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Using Behavioral Skills Training to Teach Children with Autism to Seek Help from Law Enforcement Officers When Lost

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Using Behavioral Skills Training to Teach Children with Autism to Seek Help From Law Enforcement Officers When Lost

By

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Using Behavioral Skills Training to Teach Children with Autism to Seek Help From Law Enforcement Officers When Lost

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Abstract

Children with Autism Spectrum Disorder (ASD) are at an elevated risk of becoming lost in situations due to running away or wandering behaviors. When children with ASD become lost it may be difficult for them to effectively and efficiently seek help from community helpers in a safe manner due to communication deficits and poor social skills. This study aims to teach children with ASD how to identify when they are lost and how to seek help from police officers in the community by vocalizing the problem and using a communication card. Generalization probes were conducted with three children diagnosed with ASD before and after behavioral skills training (BST) to determine mastery of help seeking behaviors. Remedial BST and in situ trainings were used to increase generalization. Two of the three participants were able to independently seek help from a confederate law enforcement officer and one participant required a gestural prompt.

Keywords: BST, law enforcement, help seeking, lost identification

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Introduction

The core symptoms of autism spectrum disorder (ASD) in children include communication deficits, and poor social interactions with hyper- or hyporeactivity to sensory inputs (American Psychiatric Association, 2013). Forty-nine percent of children with ASD attempt to run away from a safe location at least once by the age of 4 (Anderson et al., 2012). Running away can be very dangerous for the child and stressful for the family system. Communication and social deficits may result in an inability to independently request or accept assistance from community helpers, such as law enforcement, after running away from a safe space. Behavioral analytic approaches have been used in the literature to teach children with ASD to seek help from community members when lost in public (Bergstrom, Najdowski, & Tarbox, 2012; Carlile, DeBar, Reeve, Reeve, & Meyer, 2018; Pan-Skadden et al., 2009; Taylor, Hughes, Richard, Hoch, & Rodriquez Coello, 2004). Law enforcement officers are an important first point of contact for children with ASD and typically developing children as they are trained and trusted in crisis situations (Compton et al., 2014). For this reason, training needs to be done to teach children with ASD to effectively respond to and communicate with community helpers, such as law enforcement officers. The interactions that children with ASD have with law enforcement officers is an important area of study moving forward (Archer & Hurley, 2013). This study aims to use a behavioral analytic approach to teach children with ASD to appropriately and effectively seek help from law enforcement officers when lost in public.

Interactions with Law Enforcement Officers for children with ASD

Recent reports indicate the rate of violent crime against people with disabilities is twice as high compared to crimes against people with typical development, however, there continues to

be a gap in the literature on how to teach appropriate interactions involving children with autism and law enforcement officers (Cheeley et al., 2012; Teagardin, Dixon, Smith, & Granpeesheh, 2012). A common parent concern is how a child with ASD will behave in an interaction with a law enforcement officer and how the law enforcement officer will respond to the child's behavior. According to Rava, Shattuck, Rast, and Roux (2017), 20% of youth with ASD are stopped by law enforcement by the age of 21. The social deficits many children with ASD exhibit may come off as engaging in non-compliance towards law enforcement (Dogan et al., 2017). Without proper officer and child training, these interactions have the likelihood to be poor if the child is displaying emotional or behavioral outbursts and is unable to identify themselves as an individual with ASD. Proper officer trainings could be those that lead to officers identifying individuals with ASD and lead to understanding of effective communication with individuals with ASD. These results should also be maintained over time and training refreshers should be implemented in order to increase maintenance.

Although there are reports of officer trainings for working with people with special needs, there have only been a few studies to show their benefit (Bailey, Barr, & Bunting, 2001; Teagardin et al., 2012). These studies have shown an increase in awareness and identification of individuals with special needs but failed to show maintenance of the trained skills (Bailey et al., 2001; Teagardin et al., 2012). In another study conducted by Tint, Palucka, Bradley, Weiss, and Lunsky (2017), parents of 284 adolescents and adults with ASD were asked to describe police interactions with their child and their satisfaction with the police involvement over a 12-18-month period. It was reported 16% of those sampled had an interaction with an officer. The primary reason for the officer interaction was due to aggressive behavior. Part of the reason individuals with ASD engage in aggressive behaviors can be attributed to their deficits in

communication (Carr & Durand, 1985). According to this study, individuals with ASD that have interactions with officers are more likely to have a history of aggression, live outside the home possibly receiving group home services, and have a parent with high caregiver strain. Additionally, individuals with more police interactions are less likely to be able to afford services and they are less likely to have structured daily activities. Police involvement was reported to increase agitation in approximately 32% of interactions or have no effect in 17% of interactions in the given study (Tint et al., 2017). This is a concerning statistic as officers should have appropriate training to deescalate the situation. One possible way to combat this and the fear of negative interactions with law enforcement officers is to reinforce children with ASD to have positive interactions with law enforcement by teaching them who law enforcement officers are, how officers can help them and giving the children a way to appropriately communicate their diagnosis and their need for help. This could be done by examining the behavior analytic literature on teaching safety and community skills.

Behavior analytic approach to teaching safety/community skills to individuals with developmental disorders

Behavioral analytic approaches are commonly used to teach safety skills to individuals with developmental disorders, particularly children with ASD. These skills include help-seeking behaviors when lost (Bergstrom et al., 2012; Carlile et al., 2018; Hoch, Taylor, & Rodriguez, 2009; Pan-Skadden et al., 2009; Purrazella & Mechling, 2013; Taber, Alberto, Seltzer, & Hughes, 2003; Taylor et al., 2004), preventing gun play (Himle, Miltenberger, Flessner, & Gatheridge, 2004), enhancing fire safety (Garcia, Dukes, Brady, Scott, & Wilson, 2016) and teaching abduction prevention (Bergstrom, Najdowski, & Tarbox, 2014; Gunby & Rapp, 2014;

Ledbetter-Cho et al., 2016). Training safety skills using a behavioral analytic approach commonly utilizes a number of different procedures.

For example, Rodriguez, Levesque, Cohrs, and Niemeier (2017) used an interrupted chain procedure in a multiple probe design to teach three children with ASD or pervasive developmental disorder to request help from others with difficult tasks. Preassessments were conducted to determine fine motor capabilities similar to the behavioral chains used later in the general procedures (e.g., operating scissors). Pre-test probes were conducted once or twice per clinic appointment with a total of 12 trials per session with 6 being capable trials and 6 being incapable trials. During incapable trials, an interrupted chain procedure was used to manipulate the materials so one link of the behavioral chain could not be completed without assistance, capable trials were identical to incapable trials but all parts of the behavior chain could be completed without assistance. During probe sessions, help was given upon request but no other reinforcements were offered. Teaching began with a 5s prompt delay to attempt the task before a partial physical prompt and a 0s prompt delay to request help after attempting the incapable task, this was then faded to a 5s prompt delay to attempt and a 2s prompt delay to help. Generalization probes were then completed similar to pre-test probes. Correct responding increased for participants across phases with 100% correct responding consistently observed. Expanding on requesting help with difficult tasks, behavioral analytic approaches have also been used to teach help seeking when lost.

Teaching help seeking behaviors when lost has been done in numerous ways using rules, technology alone or technology with the addition of a communication card. Bergstrom and colleague (2012) used a multiple baseline design to teach 3 boys with ASD to seek help when lost in public. Prior to each teaching trial, the participants were given rules on what to do if they

were lost, including yelling for their parents, finding a worker (i.e., store cashier) and telling the worker that they are lost. During training, the participants were provided verbal praise contingent on a correct resonse (e.g., asking for help) or provided verbal prompts if they engaged in an incorrect response. Researchers implemented a 0-3 rating scale to determine mastery levels of following the steps. Participants received 1 point for engaging in each of the behaviors All three participants met mastery levels in post-test training by receiving consistent scores of 3 across different settings.

Taylor et al. (2004) implemented technology using a pager in teaching help-seeking behavior using a multiple baseline probe design across participants with three teenagers diagnosed with ASD in a community setting. Participants were paged in the community setting and instructed to hand a communication card to a community member indicating that they were lost and needed help. The pager was used as a conditioned stimulus that could be generalized across settings. Responses stabilized at the 100% correct responding mark around 55 sessions after training for participant 1, 20 sessions after training for participant 2 and 10 sessions after training for participant 3.

Similarly, Hoch et al. (2009) used the implementation of a cell phone instead of a pager. This study used a multiple baseline probe design across three teenage males diagnosed with ASD. During probes, when participants were separated from caregivers they received a phone call and were expected to answer the call, find an adult, state they were lost, exchange a communication card, and wait with the adult until they were reunited with the caregiver. The community members were blind to the study and data was also collected on their responses. Participants were taught how to answer their phone and reinforced for answering the phone call and correct responses. Participants had additional training in the community and practiced

approaching outside community members who were blind to the study and asked for help. All participants were able to answer their cell phone, find a community member, ask for help and wait with them during post-test community probes.

In addition, Purrazella and Mechling (2013) used video modeling on seeking help when lost using a multiple probe design across participants. They taught three individuals aged 24-29 with moderate ID to take and send video captions of their location when they were lost in the community. The intervention consisted of a task analysis using video modeling, picture prompts, and instructor prompts from turning on the phone to sending the video. Teaching was conducted in an isolated classroom setting at the community college that all participants attended. Probe and generalization probe sessions took place in the community at three separate locations including a church, a residential setting and in a retail area. The participant and the researcher road public transportation for a set amount of time and then got off and walked two blocks before arriving at the location where the probe would take place. It was found that all three participants learned to follow a sequence of steps for operating the iPhone 4 with video capturing and to use the skill across three unfamiliar community settings.

Continuing with cell phone use, Taber et al. (2003) conducted a study with 6 secondary students aged 14-18 with moderate cognitive disabilities who were unable to identify when they were lost or unable to dial a cell phone to call for assistance. This study used a multiple probe design across participants. All methods were similar using a task analysis but participants were divided into "Group A" or "Group B." One group was taught to answer a phone call when they were lost and provide a detailed description of their location. The other group was taught to dial a number from speed dial on the phone to call for assistance and provide a detailed description of

their location. Results indicated that all students learned to either answer a ringing cell phone or use the speed dial function to call for assistance.

Research has advanced to use more modern technology such as FaceTime® that can be seen in a study conducted by Carlile et al. (2018), who implemented a package intervention to teach children with ASD to seek help when they were lost. The researchers implemented a high technology response situation, FaceTime®, and low technology response situation, a communication card. The researchers used a multiple-baseline across participants design imbedded in an alternating treatment design with the two technology situations to evaluate the effects of video modeling and programming common stimuli to teach the low and high-tech help seeking responses. Participants were six males ages 3-14 diagnosed with ASD. Each participant was trained in both the high tech and low tech condition of help seeking. The intervention used video modeling to show each participant how to respond if they became lost in public. After the video modeling, the participant was then placed in a mock situation inside the classroom and praised for correct responding and interrupted with the video modeling re-presented for incorrect responding. During probes, participants were placed in two groups. "Group A" was expected to make a FaceTime® call and then approach a store worker while "Group B" was expected to answer a FaceTime® call and then approach a store worker. Participants in this study drastically increased their help seeking responses when lost improving from 0% correct to 100% correct and they maintained the behaviors at follow-up and during community probes. Another common behavior analytic method to teaching safety skills is behavioral skills training (BST).

Studies using BST to teach safety and community skills

BST has been used to teach a variety of behaviors to individuals with and without intellectual disabilities for numerous years (Aguirre, O'Neill, Rehfeldt, & Boyer, 2014). BST

uses instruction, modeling, rehearsal and feedback in a variety of simulated situations to teach a skill or skills to an individual or a group of individuals. More specifically, instruction includes teaching participants to label, identify and provide rationale for engaging in the behavior. Modeling includes describing and demonstrating the behavior. Rehearsal and feedback involves practice, feedback and delivery of a consequence (Aguirre et al., 2014). These fundamental components make up BST and its effectiveness. According to Miltenberger 2008, BST is more effective than an informational approach without an active learning component. Numerous studies have used BST to teach safety skills to typically developing children regarding gunplay (Himle et al., 2004; Jostad, Miltenberger, Kelso, & Knudson, 2008; Miltenberger et al., 2004; Miltenberger et al., 2005), to teach fire safety to children with ASD (Garcia et al., 2016), to respond to abduction lures for children with ASD (Bergstrom et al., 2014; Gunby, Carr, & Leblanc, 2010; Gunby & Rapp, 2014; Ledbetter-Cho et al., 2016), to respond to abduction lures for typically developing children (Johnson et al., 2006) and to teach help-seeking when lost to typically developing children (Pan-Skadden et al., 2009).

BST has been a primary tool used to teach firearm safety to typically developing children over recent years. Himle et al. (2004) started with 10, four and five year old typically developing children who were taught gun safety. This study implemented a multiple baseline design across participants using BST, remedial trainings and in situ trainings when needed for most participants to reach consistent satisfactory scores in this study. Himle et al. scored each probe on a scale of 0-3 based on their response to seeing the firearm in the room. Almost all participants required the remedial training sessions and over half required in situ training. The same study was replicated with six, 6- and 7-year-olds (Miltenberger et al., 2004). The replication found similar results in that in situ training was still necessary for over half of the

participants even though they were an older developmental age. The study was adapted again with 10, 4 and 5 year old children who received two BST sessions and 1 in situ training session planned ahead of time (Miltenberger et al., 2005). This supported using both BST and in situ training together for this developmental age.

In a similar study, Jostad et al. (2008) found that peer tutoring can be an effective way to train children about firearm safety in order to train more children using less resources. Jostad et al. used BST to train a group of 6- and 7-year-olds on firearm safety and then instructed them how to train 4 and 5 year olds on firearm safety using BST. The researchers recorded the older group training the younger group and found good results for the younger group meeting mastery criterion (i.e., scores of 3). In a review of past studies, Miltenberger (2008) not only concluded that BST was more effective than an informational approach to training, but, that an in situ assessment is the only way to determine if the child will use the skill and that in situ training is the most reliable method for producing generalization. Gunplay is a well known exemplar and its components have also been shown in other areas like fire safety.

BST has also been used to teach fire safety. Garcia et al. (2016) implemented BST in a nonconcurrent multiple baseline to teach fire safety to three, 4- and 5-year-old children diagnosed with ASD. The training consisted of teaching the participants what to do when they hear a fire alarm using modeling and rehearsal. Participants were taught to evacuate when they heard a fire alarm and immediately find an adult to tell after evacuating. During generalization, data collected showed an increase of skills implemented correctly. Generalization probes after 5-weeks showed continued implementation of skills as well.

Teaching children with ASD to respond to abduction lures is another area where numerous studies have been conducted using BST. Johnson et al. (2006) used BST with 50

typically developing 6- and 7-year-old children to teach them to say no, immediately walk away, and tell an adult when they are presented with an abduction lure. This study used a 0-4 scale regarding the response of the participant to the lure, *0 = agrees to leave with the abductor; 1 = does not agree to leave with the abductor but fails to say ''no,'' get away, or tell an adult; 2 = says ''no'' but does not leave the area or tell an adult; 3 = says ''no'' and leaves the area but does not tell an adult; 4 = says ''no,'' leaves the area, and tells an adult.* Participants were split into three conditions; BST only, BST plus in situ training, or a control group. The study found significant results for the BST and BST plus in situ training groups over the control group in posttest trials.

Gunby and others (2010) taught abduction-prevention skills using BST with in situ feedback to three children with ASD. The participants were taught to say no to the abduction lure, get away from the situation and immediately tell an adult. All participants acquired the skills and were maintained at a one month follow up. Gunby and Rapp (2014) extended the previous work and used abduction lures after a high-probability request sequence simulating the grooming or recruitment (i.e., priming) process. This included a wider range of abduction lures. All three participants diagnosed with ASD acquired the safety response and maintained after the one month follow-up. Bergstrom et al. (2014) extended the research further using primarily male confederates due to the statistics on male versus female perpetrators. This study used a nonconcurrent multiple baseline across three boys diagnosed with ASD. All participants in the study learned to correctly respond to the abduction lures similar the previous study. This showed support for generalization across environments and abductors. Recently, Ledbetter-Cho et al. (2016) provided a further extension by including multiple lure types in the baseline and assessing for maintenance of the target response across lures. This study was conducted with four children

diagnosed with ASD using a concurrent multiple baseline design. Improvements were found from the baseline that generalized to novel settings and confederates. Additionally, these improvements maintained at the four week follow-up.

The same concept of BST to teach safety responses to children with ASD can be used when they are lost. Pan-Skadden et al., (2009) demonstrated this technique with typically developing children. Three children, age 4 or 5 with no medical or developmental disabilities participated in the study. The researchers used BST and in situ to teach the children help-seeking responses if they become lost. The study implemented a 0-3 scale with *0 = participant remained in the same location for 20 seconds after realization that they were separated from caregiver; 1 = demonstrated any behavior other than going up to the cashier; 2 = went to the cashier within 20 seconds and told the cashier that they were lost but did not give any personal information; 3 = went to the cashier within 20 seconds, stated their personal information, and stated that they were lost.* The experimenter instructed the participants on what to do if they are lost in a store, modeled the behavior with dolls or acting, rehearsed with the participants and gave feedback on their rehearsals. Thirty minutes following the BST, the caregiver went to "shop" with the participant. At the store, an assessment occurred in which the caregiver "lost" the participant. If the participant performed the steps in 20 seconds they received praise, if they did not perform the steps in situ training was conducted. All participants were able to increase to a level 3 criterion and maintain at the 2-week follow-up.

Statement of the Problem

Research has been conducted teaching children with ASD to seek help when they are lost (Bergstrom et al., 2014; Carlile et al., 2018; Hoch et al., 2009; Taylor et al., 2004). As mentioned previously, a BST model has been shown to be effective in teaching typically developing

children to seek help when lost (Pan-Skadden et al., 2009). However, there is a lack of literature using BST to teach help seeking behaviors when lost to children with ASD even though there is clear support for the effectiveness of BST for teaching safety skills to children with ASD (Bergstrom et al., 2014; Garcia et al., 2016; Gunby & Rapp, 2014; Gunby et al., 2010; Ledbetter-Cho et al., 2016). In addition, further research is needed to ensure generalization of help seeking skills to community members such as law enforcement officers since they are the historically the first point of contact in crisis situations. Using prevention of firearm injury as an exemplar, Miltenberger (2008) concluded that the BST approach is more effective than an informational approach to training safety skills.

Further, children with ASD are a vulnerable population who could be easily misunderstood by authority figures for example, there are reports of law enforcement officers harming children with ASD because they do not understand them (Associated Press, 2017). As previously mentioned, approximately 49% of children diagnosed with ASD run away from a safe place by the age of 4 (Anderson et al., 2012). When the child has ran away from a safe place for any reason, it would be helpful for the child to be able to identify an officer in the community and seek help in a positive manner. Tint and colleagues reported that 16% of adolescents and adults diagnosed with ASD had an encounter with an officer, primarily due to an aggressive behavior. Communication deficits sometimes can serve as the function of aggression and other disruptive behaviors (Carr & Durand, 1985). These communication deficits and subsequent disruptive behaviors may lead to more police encounters. By teaching children to seek help from officers when lost, the percentage of interactions may increase in a positive and beneficial manner for both parties. Parents of children with ASD show concern for interactions between officers and their children (Rava et al., 2017). Further research is needed to teach children to

seek help from community helpers, like law enforcement officers, when they are lost in the community to further extend the literature using a BST procedure. The purpose of this study is to teach children with ASD to identify when they are lost and effectively and efficiently seek help from a police officer in the community to enhance their safety skills.

Method

Participants and Settings

Three children with autism spectrum disorder aged 5-10 participated in this study. Adam age 5, Liam age 6, and Ellie age 10. All participants were diagnosed by a mental health professional according to the Diagnostic and Statistical Manual of Mental Disorders, 5th Edition (American Psychiatric Association, 2013). Participants were recruited from a local autism center in Southern Minnesota. The Vineland was administered to all participants to assess their communication, daily living and community skills. According to age, Adam was in the low range for daily living, socialization and motor skills and in the moderately low range for communication. Adam showed receptive language as a strength (e.g., following instructions, engage in conditional discriminations). Liam was in the low range for communication, and moderately low for daily living, socialization and daily living skills. Liam showed community skills as a weakness. Ellie was in the low range across all areas; communication, daily living, socialization and daily living. She showed interpersonal relationships as a strength. The Verbal Behavior Milestone Assessment and Placement Program (VB-MAPP) was also administered to assess participants' receptive and expressive language repertoires. To be included in the study, participants were expected to be in the higher level two and show some emerging level three scores. Adam's VB-MAPP scores indicated that he is able to request most of his wants and needs with 3-6-word phrases, can label and identify most common items and functions of objects. He is also able to answer and ask basic social and personal questions. Liam had very similar scores to Adam but he also showed some emerging basic reading and writing skills for a 5-year-old. Ellie can communicate independently with an Augmentative and Alternative Communication Device (AAC), which is an application on an iPad. Ellie's scores were in the high level 1 and emerging

level 2 indicating that she is able to identify and label basic common items and answer some personal questions through her device. However, she requires some gestural prompting to tact and engage in listener responding in two or more-word phrases. She also showed some emerging echoics due to her only being able to imitate one syllable sounds. The parents of these children also must have indicated a concern for their child's safety and interactions with police officers. Training and generalization probes took place at the local autism center in Southern Minnesota. Trainings were conducted in cubicles with one table, two chairs and a small play area. Generalization probes were conducted in an open gym with all distractors put away or a small room with a two-way mirror, TV and gaming system which participants did not have access.

Materials

The materials for this experiment were identification cards for the participants. The identification cards included the participants name, age, diagnosis, address, best form of communication and emergency contacts (2 x 3 card). Visual stimuli of police officers (4 x 6 picture cards) were used during identification training along with distractor stimuli of other community officers (e.g., fireman and doctor). Confederate officers were trained Research Assistants dressed as officers.

Dependent Measure(s)

The primary dependent measure was a scale of 0-3 indicating the level of the participants interaction with the police officer. *0 = the participant had no interaction with the law enforcement officer within a minute of identification of a problem or did not identify that they were lost, 1 = the participant approached the officer within 1 minute of identifying the problem and stood less than 3 feet away but did not hand the identification card, 2 = the participant approached the officer within 1 minute of identifying the problem, was less than 3 feet away and*

handed the identification card to the officer, 3 = the participant approached the officer within 1 minute of identifying the problem, was less than 3 feet away, handed the identification card to the officer and vocalized (through oral communication or with AAC) the problem. The secondary dependent measure was the percentage correct of responding during identification training before moving onto behavioral skills training.

Experimental Design

A non-concurrent multiple baseline across participants design was used. Pretest and posttest generalization probes were conducted to probe the participants interactions with the confederate officers. Behavioral skills training (BST) was the primary independent variable in this study. BST began with identification training then moved into traditional components including instruction, modeling, rehearsal and feedback. Identification training was implemented to teach participants to discriminate police officers from other community helpers and identify their roles following a similar format to traditional community helper teaching in Applied Behavior Analysis programming. Instruction included verbal instruction regarding how to approach an officer when lost. Modeling was done by the researchers to demonstrate identifying when they are lost and approaching an officer for help. Rehearsal consisted of the researcher and the child practicing interacting with law enforcement officers and feedback was given throughout this stage. A Remedial BST and in situ trainings were used if the participant was not receiving scores of 3 during posttest probes.

Interobserver Agreement (IOA)

Total IOA was conducted for 100% of probe sessions for Adam with a 91% agreement and 88% of training sessions for 100% agreement. Total IOA was conducted for 100% of probe sessions for Liam with a 100% agreement and 71% of training sessions for 100% agreement.

Total IOA was conducted for 100% of probe sessions for Ellie with a 97% agreement and 64% of training sessions for 100% agreement. An agreement was defined as the two observers recording the same response on the 0 to 3 scale or circling the same response on the data sheets. A disagreement was defined as the two observers recording different responses on the data sheets. Total IOA was calculated by dividing the number of agreements by the number of agreements plus disagreements, and multiplying the resulting quotient by 100%.

Procedural Integrity

Procedural integrity (PI) was collected using a checklist designed specifically for the study. Examples of items in the checklist include officer placement, officer communication, participant attention and verbal praise delivered by experimenter during instruction. PI was collected for 86% of probes and 63% of trainings for Adam for 100%. PI was collected for 86% of probes and 50% of training for Liam for 100%. PI was collected for 91% of probes and 57% of training with Ellie for 100%.

Procedures

Pretest generalization probes. Pretest generalization probes were conducted with the participants in the local autism center. During pretest and posttest generalization probes, confederates dressed as officers were placed in the autism center to portray real life scenarios. The participants were put in situations of being lost and observers measured their interactions with the confederate police officer based on the 0-3 scale. The identification card was placed in the pocket or hand of the participant. Participants were not instructed on the use of the card during pretest probes. During pretest and posttest generalization probes, the child and caregiver walked together to a specific destination. The caregiver gave a directive task to the child to complete when they were within 20 yards of the officer, such as "go grab that ball." The

caregiver then slipped out of the room when the child began the task and was not looking at the caregiver. Unknown to the participants, confederates were observing them to ensure safety, including a confederate officer and 1-2 research assistants. The participant then had 3 minutes from the time of the directive to seek help from the officer. If they did not perform the target behavior in 3 minutes the caregiver returned. If there were any points of distress for the participant, the confederate officer or experimenter was able to end the trial. During pretest probes, if the participant walked up the confederate police officer or a community member during session would end without reinforcement and the caregiver would return. If the participant asked the caregiver where they were they were to respond with a neutral statement (e.g., "I had to grab my keys").

Behavioral skills training. The first stage of BST was identification, participants were required to reach 100% mastery in each phase. Participants were taught how to identify a police officer and how to discriminate officers from civilians. Listener training was used by showing participants pictures of police officers and other professionals in a field of 4. Researchers instructed participants to "point to the police officer." Participants were required to point or select all 3 different officers in order to move onto the next phase (100% across three 3-trial blocks). If the participant answered incorrectly the researcher provided a least to most physical prompt for the correct response followed by error correction then moved on to the next trial. Tact training was implemented by showing pictures of 3 different police officers to participants and asking "Who is this?" Participants were required to tact all three police officers in order to move onto the next phase (100% across three 3-trial blocks). Intraverbal training consisted of asking participants a series of questions about the role of police officers, including "who do we go to if we need help?", "what situations may we need help in?" and "who is the first person you look for

if you cannot find your parents?" Participants were required to respond correctly to each question to move on to the next phase (i.e., 100% across three 3-trial blocks). Incorrect responding or no response for both tact and intraverbal training were followed by an echoic prompt (i.e., "say police officer") then an error correction trial before moving on to the next trial. During listener, tact, and intraverbal training, maintenance questions (e.g., motor imitation, listener responding of motor actions) for each participant was interspersed on a VR 2 schedule. Reinforcement was given following each correct response and included verbal praise and access to a tangible item determined through a multiple stimulus without replacement preference assessment and paired choice assessment prior to each session.

After the identification phase, verbal instruction using a visual prompt in the form of a story was used to instruct the participants to give their identification card to police officers and vocalize that they need help (see Appendix A). Rationale during instruction was provided in order for participants to discriminate when they need help versus when they do not.

Phase two of training was modeling of the behavior using role play. Researchers demonstrated lost scenarios and modeled how to approach an officer, how to hand their identification card and how to ask for help. Modeling included researchers pretending to search for their parents and stating "I am lost because I cannot find my mom, dad or therapist" then walking through the steps of approaching a law enforcement officer and requesting help. Phase three of training included rehearsal and feedback. It was required that during rehearsal the participant received a rating of three on two consecutive trials before going into posttest generalization probes. Participants were asked to pretend they were lost and practiced asking a pretend officer for help in a controlled setting. Specific feedback was given to participants whether they were correct or incorrect. If the participant did not meet mastery for two

consecutive posttest generalization probes they cycled back to rehearsal and feedback for remedial BST before trying again.

Posttest generalization probes. After meeting the mastery criterion during rehearsal, posttest generalization probes were conducted. Direct observation was used and participants were given a score as indicated in the dependent measures section. If the participant received a score of 3 during posttest generalization probes, they were reinforced through verbal praise. If the participant asked a confederate community member (i.e., another adult) for help, they were differentially reinforced and redirected to the officer (e.g. "oh ok, let's look for an officer"). If the participant did not receive a score of 3 for 2 consecutive posttest probes, remedial BST instruction was implemented. If mastery was still not met on the subsequent posttest generalization probe, the researcher used in situ training. In situ training included least to most verbal and physical prompting during the generalization probe starting with verbal instruction and going to physical prompting if needed.

Rule and consequence. A rule and consequence was added in addition to in situ training for Liam and Ellie. This included the participant being told before each probe "if you tell the officer that you are lost, then we can play with a toy." A preferred item was selected from a paired choice preference assessment before each probe. Following the rule, the probe would begin with the therapist giving a directive to the child and if the child completed the steps they would have access to the reinforcing toy. A time-prompt delay procedure an addition to the rule and consequence was added for Ellie only.

Follow-up. Follow-up generalization probes were conducted to measure maintenance. These probes were set up the same as pretest generalization probes and were done at two weeks after the final posttest generalization probe for Adam and after three weeks for Liam

Results

All participants showed stable responding (i.e., score of 0) during their baseline probes as seen in Figure 1.

During identification training, Adam mastered listener responding in 2 sessions (6 trial blocks), tact training in 1 session (6 trial blocks) and intraverbals in 4 sessions (11 trial blocks) as seen in Table 1. During his initial posttest probes, Adam did not seek help from a police officer. After remedial BST, he was able to quickly acquire the help-seeking skill. It took one probe after remedial BST of scoring a zero then on the subsequent probe he independently sought help from the law enforcement officer. Adam mastered posttest generalization probes after 8 sessions by scoring 3 consecutive scores of 3 across two confederate officers. Adam maintained a score of 3 at a 2-week follow-up posttest generalization probe.

Liam met listener responding mastery in 1 session (4 trial blocks), tact mastery in 1 session (4 trial blocks) and intraverbal mastery in 3 sessions (9 trial blocks) as seen in Table 1. Liam did not initially seek help from the law enforcement officer. When remedial BST was implemented it did not generalize to the probe environment and in situ training was added. During in situ training, Liam was prompted by the experimenter with the statement "your therapist is gone, what do you do?" On the first in situ probe he immediately went to the confederate officer, handed his card, and vocalized the problem. He then did not perform the behaviors on the subsequent trial, which did not include the prompt. Two in situ trainings were then done back to back in a new probe location and he still did not perform the behaviors on the subsequent trial without in situ. A rule and consequence was added for Liam on the 9th probe (Bergstrom et al., 2012; Miltenberger et al., 2004; Pan-Skadden et al., 2009). He was told "if you tell the police officer you are lost we can play with a toy." The toy was whatever he chose from a

paired choice preference assessment before the trial. On the first day of the rule and consequence the reinforcer was possibly not strong enough and it was in a different location from the other probes due to the other room being in use. The location was still in the center but there were too many windows and Liam could see other therapists walking by, leading to distraction. An in situ training session was done with the rule and consequence condition, showing Liam what he was working for. After that trial with a researcher in the room he was then able to perform the behaviors on his own with the rule and consequence alone and a highly motivating reinforcer. Liam mastered by completing the behaviors independently without the primary researcher in the room 3 consecutive times across 2 confederate officers after 16 probes. Liam scored a 2 at a 3-week follow-up probe. Liam was sick 2 weeks after his probes so his follow-up was done 3 weeks later. Staff reported after the follow-up probe that it was his first day back from being sick and was not vocalizing much with staff prior to the follow-up probe.

Ellie met listener responding mastery in 1 session (4 trial blocks), tact mastery in 1 session (5 trial blocks) and intraverbal mastery in 7 sessions (22 trial blocks) as seen in Table 1. Ellie was not able to independently seek help from a confederate officer. She went through remedial BST and did not engage in any of the help-seeking behaviors on the following probe. Ellie was given 4 consecutive in situ trials and provided with the prompt "your therapist is gone." After the in situ trainings, experimenters continued to observe stimulus control issues with Ellie. Ellie would be in the room for the 1-3 minutes and then as soon as the experimenter walked in after the trial was over she would approach the officer and perform the behaviors. A rule and consequence identical to the procedure used with Liam was implemented on the 10th probe. There were three instances where Ellie scored a 1, in these cases Ellie approached the officer but did not perform any help seeking behaviors (i.e., hand her communication card or

vocalize the problem). Due to Ellie depending on the experimenter prompt, a time-prompt delay was added to the rule and consequence phase. This consisted of the confederate officer giving a gestural prompt (i.e., come here hand motion) to Ellie and fading the prompt from 5s to 60s from probes 17 to 27. Probes were discontinued after the 27th probe due to needing the prompt from the confederate police officer.

Discussion

It was found that 1 out of 3 participants showed mastery with 1 remedial session of BST. This is similar to the findings of Bergstrom et al. (2012) and Garcia et al., (2016) who showed that remedial trainings alone were effective. Each study had 1 of 3 participants that required remedial trainings while the others mastered right away. The remedial sessions for this study followed a similar format of a quick overview of the stages of BST and then going into the probes.

In situ and a rule and consequence was added for two participants which is similar to the findings of Bergstrom et al. (2014); Miltenberger et al. (2004) and Pan-Skadden et al. (2009). It was found in Bergstrom et al. (2014) that 1 participant required a rule and consequence because he was being goofy and laughing during the probes. Pan-Skadden et al. (2009) conducted a preference assessment for two participants then told them if they engage in the behavior they can have the item. Miltenberger et al. (2004) provided reinforcement for one participant without a rule prior to the probes. This study follows similar guidelines to what those studies found effective in order to increase motivation. Staff that work with Liam reported after training that he typically engages in correct responding with a dense schedule of reinforcement and was either very shy or overly goofy during sessions. During pre-assessments (VB-MAPP) and identification training Liam showed noncompliance until researchers presented him with toys and let him play

for a few minutes before sessions and maintained a dense reinforcement schedule. His therapists at the clinic indicated that this was common in his programming and it generalized to his posttest probes. Therefore, Liam required the rule and consequence to meet mastery because he needed to know what he was working for in order to engage in the behaviors.

The establishing operations (EOs) for all participants were not initially strong enough in the probe location. Establishing operations as defined by Michael (2004) "is an environmental event, operation, or stimulus condition that effects an organism by momentarily altering (a) the reinforcing effectiveness of other events, and (b) the frequency of occurrence of the type of behavior that had been consequated by those other events" (p. 136). Participants were in a familiar setting and all rooms that probes were conducted in had windows where they could see peers and other therapists walking by. Therefore, the probes may have not been set up to be evocative enough for the participants to seek help from a law enforcement officer because of the familiarity of the location and bystanders. Miltenberger (2008) indicated that naturalistic settings are the most effective to evoke responses from participants after BST. This study used analogue probe settings which may not have been evocative enough.

It was discovered during training that Ellie is typically with an adult at all times and mainly uses her AAC device when verbally prompted to do so. It was also found during her probes that some of the objects she was directed to get or walk to were too distracting (e.g., she would play with a ball or put on a helmet). She would set down her card and her device to play with these objects so the prompt changed to just walking to a corner of the room. As a result, Ellie became dependent of a gestural or verbal prompt from the experimenter or confederate police officer instead of independently tacting that she was lost once her staff member was no longer in view.

When reviewing the BST literature, there is a lot of variability in in regards to how to implement remedial BST and in-situ training. Some studies do not give information on how booster sessions (i.e., remedial BST sessions) are conducted (Garcia et al., 2016). Other studies reported "skills were reviewed and practiced" in booster sessions (Himle et al., 2004). There is also little information on the location of booster sessions. Bergstrom et al. (2014) conducted booster sessions in the same location as the probes while other studies do not state if they were conducted in the original training location like this study or the probe location. Jostad et al. (2008) set a booster training criterion at 3 booster trainings total before moving on to in situ training, while others may have only conducted 1 or did not have a set amount. In situ training usually follows the same format of when a child fails the assessment probe the experimenter walks into the probe location and gives some kind of directive. However, studies require different responses from the participant when experimenter walks in the room. Gunby et al. (2014) gave additional instructions, modeling rehearsal and feedback after interrupting the assessment. Himle et al. (2004) modeled what the child should have done then asked the child to rehearse and provided feedback. Miltenberger et al. (2005) asked the child what they should have done then required the child to practice the behaviors 5 times, while Jostad et al. (2008) provided corrective feedback then required the participant to rehearse the skill 5 times. This raises the question about what kind of booster or in situ training is the most effective to generalize help seeking skills. There is little discussion in articles about mastery criterion of BST, many state that each participant cycled through BST twice without discussing their actual performance on BST (Miltenberger et al., 2005). This raises the question that if setting a stricter mastery criterion could affect posttest performance for participants and lead to generalization.

Limitations and Future Research

This study is not without its limitations that could be revised in future research and applied work. The setting of the study was in a familiar location of the autism center, this lead to weak EOs as mentioned previously. Future research should conduct probes in the community setting to strengthen the EOs and increase social validity. Miltenberger (2008) indicated that the most valid assessments are in situ assessments conducted in the natural environment. Being in a more natural environment could have evoked some more immediate help seeking behaviors.

In addition, using parents instead of therapists could also make the lost scenario more naturalistic and evoke those help seeking responses. Another component to strengthen the social validity would be to incorporate actual law enforcement officers instead of research assistants dressed up as officers. This could potentially be beneficial for both the child and the officer to have mutual exposure and interactions with each other.

Future studies could also probe community helper knowledge prior to the study. It was unclear whether or not the identification training was necessary or made a difference in acquiring the BST skills. All of the participants had some community helper training prior to starting the study, which was not assessed before the study.

Future studies using BST should have a better way to identify who benefits the most from this training sequence. For instance, Ellie was not a good fit for this study even though she fit the inclusion criteria of being able to follow instructions and could engage in basic tact and listener responding tasks. Future research could evaluate what other characteristics are best for inclusion criteria in BST studies.

This was a good investigative study for using BST to teach children with ASD to seek help from law enforcement officers. Forty-nine percent of children with ASD attempt to run away from a safe location at least once by the age of 4 (Anderson et al., 2012). This study

provides those children with the tools needed to seek out and request help from community helpers such as law enforcement officers who are trained and trusted in crisis situations (Compton et al., 2014). This study provides support for the use of BST and incorporation of law enforcement officers in help seeking literature because two of the three participants were able to independently initiate the skills and the last participant was able to initiate the skills with a small gestural prompt. As stated, there is not enough literature on the interactions between individuals with disabilities and law enforcement officers. Providing individuals with ASD the tools and skill set to seek help from community helpers is a safety response that should be explored further.

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Table 1

Identification phase mastery

Participant	Listener Responding	Tact	Intraverbal
Adam	6 trial blocks	4 trial blocks	11 trial blocks
Liam	4 trial blocks	4 trial blocks	9 trial blocks
Ellie	4 trial blocks	5 trial blocks	22 trial blocks

Note. Each session was one day of working, each trial block was a set of 3 questions. Mastery criterion was set at 100% across 3 trial blocks. E.x. Adam reached mastery of listener responding in 2 days of working and 6 trial blocks for a total of 18 questions.
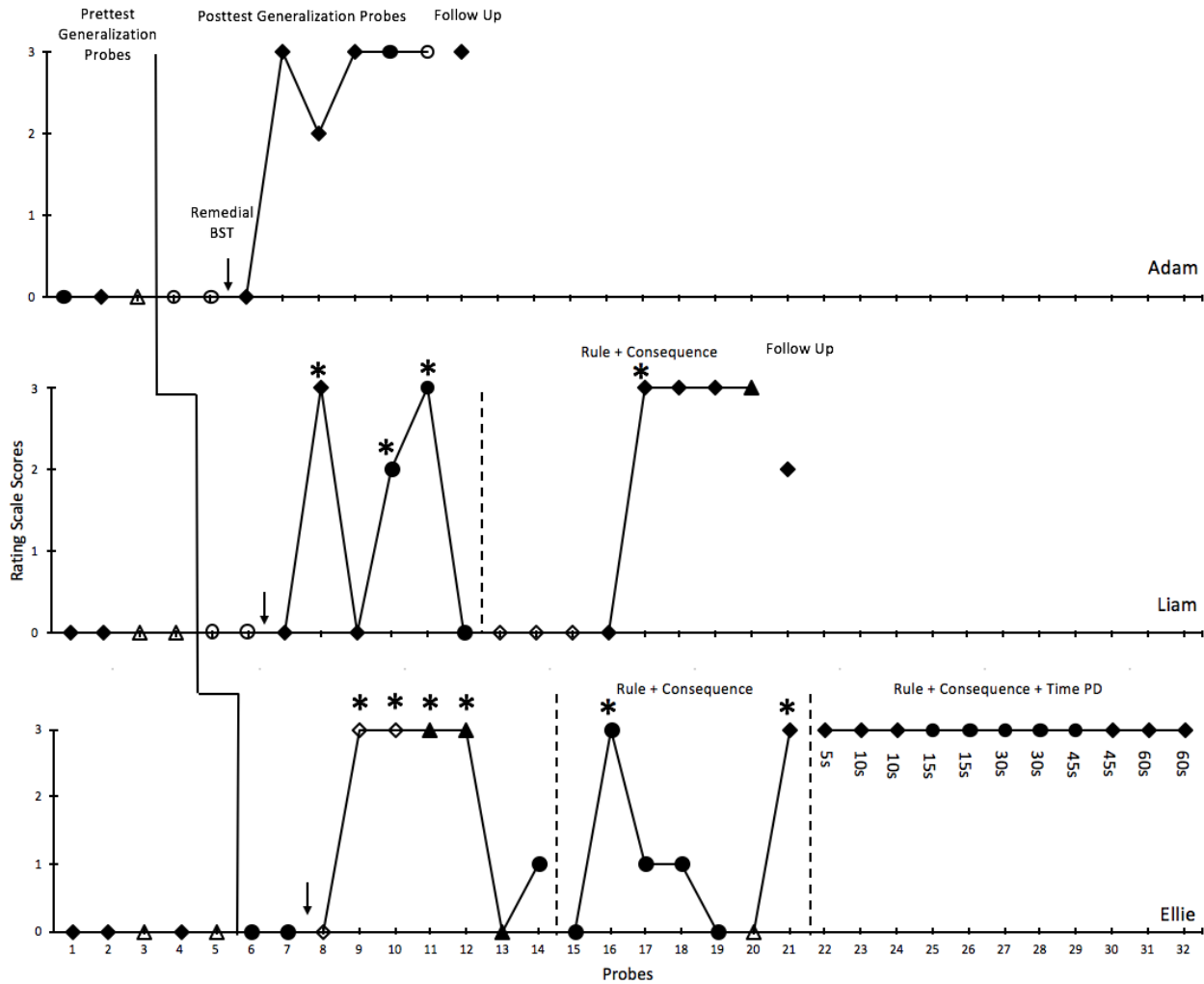
Figure 1. Each participant's rating score during pretest generalization probes, posttest generalization probes and follow up sessions are reflected. An arrow indicates remedial BST and an asterik indicates in situ training for the participant. The different shapes represent different confederate officers.

Appendix A

Researchers will show participants pictures of different police officers in various uniforms and situations. Researchers will state, "these are all pictures of police officers, police officers help keep the community safe by catching bad people and acting in emergencies like if someone is hurt or helping if we are lost. Sometimes we might get lost when we are out in the community with our parents, friends, teachers or anybody else. This can be very scary. Sometimes there are a lot of people around and asking for help is always the right thing to do but it can be hard to know who we should ask for help from. The first person we should always look for is a police officer because they are trained to help us in these situations. If you are lost in the community and you see a police officer, walk up to them, hand them your identification card and tell them that you are lost. They are very nice and will help you look for your mom and dad or call them for you and keep you safe if you are a long way away from home."