. She wrote grocery lists and was working on nutritional meal planning. She completed job applications with a visual model for more difficult questions and filled out demographic information independently. She wrote and utilized a shopping list to shop and gave cashiers money using the next dollar strategy for amounts over $50. She answered the phone and took messages, but did not own a cell phone. She was encouraged to use a quieter voice when talking and to reduce blaming peers for inappropriate situations as well as increasing telling the truth when describing these situations. Her personal hygiene was improving since becoming employed at Walmart as a store greeter. She enjoyed basketball, using the internet, and listening to music. She traveled alone to places such as the mall using the city bus.

Kimberly was 21 years and 1 month old with a diagnosis of intellectual disability and a seizure disorder. Her full scale IQ score was 59 on the Wechsler Intelligence Scale for Children – Third Edition (WISC-III; Wechsler, 1997). Her composite score on the Vineland Adaptive Behavior Scales (Sparrow, Balla, & Cicchetti, 1984) was 68. She read restaurant menus, recipes, and shopping lists using assistance with pictures. She wrote her first and last name in cursive and was learning to complete demographic information on job applications. She had fine motor delays which affected her writing and had double knee replacements which limited walking long distances. She read a calendar for information and used a personal daily calendar for tracking daily activities. She counted coin combinations with pennies plus nickels and dimes, but was learning to use the next dollar strategy when paying at the cash register. She followed step by step directions from a work list, but needed to increase her initiation of tasks. She volunteered at a day care and thrived when helping with smaller children. She also liked caring for small animals. She displayed social behaviors appropriate for her developmental level and was polite to adults, but had difficulty with peer relationships and frustration. She went into the community in small groups and traveled throughout the community on the city bus with other students. She utilized pedestrian safety skills in familiar settings. She needed to increase her volume when speaking as she often displayed inaudible speech. She enjoyed dancing, vacuuming, and making loom bracelets.
Video modeling sessions took place in different university classrooms using a portable Lenovo B560 laptop computer. The instructor worked individually with each participant up to three days per week. During video modeling sessions the instructor sat next to the student and advanced the Power Point slides to the next video scenario or to deliver the controlling video prompt. Baseline probe and generalization settings were conducted in various community settings within the university campus or nearby neighborhoods. These sessions took place in locations where participants: a) used the university bus system (on the bus, various bus stops); b) ate at various cafeterias, restaurants, and snack bars and: c) used the library, game rooms, book stores, and recreational facilities.

Social Safety Skill Scenarios and Equipment

Social safety skills were taught using video modeling presented on a laptop. Video captions of a “victim” and a “perpetrator” were made using a Sony Digital HandyCam Camera Recorder and converted into high definition video using Windows Live Movie Maker. Each scenario was saved as a Windows Media Audio/Video file and inserted onto a separate Power Point slide. Three sets of scenarios were targeted for intervention: (a) perpetrator asking for personal information (e.g., “Where do you live?”); (b) perpetrator asking for money (e.g., “Can I borrow a couple of dollars for the shelter?”); and (c) perpetrator entering the victim’s personal space (e.g., sitting too close at a bus stop bench so that the perpetrator’s body is touching the victim’s body). Within each set of scenarios, three different types of question/proximity examples and responses were videotaped and used for instruction [e.g., requests for money for: (a) bus fare; (b) food; and (c) shelter] and within each of the three different types of questions, three different variations of the question were provided (e.g., (a) “I need money for the bus”; (b) “Can you loan me money for the bus?”; and (c) “Do you have money for the bus?”). A complete list of the scenarios, question types, variations and responses are listed in Table 1. Three scenarios were used in order to meet the requirements of the multiple probe research design and to target the types of social safety situations frequently encountered in the community. Multiple examples of each scenario and variations of questions/proximity examples and answers were used in an effort to target the multiple forms of questions/proximity examples the participants might encounter in the community and the different responses that would be appropriate. Videotaping and assessments also occurred at multiple locations in the community (e.g., bus stop in front of the Education Building, riding the bus, bus stop at the Hawk’s Nest restaurant). In addition, when assessing for generalization at community sites, one novel type of question/proximity example, with three variations, were tested for each scenario in order to evaluate stimulus generalization (Table 1). These examples were not used during video modeling instruction.

For each video scenario, the model perpetrator approached the model victim (first author) and asked a question or entered her personal space. The model victim then verbally responded or physically moved according to the scenario and example (Table 1). Multiple model perpetrators were used during the videotaping and included both males and females. Video clips ranged from 4s to 20s in duration.

Experimental Design

A multiple probe design across three sets of scenarios and replicated across three participants was used to evaluate participants’ abilities to verbally or physically respond to social safety questions and personal space issues (Gast, Lloyd, & Ledford, 2014). This design was used in order to demonstrate a functional relationship between the intervention (video modeling with a constant time delay procedure) and subsequent changes in students’ verbal and physical responses to social safety scenarios. The study included three conditions: (a) in vivo baseline probes at community sites; (b) video modeling with constant time delay: 0s time delay non-intermixing of different types of question/proximity examples; 3s time delay non-intermixing of different types of question/proximity examples; 3s time delay intermixing of different types of
<table>
<thead>
<tr>
<th>Scenario</th>
<th>Response</th>
<th>Setting Used for Videos</th>
<th>Generalization</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Set 1:</strong> Requests for Personal Information</td>
<td>Live→Response: That is personal</td>
<td>Video location: Campus Bus Stop</td>
<td>Sitting too close→Response: Slide over</td>
</tr>
<tr>
<td>Video 1:</td>
<td>Where do you live?</td>
<td>Video location: Campus Bus Stop</td>
<td>Sitting too close on the bus</td>
</tr>
<tr>
<td>Video 2:</td>
<td>What is your address?</td>
<td>Video location: Campus Bus Station</td>
<td>Video location: Campus Bus Stop</td>
</tr>
<tr>
<td>Video 3:</td>
<td>Where is your house?</td>
<td>Video location: Campus Student Union</td>
<td>Sitting next to at the bus stop</td>
</tr>
<tr>
<td><strong>Set 2:</strong> Requests for Money</td>
<td>Number→Response: I don’t give that information</td>
<td>Video location: Outside of Campus Dining Hall</td>
<td>Sitting too close on the bench</td>
</tr>
<tr>
<td>Video 1:</td>
<td>What is your number?</td>
<td>Video location: Inside Einstein’s Bagel on Campus</td>
<td>Video location: Bench outside of Campus Dining Hall</td>
</tr>
<tr>
<td>Video 2:</td>
<td>Can I get your number?</td>
<td>Video location: Outside of Campus Dining Hall</td>
<td>Sit with you→Response: Move to a new table</td>
</tr>
<tr>
<td>Video 3:</td>
<td>What is your phone number?</td>
<td>Following too closely down an aisle</td>
<td>Video location: Table Campus Dining Facility</td>
</tr>
<tr>
<td><strong>Set 3:</strong> Entering Personal Space</td>
<td>Name→Response: I’m sorry, I don’t know you</td>
<td>Following too closely in open area/atrium</td>
<td>Sitting with them at a table in a cafeteria</td>
</tr>
<tr>
<td>Video 1:</td>
<td>What is your name?</td>
<td>Video location: On the Sidewalk outside of Campus Dining Hall</td>
<td>Video location: Table Campus Dining Hall</td>
</tr>
<tr>
<td>Video 2:</td>
<td>You got a name?</td>
<td>Video location: Hallway inside School of Education Building</td>
<td>Following you→Response: Take 2 steps sideways</td>
</tr>
<tr>
<td>Video 3:</td>
<td>What do you go by?</td>
<td>Video location: Hallway inside School of Education Building</td>
<td>Video location: Aisle in Lowes Food Grocery Store</td>
</tr>
<tr>
<td><strong>Novel Questions:</strong> Birthday→Response: Generalize</td>
<td>Baby→Response: Generalize</td>
<td>Following too closely down a sidewalk</td>
<td>Video location: Sidewalk outside Campus Dining Hall</td>
</tr>
<tr>
<td>1</td>
<td>How old are you?</td>
<td>Can I borrow a couple of dollars to get into the shelter?</td>
<td>Following too closely in open area/atrium</td>
</tr>
<tr>
<td>2</td>
<td>Are you 21?</td>
<td>Video location: Campus Bus Stop</td>
<td>Video location: 2nd Floor Atrium of the School of Education Building</td>
</tr>
<tr>
<td>3</td>
<td>When is your birthday?</td>
<td>My baby is sick can I have some money for medicine?</td>
<td>Stand too close→Response: Generalize</td>
</tr>
<tr>
<td></td>
<td></td>
<td>My kids are hungry do you have any spare change?</td>
<td>Stand too close at a store checkout</td>
</tr>
<tr>
<td></td>
<td></td>
<td>My baby is tired can we have some money to get into the shelter?</td>
<td>Stand too close at a bus stop</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Stand too close down an aisle</td>
</tr>
</tbody>
</table>
question/proximity examples; and (c) in vivo generalization probes at community sites. Video modeling was implemented for the first set of social safety skills after the participant’s data showed stable or a decreasing trend across four sessions. Introduction of video modeling was staggered across three social safety skills and a participant’s progression across scenarios was independent of other participants. The order of the social safety skills was alternated across the participants. Criteria for starting a new social safety skill was set at 100% independent correct responding across three sessions when the different types of question/proximity examples were intermixed. Upon mastery of a set of social safety skills, video modeling was withdrawn and four generalization sessions in the community were conducted. Subsequent community generalization probes of mastered social safety skill sets served as maintenance data for the first two sets of skills.

**Dependent Measures and Data Collection**

During baseline probes, video modeling, and generalization probes in the community data were collected on each participant’s ability to verbally respond to perpetrator questions (requests for personal information; requests for money) or physically move away (entering personal space) from the perpetrator. Correct answers and physical movement are described for each set of skills in Table 1. During video modeling an unprompted correct response (anticipation) was defined as verbally answering the question (e.g., “I don’t have any money”) or verbally describing the physical movement (e.g., move to a different table) within 3s of the question or physical movement of the perpetrator presented on the video model. A prompted correct response was defined as verbally answering the question or verbally describing the physical movement after waiting 3s and watching the video model of the correct response (first author saying the correct response to the perpetrator or moving away from the perpetrator). An error or incorrect response was defined as either: (a) an incorrect response before the video model; an incorrect response after the video model; or (b) no response after the video model. Only unprompted correct responses (anticipation) counted towards criteria.

During in vivo baseline and generalization probes, no prompts were provided. Therefore a correct response was defined as verbally answering the question or physically moving away from the perpetrator within 3s of the perpetrator’s question or physical movement into the participant’s personal space. An error or incorrect response was defined as either: (a) verbally making an incorrect statement or physically moving in the wrong direction; or (b) failure to say anything or move in any direction.

**Procedure**

In Vivo Probe 1 (Baseline). Prior to beginning video modeling, each participant was taken to community settings to evaluate her ability to respond to social safety skill situations. During baseline probe sessions participants were brought individually to three different areas of a university campus (Table 1) during each session. At each location a different perpetrator (volunteers secured by the investigators) approached the participant and asked the first question or entered the participant’s personal space from the first example of each of the three social safety skill sets (e.g., “Where do you live?”; “I need money for the bus”; sitting too close on the bus). During the second session of the baseline probe, participants were brought individually to three areas of the university campus different from the first session (Table 1) and were approached by three different perpetrators who asked the second question or entered the participant’s personal space from the first example of each of the three social safety skill sets (e.g., “What’s your number?”; Do have money; I’m hungry?; sitting with the participant at the restaurant table). This process continued on the third session whereby questions and personal space were targeted from the third questions/personal space of each social safety skill set. On the fourth session the questions and personal space examples were from the novel examples not depicted in the video models (e.g., “How old are you?”; “Can I have some money to buy medicine?”; Standing too close to the participant at a checkout line.

At each location, the instructor directed the
participant to the next location (i.e., “Go and wait for the bus and I will catch up with you”; “Go ahead and find a table while I go to the restroom”) and then waited in an area out of the view of the participant and waited until the perpetrator had approached the participant and left. At that time the instructor walked up to the participant, but did not comment on the perpetrator. If the participant made a statement about the perpetrator the instructor re-directed the participant to the activity or provided a vague statement such as “I’m not sure”.

Because the instructor could not hear the participant’s response, the perpetrator recorded the response after leaving the area and also recorded the session on his or her smartphone for reliability measures.

After criteria was reached for responding to one set of social safety skills, probe sessions were again conducted to evaluate the participant’s ability to respond to social safety skill situations not yet introduced through video modeling. These sessions served as generalization measures for mastered sets.

**Video Modeling with Constant Time Delay**

Social safety skills were taught individually using video models of the instructor and different actors who portrayed the perpetrators. The video models were presented using the constant time delay (CTD) procedure and participants were taught to verbally respond to three common types of scenarios. Three sets of scenarios were targeted for intervention: (a) perpetrator asking for personal information (e.g., “What is your address?”); (b) perpetrator asking for money (e.g., “Do you have any spare change for food?”); and (c) perpetrator entering the victim’s personal space (e.g., following too close in a store aisle).

**0s Time delay.** For the first session of each newly introduced set of social safety skills, the instructor turned on the laptop and advanced the Power Point program to the first slide which showed the perpetrator asking a question or entering the instructor’s personal space immediately followed by the instructor’s response (0s delay). Three different examples of the targeted social safety skill were provided with three different responses (Table 1). In addition, three variations of each question/personal space were provided for each of the three different examples for a total of nine trials. The nine trials were then repeated for a total of 18 trials per session. Sessions remained at a 0s delay until the participant responded 100% correct after the video prompt.

**3s Non-intermix time delay.** A 3s delay was then introduced, whereby the instructor paused the video for 3s after the perpetrator asked a question or entered the instructor’s personal space. If the participant did not respond correctly within 3s the instructor played the remainder of the video which modeled the correct response. During these non-intermixed sessions, the three variations of each question type (e.g., requests for money for the bus: “I need money for the bus”; “Can you loan me money for the bus?”; “Do you have money for the bus?”) were presented sequentially. The nine trials were then repeated for a total of 18 trials per session. Sessions remained at 3s non-intermixed until the participant responded 100% correct for one session with the exact response for that type of question (e.g., “No, sorry.”).

**3s Intermix time delay.** The non-intermixed sessions were followed by 3s intermix sessions whereby all three question types and variations (9 total) were presented out of sequence (e.g., “Where is your house?”; “What’s your phone number?”; “What’s your name?”). During these sessions the instructor again paused the video for 3s after the perpetrator asked a question or entered the instructor’s personal space. If the participant did not respond correctly within 3s the instructor played the remainder of the video which modeled the correct response. The nine trials were then repeated for a total of 18 trials per session. Sessions remained at 3s intermixed until the participant responded 100% correct for three sessions using any of the three responses taught for that social safety skill scenario (e.g., “That is personal”; “I don’t give out that information”; “I’m sorry, I don’t know you”).

**In Vivo Generalization Probe**

After a participant met criteria for the video modeling condition with a set of social safety skills, the participant returned to the community settings represented in the video models for three sessions. The fourth sessions of gen-
eralization probes was conducted with three novel questions/personal space examples not depicted in the video models to test for stimulus generalization. The procedures used during the generalization probes sessions were conducted identically to those used during the baseline probe sessions and served as probe sessions for sets not introduced to video modeling.

During the In Vivo Probe 2 condition, sessions were conducted at the sites corresponding to the second variation of each question or personal space example (e.g., Session 1: “What’s your address?”; “Can you loan me money for the bus?”; Sitting too close on the university shuttle; Session 2: “Can I get your number?”; “I need a dollar for lunch”; Sitting with the participant at the food court; and so forth). This pattern of variation of questions continued with In Vivo Probe 3 and during In Vivo Probe 4 the questions and person space examples were identical to those used for In Vivo Probe 1.

Generalization sessions conducted during In Vivo Probe 3 were used to measure maintenance of skills for Set 1 and sessions conducted during In Vivo Probe 4 were used to measure maintenance of skills for Sets 1 and 2 for each participant.

Social Validity
Informal interviews were held individually with the three participants regarding their comfort level in dealing with strangers who might ask them for money etc. and whether they found the video models to be helpful in teaching them these skills. Teresa reported that she wasn’t as afraid to go out by herself on the bus after watching the videos and Lacy said, “No one should mess with me now.” She also said that she liked to watch the investigator in the videos to show her what to do. Kimberly did not appear to understand the question about the strangers, but said, “I think so.” She said that the video models were fun to watch and that she learned from them, “Not to tell strangers anything.”

Interobserver Agreement and Procedural Integrity
During the video modeling condition, interobserver agreement and procedural integrity data were assessed simultaneously by the second investigator on 29.4% of the sessions. Agreement was calculated on a session-by-session basis by comparing both investigators’ data regarding the participant’s response and dividing the number of agreements by the number of agreements plus disagreements and multiplying by 100 (Ayres & Ledford, 2014). Resulting mean inter-observer agreement ranged from 83.3%-100% with a mean agreement of 98.3% across all participants. Mean inter-observer agreement was 100% for Lacy, 99.1% for Teresa, and 96.5% for Kimberly. Investigator behaviors measured for obtaining procedural integrity were: (a) advancing the Power Point slides; (b) pausing the video; and (c) delivering the video prompt after 3s. Procedural integrity was calculated to be an average of 99.7% with a range of 98.1%-100%. Errors occurred when the investigator played an extra slide (extra trial), failure to pause the video, and when the program froze and did not advance to the next slide.

During the in vivo probe sessions, interobserver agreement and procedural integrity data were collected 68% of the time. To measure interobserver agreement, data were collected using a voice recorder application on a Samsung Galaxy S5 smartphone since the investigator was not present when the perpetrator approached the participants. Resulting mean inter-observer agreement was 100% across all participants.

Procedural integrity data were collected by the investigator on whether the perpetrator was in the correct location and asked the correct questions (determined by the video recordings). Procedural integrity was calculated to be 100%.

Results
Figures 1-3 present performance data for each participant across all of the study’s conditions. During the first probe (baseline) condition in the community, Teresa was the only participant who completed correct behaviors in response to the perpetrator. For sessions evaluating the perpetrator entering her personal space she moved over on the bus when the perpetrator sat too close to her (Session 1) and moved to the side when the perpetrator followed her too closely in the aisle (Session 3).
Lacy and Kimberly did not appear to acknowledge the perpetrator entering their personal space and none of the students responded to questions by the perpetrator during the baseline condition. Instead they either stood and stared at the perpetrator or provided him/her with personal information (e.g., “My name is Lacy.”). None of the participants gave the perpetrator money.

When using video modeling with a constant...
time delay procedure, all participants reached criteria in a relatively short amount of time. Kimberly required 6-7 sessions across all three social safety skill sets including 0s, 3s without intermixing, and 3s with intermixing procedures. Lacy likewise required 5-7 sessions to reach criteria across the video modeling instructional sessions. Teresa’s first set of social safety skill scenarios involving a perpetrator asking for money required multiple sessions for her to reach criteria. Even when the questions were not intermixed she required seven
sessions to reach 100% correct responding. Similarly, when the variations of questions were mixed her performance dropped to 77.8% and she required eight sessions to reach criteria. Her ability to master the personal space and personal information scenarios showed much improvement with only five sessions needed to reach criteria for the personal space scenarios and eight sessions for answering requests for her personal information.

Generalization. All three participants generalized and maintained (where measured) their performance to community settings for the social safety skills of verbally responding to requests for money and personal information. Teresa was the only participant who made an error during the first generalization probe condition following mastery of a set. She failed to answer correctly during the third generalization session when the perpetrator said, “I need a place to sleep, can I have some money?” She did respond by saying, “No”, but this response was not one taught for this set during video modeling. Both Teresa and Lacy maintained their ability to answer questions correctly in the community for sets evaluated and although Kimberly failed to respond to the question, “Where do you live?” during the first session of Probe 4 (maintenance) she

![Graph showing percentage of correct responses by Kimberly](image-url)

Figure 3. Percentage of correct responses by Kimberly (closed squares represent generalized performance across stimuli (questions and personal space) not depicted in video models.)
responded correctly to the personal information questions during the last three sessions. All three participants responded correctly (by stating one of the three acceptable responses within a set) to personal information questions and requests for money during novel scenarios not presented in the video models.

Interestingly, none of the participants responded consistently correct when the perpetrator entered their personal space in the community. Kimberly responded correctly during the first session of In Vivo Probe 2 and 3, but failed to maintain her performance during the last probe condition. Teresa responded correctly during two of the four sessions immediately following mastery of the skill, but did not respond correctly during the last three sessions of the last probe (maintenance) condition. The personal space scenarios were the last set taught to Lacy so only one generalization probe condition was implemented. She did not respond correctly to any of the sessions following mastery of the skill with video modeling.

Discussion

This study extends the literature on teaching personal safety skills to persons with intellectual disability by demonstrating that video modeling can be effectively used to teach social safety skills in a simulated environment. Social safety skills requiring a verbal response by the participants were generalized to untrained environments and stimuli and maintained over time.

The remaining question is why the participants did not generalize the response to perpetrators entering their personal space in the community. The answer is likely due to a limitation of the study. Although the participants were able to verbally describe what they should physically do (e.g., “Move to another table”) in response to watching the video models physically perform the responses, they never physically engaged in the response during video modeling. It appears from the data that describing these movements was even easier for them to acquire than learning the three verbal responses required when perpetrators asked for money or personal information during video modeling. Most likely this was due to the difference in response require-ments between the video modeling and generalization conditions. In order to promote generalization of skills it is important that responses share common physical characteristics similar to those used during teaching (Albin & Horner, 1988). During video modeling, participants verbally responded and during in vivo generalization they were expected to make a gross motor response which did not consistently happen. The results appear to support the findings by Kim (2010) whereby the ability to perform skills in role play situations did not necessarily ensure their performance in applied settings and by Mechling (2008) who reported that a key component, when teaching safety skills was behavioral performance of the skills. Future research using video modeling, in which a physical response is required to social dangers such as responding to the lures of strangers or someone entering the person’s personal space, should consider use of role playing in the simulated environment so that the participants physically rehearse what they see on the video.

The current study adds to the literature by evaluating use of social safety skills in real life situations without the presence of an investigator. Future research may need to evaluate generalization of social safety skills, such as the ones used in the current study, when the participant is traveling completing alone without the investigator being present at any time. Although the investigator in this study was not with the participants when the perpetrator approached them, she did travel with them to different locations along the way during the generalization sessions. This may have provided a sense of security or influenced the participants’ behaviors in some way than if they were totally traveling alone. The design of the study also required that the participants be approached by multiple perpetrators during each in vivo community session. Realistically this would not likely occur in real life situations unless the participant was involved in activities in a particularly unsavory locale.

Despite the limitations, this study highlights an intervention strategy, video modeling, for teaching safety skills that may not convincingly be simulated by other means or practically taught through real life scenarios that may infrequently occur or take place in unsafe situations. As we continue to recognize that
persons with intellectual disability have the right to increased independence and mobility which therefor leads to increased risks, it is important that means for responding to these risks be systematically taught. As stated by Taylor et al. (2010) in response to their own study examining abduction prevention strategies among students with autism, perhaps the current study will contribute toward an increase in attention to effective technologies for teaching safety skills to persons with disabilities.

References


Received: 19 March 2015
Initial Acceptance: 28 May 2015
Final Acceptance: 28 July 2015