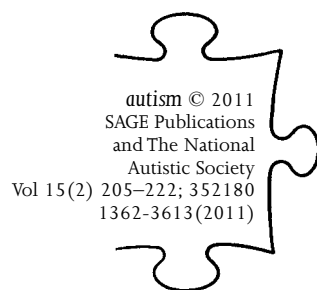


Teaching children with autism how to respond to the lures of strangers



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ABSTRACT A multiple probe design was used to assess the combined effects of videomodeling, graduated guidance and community-based instruction for teaching children with autism how to protect themselves from the lures of strangers. Parental opinions were also assessed in the study. Three children with autism (aged 6 to 11 years) participated in the study. Data indicated that videomodeling with graduated guidance and community-based instruction was effective for teaching children with autism how to protect themselves from the lures of strangers. Also it can be seen that participants maintained the acquired skill over time and applied it to novel settings. Furthermore, generalization was maintained over time. The parents of the participants reported positive opinions regarding the aims, procedures, and results of the study. Based on an evaluation of the findings, implications and future research needs are discussed.

KEYWORDS

safety skills;
autism;
graduated
guidance;
video
modelling;
community-
based teaching

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According to *The State of the World's Children* report (UNICEF, 2005), 1.200.000 children are kidnapped or missing every year. Therefore, ensuring children's safety is, and should always be, a concern for parents, teachers, and society. Gast, Collins, Wolery, and Jones (1993) indicate that teaching safety skills is planned for students who are receiving transition planning services. Therefore, teachers of these students should seek possible ways to teach personal safety. Safety skills can be defined as preventive or reactionary verbal or nonverbal behaviors which establish or maintain the safety of a person. While preventive safety skills serve to avoid potentially dangerous situations prior to them occurring, reactionary safety skills allow escape from or termination of presently occurring situations (Clees and Gast, 1994).

Mechling (2008) conducted a literature review of empirical studies with the aim of teaching safety skills to individuals with intellectual disabilities from 1976 to 2006, and grouped safety skill instruction into six areas. These are (a) pedestrian/street crossing safety, (b) home accident prevention, (c) application of first aid, (d) response to lures of strangers, (e) fire safety, and (f) emergency use of telephones. Results of this review indicated that when systematic, behavioral training was provided, persons with disabilities have the ability to learn to react to and prevent emergencies. As seen in Mechling's (2008) review, teaching persons with disabilities to protect themselves from the lures of strangers is one of the important areas of safety skill instruction as they are more vulnerable than those with no disabilities. According to Matson (1984) children with disabilities may lack social and communication skills, intellectual ability, and judgment, thus making it easier to coerce them into dangerous situations.

Published research examining possible ways of teaching children (Gast et al., 1993; Watson, Bain, and Houghton, 1992) and adults (Collins, Schuster, and Nelson, 1992; Haseltine and Miltenberger, 1990; Lumley, Milenberger, Long, Rapp, and Roberts, 1998; Mazzucchelli, 2001) with mental retardation to protect themselves from the lures of strangers is limited. The findings of these studies show that children and adults with disabilities are able to learn to protect themselves from strangers.

Of the aforementioned studies, only two have addressed teaching safety skills to children with developmental disabilities (Gast et al., 1993; Watson et al., 1992). Watson et al. investigated the effects of training in self-protective skills on children with moderate to severe intellectual impairment. Generalization effects of the training into nontraining situations and maintenance effects of training were also tested in the study. Seven students (aged 6 to 8 years) participated in the study. Two intervention phases in small group arrangement were implemented. The first phase was conducted in a school setting and consisted of 10 sessions. The second phase was conducted in a playground area to facilitate generalization and consisted of 5 sessions. The students were tested in three different novel settings using adult confederates prior and subsequent to receiving instruction in self-protective skills. Discussion, modeling, and role playing were used as a training sequence during instructional sessions. Results showed that 6 of the 7 students displayed improvement in self-protective skills and applied these to novel situations and strangers. A 14-day maintenance probe showed that 6 students had maintained the acquired skills.

In another study, Gast et al. (1993) investigated the effects of a constant time delay used in combination with multiple exemplars of strangers, lures, and sites to teach a generalized response to the lures of strangers to four preschool children with various disabilities (i.e., hearing impairment, mental

retardation). Four children (aged 3 years, 5 months to 5 years, 0 months) participated in the study. The findings of the study show that the instruction was effective in teaching appropriate responses to the lures of strangers. However, their behavior did not generalize to community probe sessions in which similar lures were presented by different strangers. Gast et al. proposed to examine the effects of community-based instruction and in vivo instruction when aiming to teach safety skills.

Visual supports are important tools when teaching independent living to children with autism (Heflin and Alaimo, 2007; Nikopoulos and Keenan, 2006; Scheuermann and Webber, 2002). Text, line drawing, photographs or video-based materials can be defined as visual supports. Research has shown that using visual supports for teaching many skills (e.g., language, communication, social skills, community skills, self help skills and so on) to children with autism resulted in promising outcomes (Alcantra, 1994; Bidwell and Rehfeldt, 2004; Reagon, Higbee, and Endicott, 2006; Shipley-Benamou, Lutzker, and Taubman, 2002). Videomodeling is one of the visual support systems and many research studies have been conducted examining the use and effectiveness of videomodeling for teaching children with autism. Videomodeling is defined as an instructional approach in which learners view the entire skill or steps of the skill before engaging the target skill to be taught. Although many research studies are conducted to investigate the effects of videomodeling alone on teaching various skills, there are other studies examining the effects of videomodeling with other strategies such as simulation, and community-based instruction. In order to ensure correct responses during safety skill teaching, graduated guidance was delivered in the study after videomodeling instruction.

Graduated guidance is an errorless teaching procedure. The teacher gradually reduces the amount of physical guidance (prompts) as the student's performance improves. The prompts are faded to prevent the students to become prompt dependent. If the student stops responding at any point during the instruction, the degree of physical guidance is increased. The teacher decides to deliver and fade the prompt on a moment to moment basis. The prompt can be faded by changing its location, reducing its intensity or its amount (Duker, Didden, and Sigafoos, 2004; Wolery, Ault, and Doyle, 1992). Fading the intensity of the prompt can be achieved by starting the instruction with full physical prompting to shadowing. A number of studies have shown that graduated guidance is an effective procedure when teaching children with disabilities on teaching both discrete and chained skills (Bryan and Gast, 2000; Cicero and Pfadt, 2002; Denny, Marchand-Martella, and Martella, 2001; MacDuff, Krantz, and McClannahan, 1993; Woods and Poulson, 2006). Apparently, there is a need for research to integrate the technology such as videomodeling or computer-based

implementation into intervention with graduated guidance. To the knowledge of the authors, there is not such a study investigating the effects of an intervention composed of videomodeling and graduated guidance.

Research has shown that children with autism often have difficulty in performing acquired skills in novel settings (Doyle and Doyle-Iland, 2004; Scheuermann and Webber, 2002; Smith and Donnelly, 1998). Gast et al. (1993) also reported a failure in generalizing the acquired safety skills. Therefore, generalization to novel situations should be planned during instruction with children with autism. Different strategies for ensuring generalization, such as using indiscriminable contingencies, training sufficient stimuli, loosening control over response contingencies, programming common stimuli, community-based instruction, and introduction to natural maintaining contingencies have been suggested (Stokes and Baer, 1977). Community-based instruction (CBI) is conducted in real settings and is generally used to teach community skills such as purchasing skills, using an ATM, using public phones, safety skills and so on. The effectiveness of CBI has been shown in many research studies. These studies have shown that CBI is effectively used for teaching children and youth with developmental disabilities how to resist the lures of strangers (Gast et al., 1993), how to cross a street and to use public phones (Collins, Stinson, and Land, 1993), how to cash a check, cross a street, and mail a letter (Branham, Collins, Schuster, and Kleinert, 1999), and purchasing skills (Haring, Kennedy, Adams, and Pitts-Conway, 1987; Morse and Schuster, 2000; Tekin-Iftar, 2008).

Many research studies are being currently conducted for assessing the effects of various instructional strategies to teach children with autism to be more independent (Alcantra, 1994; Bidwell and Rehfeldt, 2004; Haring et al., 1987). Evaluation of the above studies (Gast et al., 1993; Watson et al., 1992) has encouraged us to plan a study aimed at a generalized response to the lures of strangers in community settings. A manual and internet search showed that there is no published study concerning teaching safety skills to children with autism. This gap needs to be closed in order for safety skills to be effectively taught to children with autism. The current study is an attempt to extend the literature and provide practice for teaching safety skills to children with autism. Therefore, the purpose of this study is to assess the combined effects of videomodeling, graduated guidance and community-based instruction for teaching children with autism to protect themselves from the lures of strangers. Based on this general purpose the following questions are addressed in the present study: (1) Is an instructional package consisting of videomodeling with graduated guidance and community-based instruction with graduated guidance effective in (a) teaching children with autism to protect themselves from the lures of

strangers? (b) maintaining the acquired skills 1, 2, and 4 weeks after the instruction? and (c) generalizing the acquired skills across different persons and settings? (2) What are the opinions of the parents of the participants regarding the study?

Method

Participants

Three children (two boys and one girl) with autism participated in the study. The participants' ages ranged from 6 to 11 years. Parental interviews were conducted to inform the parents about the goals of the study and their consent was obtained prior to the study. None of the participants had a systematic instruction history with videomodeling or graduated guidance procedures. Furthermore, they did not receive systematic training for safety skills prior to the study. No adaptive scores were available for the participants. However, the informal observations revealed that all of the students had age-appropriate fine and gross motor skills. All of the students were verbal and had autism. All of the participants had been diagnosed at hospitals in Turkey by child psychiatrists.

Fatih was a 10-year-old male with autism and mental retardation. He was diagnosed with autism at the age of 3. He had an IQ score of 49 as measured by Leiter at The Guidance and Research Center. The Guidance and Research Centers are local branches of the office of Special Education which is directly affiliated with the Ministry of Education in Turkey. There is at least one Guidance and Research Center in each province, depending on the population. Students referred by classroom teachers or principals are assessed in these centers for identification and placement purposes. Psychologists, special educators and support personnel are the main staff of these centers. Fatih had enrolled in first grade in a public school. He was also receiving special education services twice a week. He had difficulty in initiating and maintaining social interaction and communication skills. He could imitate single words and 2-word phrases. When needed, he could use single words to initiate a conversation and answer simple questions. He could read and write and attend to an activity for 15 minutes.

Haluk was a 7-year-old male with autism. He was diagnosed with autism at the age of 5. No score is available for his level of cognitive ability. He was receiving special education services for two hours a week. He had difficulty in initiating and maintaining social interaction and communication skills. He could imitate words, follow simple directions, and attend to an activity for 5 minutes. He could match colors, shapes and simple pictures.

Ozlem was 11 years old during the study. She had mental retardation and autism. Her diagnosis of autism was made when she was 3. She had an IQ score of 51 as measured by Leiter at The Guidance and Research Center. She enrolled in a special class in a public elementary school. She was also receiving special education for two hours a week. She performed below her age level on social and communication skills. She could imitate single words and 2-word sentences. She could initiate conversation by using 2-word phrases, and follow simple directions, and attend to an activity for 10 minutes. She was being taught reading and writing skills during the study by her classroom teacher.

There was a fourth participant (a boy) in the study. He was withdrawn from the study because his behavior spontaneously improved during the baseline.

The students involved in the study had to have the following prerequisite skills: (a) waiting quietly for 1 minute when left alone, (b) distinguishing different people, (c) imitating verbal behavior, (d) maintaining a task for 5 minutes, (e) walking independently, and (f) following simple directions. To assess the waiting skill of the participants, the researcher took each participant to a classroom and told him/her, 'I have to go out to my office, please stay here and wait for me.' The researcher observed the participants through a one-way mirror. The skill of distinguishing individual people was tested by presenting a series of photographs (a total of three for each trial) of people who were known and people who were not known by the participants. Each participant was asked to bring photographs of people who were familiar to him/her. Other photographs were obtained by the researcher. The researcher presented a task direction such as, 'Please show your mother.' Six trials were conducted and 4 correct responses out of six trials were considered as meeting the requisite criterion. Imitating verbal behavior was assessed by delivering simple directions to be imitated by the participants. Maintaining on-task behavior was tested by delivering a direction such as, 'Please complete the puzzle,' while the researcher observed the participant's on task behavior. The skill of walking independently was assessed by delivering the direction, 'Please, walk,' with the participant then being observed. Following simple directions involving an object and an action was tested by presenting a task direction such as, 'Please throw the ball'.

Peers

Four typically developing peers took part in the study to be models for the participants. Video clips were prepared with the peers modeling the appropriate responses to the lures of strangers. The model peers were attending the 2nd and 3rd grades at an elementary school and were unknown to the participants.

Strangers

The strangers who took part in the study with the aim of delivering lures to the participants were informed about the behavior to be demonstrated in the study. Thirty-one voluntary adults participated in the study as strangers who presented lures to the participants. Four of them served during the preparation of the video models and the remaining strangers served to present lures during instruction, generalization, and maintenance sessions.

The study employed the multiple exemplar approach for choosing the strangers. In the multiple exemplar approach, samples of the target behavior are defined and the instruction is delivered by using all of these samples (Gursel, Tekin-Iftar, and Bozkurt, 2006; Tekin-Iftar, Kurt, and Acar, 2008and). Therefore, the participants encountered several different strangers in the period of this study. The stranger participants were university students, graduate students, school staff lecturers and the researcher's friends. The strangers differed in age, gender, physical characteristics (weight, height, hair color and style) and dress style. The strangers took part in the study no more than twice within the same week and on nonconsecutive days. The strangers were asked to deliver three types of lures during the study. The types of lures are as follows: (a) authority-type lure (e.g., 'Your teacher said that you need to come with me. '), (b) incentive-type lure (e.g., 'Would you like to go to McDonald's with me?'), (c) general/simple lure (e.g., 'Would you like to take a drive with me?').

Settings

This study was conducted in two different phases. The first phase, the video-modeling phase, was conducted at a Research Institute. The participants watched the videotapes in one of the 1:1 study rooms at the Research Institute. After watching the videotapes, the participant was taken out of the room. All settings of the Institute were used for the instruction after watching the videotapes. For the community-based instruction, different settings on the campus (e.g., parks, different streets or faculty backyards) were used. Generalization probe sessions were conducted in other settings on the campus (e.g., Bazaar Anadolu A, places near ATMs and the market).

Materials

The materials used during this study were an instruction VCD, a television with a 72-cm screen, a VCD player, a list of lures, the objects used as lures (e.g., ball, chocolate, candy), the objects used as reasons for leaving the subject (e.g., paper tissue, cell phone), reinforcers (e.g., cake, candy, chocolate), a video camera, videotapes, and data collection forms.

Dependent variable and response definitions

The dependent variable of the study was the percentage of correct responses to the lures of strangers. A two-step task analysis was developed for the target skill. The possible participant responses during the probe sessions were as follows: (a) Correct response: the participant starting to give a verbal response (e.g., saying 'no') and a motor response (e.g., going 4–5 steps away from the stranger) within 4 seconds of the time s/he was delivered a lure. (b) Incorrect response: the participant not starting to give a verbal response (e.g., not saying 'no') and/or a motor response (e.g., not going 4–5 steps away from the stranger) within 4 seconds of the time s/he was delivered a lure. The participant's giving a verbal response (e.g., saying 'no') and going together with the stranger, only going away from the stranger but giving no verbal response (e.g., by not saying 'no') or giving no response at all were all recognized as incorrect responses. Correct responses during daily probe sessions were counted toward the criterion. The criterion was 100% correct response for three consecutive sessions.

Social validation

The parents of the participants completed a social validity questionnaire individually at the end of the intervention to share their opinions concerning the aim of the study, the appropriateness of the procedure, and the importance of observed changes in the target behavior. A 'Social Validity Form' was developed for collecting the social validation data. It included eight yes/no type questions and two open-ended questions. The parents were also asked to express their views with regard to the yes/no type questions.

Experimental design

A multiple probe design across participants was used to assess the effectiveness of the instructional package consisting of the videomodeling with graduated guidance and community-based teaching. In this design experimental control was demonstrated when the participant was responding at or near to baseline levels during probe sessions before the intervention had been introduced and the criterion was reached only after the intervention was introduced (Tekin-Iftar and Kircaali-Iftar, 2006; Wolery, Bailey, and Sugai, 1988).

General procedures

Probe (baseline and daily probe), intervention, generalization, maintenance, and generalization maintenance sessions were conducted in the study in a 1:1 teaching arrangement. Daily probe sessions were conducted to test acquisition. Response intervals were 4 s during all experimental sessions and the intertrial intervals were 10 s. Data for the error analysis (topography

errors-not performing the steps correctly and duration error-not initiating to perform or not performing the steps within 4 s.) were also collected in the study. During all sessions, the teacher remained out of sight of the participants. to ensure this, the settings in the study were chosen to enable the teacher to get out of sight of the participant and also to give the prompt to the participant (e.g., near a door, a corner or a column). The first author conducted all of the sessions. She delivered reinforcement for the participants' performances, as well as attendance and cooperation behavior, at the end of each session.

Baseline probe sessions

Baseline probe sessions occurred in the community settings prior to training until stable data were recorded for at least three consecutive sessions. Six trials were conducted during the baseline sessions. A single opportunity method was used during all of the probe sessions. The teacher presented the task direction and recorded the participant's responses to the steps of the task analysis. If the participant initiated an incorrect response, the teacher interrupted his/her response and recorded the response as incorrect. The following steps in the task analysis were recorded as incorrect. Baseline sessions were conducted as follows: (a) When the teacher came to the previously determined videomodeling or community-based instruction field, she said 'Wait for me here'. (b) Then the teacher went out of sight of the participant (e.g., she hid behind a door). (c) Once the teacher was out of sight, the stranger came close to the participant and delivered the lure (e.g., 'Shall we go and buy chocolate?'). (d) The participant giving a verbal response (e.g., saying 'no') and a motor response (e.g. going 4–5 steps away from the stranger) in 4 seconds was accepted as a correct response. (e) If the participant gave an incorrect response (e.g., attempted to go with the stranger) or gave no response, the teacher returned to take the child in order to avoid the possibility of the child learning to go with strangers. (f) The correct responses were verbally reinforced whereas the incorrect responses were ignored in all of the probe conditions. Error correction was not utilized.

Daily probe sessions

Daily probe sessions were conducted before each instructional session. Three trials were conducted during a daily probe session. In order to determine the performance related to the skill, the participant's correct responses in the daily probe sessions were taken into consideration. The instruction was continued until the participant reached 100% correct performance on the skill. Probe sessions were conducted in the same manner as the baseline sessions.

Training sessions

Training occurred in videomodeling and community-based settings. Graduated guidance was used in both the videomodeling sessions and the community-based training sessions. There were six trials in each training session and a total task presentation format was used during the instruction. Four instructional sessions were conducted per week. Correct responses resulted in verbal and edible reinforcements continuously until the criterion was met.

To fade the reinforcement, reinforcement for the correct responses was provided at the end of the session as soon as the criterion was met. Full physical prompt, partial physical prompt and shadowing were used during the graduated guidance.

Videomodeling instruction sessions

A stranger and a model peer appear in the videotapes prepared. The stranger delivers an example of each of the three lures to the model peer. The peer becomes a model by giving appropriate responses to these three types of lures independently. The intervention sessions were conducted as follows: (a) The teacher and the participant watched the videotape together. (b) Once the student watched the videotape, instruction with graduated guidance was provided. (c) The teacher delivered the direction to the student to wait alone (e.g., 'Please wait for me. I'll be back'.) and the teacher went out of sight of the participant. (d) A stranger approached the student and delivered a lure (e.g., 'Would you like to come with me to McDonald's?') (f) The teacher came back immediately and delivered the instruction with graduated guidance to teach an appropriate response to the lure provided by the stranger.

Maintenance probe sessions

Maintenance probe sessions occurred again in community settings 1, 2, and 4 weeks after the initial criterion was met. Maintenance probe trials were conducted in the same manner as the baseline/daily probe trials and the same response definitions were used. However, the reinforcers were faded at the maintenance stage. The reinforcement was delivered at the end of the session when the subject completed all of the trials correctly.

Generalization/maintenance of generalization probe sessions

Generalization sessions occurred in different settings to the CBI settings where the instruction was delivered. Generalization occurred after the instruction criterion was met in the CBI settings. Generalization was considered as a posttest. Maintenance of generalization sessions occurred twice in two-week intervals after the generalization posttest session.

Generalization/maintenance of generalization probe trials were conducted in the same manner as the baseline/daily probe trials and the same response definitions were used. The subject was delivered reinforcement only at the end of the session.

Reliability

Reliability data was collected from at least 20% of all experimental sessions. Interobserver agreement and procedural reliability were calculated in the study. The point by point method was used for the analysis of interobserver reliability (Tawney and Gast, 1984; Tekin-Iftar and Kircaali-Iftar, 2006). Procedural reliability data were collected to determine whether the independent variable used as was initially planned. The planned steps that the teacher was expected to demonstrate for graduated guidance were (a) preparing the tools, (b) giving the participant a reason for leaving, (c) delivering a lure, (d) waiting for the wait time (4 s), (e) giving the controlling cue, (f) responding appropriately in accordance with the participant's responses, (g) waiting for the intertrial interval, and (h) praising the participant's collaboration during the study. Both interobserver agreement and treatment integrity were 100% across all the participants.

Results

Effectiveness data

Figure 1 depicts data collected on the percent of correct responses during baseline, training, maintenance, and generalization for Haluk, Ozlem, and Fatih. Daily probe data was used to test the transfer of stimulus control and plotted for the intervention phase in Figure 1. Closed circles represent the percentage of correct responses during probe sessions (baseline, daily probe, and maintenance probe sessions). Open triangles represent training data and closed triangles represent maintenance of the generalization of the acquired skill. Data indicated that the instructional package used in the study was effective for teaching children with autism to protect themselves from the lures of strangers and in maintaining the acquired skills over time (i.e., 1, 2 and 4 weeks after the training). Prior to training, none of the participants performed correct responses for the target skill. Procedural modification was needed during intervention sessions with Haluk. Haluk did not perform correct responses during 10 training sessions. Therefore, a modification was made in his training. The number of training trials was increased between the tenth and fifteenth training sessions; the researcher did not go out of his vision between the twelfth and fifteenth training sessions, and the researcher stood just behind him for the fourteenth and

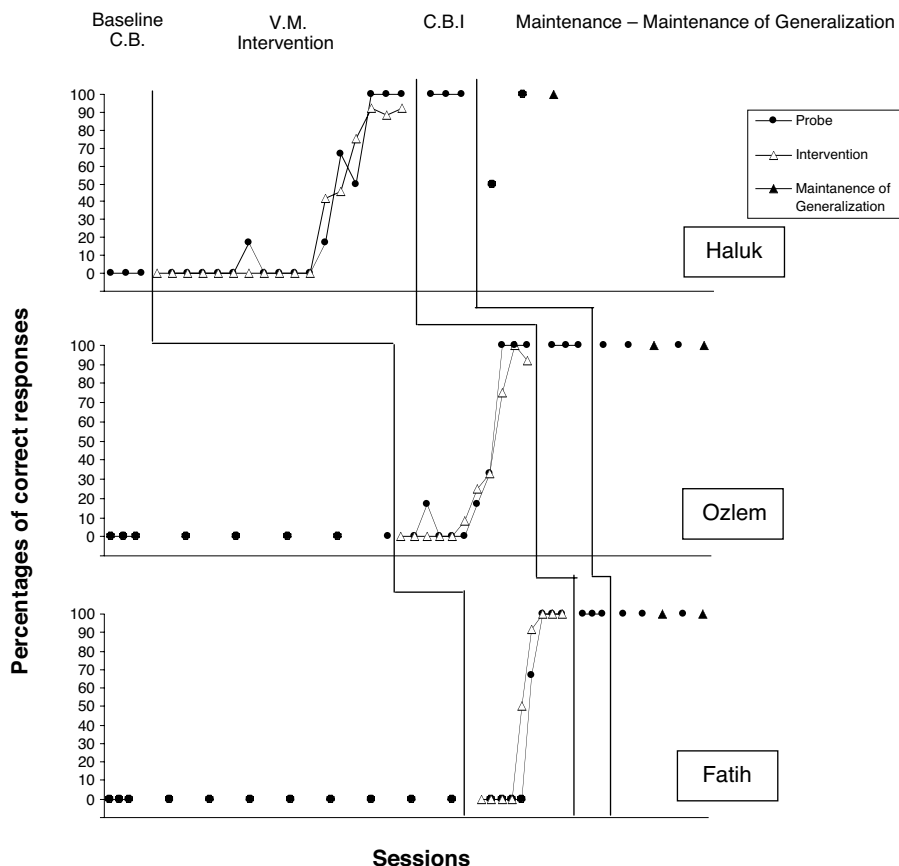


Figure 1 Percent of correct responses for Haluk, Ozlem, and Fatih during the baseline, intervention, full probe sessions, and maintenance and maintenance of generalization probe sessions

fifteenth training sessions. After the fifteenth training session, these prompts were faded and the researcher implemented the procedure developed at the beginning of the study.

Instructional data

The instructional data for each participant, including the number of training sessions, the number of training trials, the number and percentage of training errors, the amount of training time, the number and percentage of daily probe errors, and the amount of probe time are shown in Table 1.

Sessions and trials to reach criterion Haluk needed 17 training sessions and 138 training trials to reach criterion. Ozlem needed 11 training sessions

and 66 training trials, and Fatih needed 9 training sessions and 54 training trials to reach criterion for the skill of responding appropriately to the lures of the strangers.

Training and probe errors to reach criterion The percentage of errors to reach criterion ranged from 37.9% to 42.4% across the participants with a mean of 39.9% during training sessions. The total number of errors during the probe sessions was ranged from 26 to 42. The percentage of probe errors to reach criterion ranged from 54.1% to 63.3% with a mean of 57.2% across the three participants. Error analysis showed that most of the errors were topographical.

Training and probe time to reach criterion Haluk needed the longest training time (1 hr 9 min 11 s) and Fatih needed the shortest training time (26 min 28 s) to reach criterion. The daily probe time that the participants needed to reach criterion was between 10 min 14 s and 21 min 12 s.

Generalization and maintenance of the generalized skill

Data for the generalization of the acquired skill in the community settings showed that all the participants generalized the skill of responding appropriately to the lures of strangers within 100% accuracy. Furthermore, maintenance of the generalization data indicated that all three participants maintained the generalized skill at criterion level over time.

Social validation

The parents of the participants reported positive opinions regarding the aims, procedures, and results of the study. Since Haluk's mother moved to another city at the end of the study, social validity data were collected from two parents with a return rate of 67%. Regarding the aims of the study, parents reported that they agree on the importance of teaching self-protection skills to their children with autism. Regarding the acceptability of using peers with normal development as models for their children through videomodeling, parents stated positive opinions. They also reported that

Table 1 Instructional data

<i>Participants</i>	<i>No. of training sessions</i>	<i>No. of training trials</i>	<i>No. and % of training errors</i>	<i>Training time (h:m:s)</i>	<i>No. and % of daily probe errors</i>	<i>Probe time (h:m)</i>
Haluk	17	138	109–39.4	1:9:11	42–54.1%	21:12
Ozlem	11	66	56–42.4	34:42	38–63.3%	12:14
Fatih	9	54	41–37.9	26:28	26–54.1%	10:14

their children with autism would learn the target skill from their peers much more easily. When the parents were asked about the use of multiple sites, and strangers in the study, they reported that these aspects were very useful in terms of ensuring the generalization of the target skill and in presenting the opportunity for interacting with different people and settings.

Discussion

The purpose of this study was to determine the combined effects of video-modeling, graduated guidance and community-based instruction for teaching four children with autism to protect themselves from the lures of strangers. Maintenance and generalization effects of the instruction were assessed in the study. The parents' opinions concerning the aims, procedures and outcomes of the study were also evaluated. By providing an instructional package consisting of videomodeling, graduated guidance and community-based instruction, we were able to teach children with autism to protect themselves from the lures of strangers. The maintenance and generalization effects of the instruction showed that children with autism were able to maintain the target behavior after the instruction and generalized the target behavior to various community settings. It can also be that the children were able to maintain the generalized response of responding to the lures of strangers. In addition, the parents declared in the social validity questionnaire that they found this intervention necessary and important and they believed it had a positive effect on their own lives as well as on the lives of their children.

These findings confirm findings in previous investigations that found responding to strangers appropriately can be taught to children with disabilities (Gast et al., 1993; Watson et al., 1992). Although in vivo instruction was needed in the Gast et al. study to overcome the failure in securing the generalization of responding appropriately to the lures of strangers in novel settings, it was not needed either in the Watson et al. study or in this study. It can be seen in this study that after receiving instruction through videomodeling and graduated guidance, the participants of the study were able to respond to the lures of strangers appropriately in community settings. While considering the cost of delivering community-based instruction, the findings of the study are promising. The possible reasons for not requiring in vivo instruction in this study can be explained as follows. First, a large number of strangers took part during the intervention. Therefore, the risk of encountering the same person during intervention was decreased and the possibility of generalizing the target skill increased. Second, all of the settings of the research institute were used during the study. It was considered that using different settings could have positive effects on promoting

generalization. Third, when delivering lures, different scenarios were used during instruction. All of these three points used during the intervention could have positive effects for facilitating and/or enhancing the generalization to community settings.

While these results are promising, several observations and issues should be considered. First, a high error rate during both intervention and daily probe sessions occurred in the study (53.7% for daily probe sessions and 39.9% for intervention). The possible reasons for the high error rates can be explained by the features of the target behavior taught in the study. Responding appropriately to the lures of strangers requires mental reasoning in addition to imitation of a chained skill. In other words, participants of the study needed to evaluate their position during the intervention differently than in a daily routine. For example, the participants were taught and are used to accepting and consuming various edibles and pleasant suggestions delivered by their parents and/or familiar persons around them. However, in this study, the participants were required to reject these kinds of suggestion and invitation delivered to them from strangers. Therefore, the participants were expected to discriminate dangerous and non-dangerous suggestions and invitations. When the characteristics of children with autism are considered, the difficulty of differentiating between such situations are evident.

Second, as mentioned earlier, daily probe sessions were conducted to test the acquisition of the target behavior. The mean for the daily probe time through criterion across the participants was 14 minutes and 46 seconds. Conducting daily probe sessions may turn out to be inefficient in terms of time.

Third, Haluk did not show any progress during the first 10 intervention sessions, therefore modifications were made and more intrusive prompts were delivered for him. The number of training trials was increased between the eleventh and fifteenth intervention sessions, the researcher stayed within his view between the twelfth and fifteenth intervention sessions and stayed just behind him during the fourteenth and fifteenth intervention sessions. All these modifications and prompts were faded after an increase was observed in his performance during the fifteenth intervention session. At this point, the intervention was delivered as planned at the beginning of the study.

Fourth, there was a significant decrease in the first maintenance probe data for Haluk. The researcher was told by his mother that there were serious problems between herself and her husband and Haluk could have been negatively affected by these problems.

An error analysis was conducted during all of the experimental sessions to explain the error patterns in the study. The error analysis showed that the participants performed the topographical errors most of the time. The

possible causes of this can be explained by the characteristics of the target behavior. There were only two steps in the target behavior. The limited number of steps in the task analysis may have prevented exhibition of other types of error. The other explanation can be the deliverance of a controlling prompt 4 seconds after the task direction. The absence of duration error in the study can be explained by the use of physical prompting.

Limitations

Although the results of the study were positive, they should be interpreted with caution. First, the results were limited with only the participants and target skill of the study. Second, because the present study incorporates an instructional package, when a change in target behavior occurs, it is difficult to determine if the entire instructional package or its components impacted the change. Third, the social validity findings were derived from a non-standard measure with two parents. Therefore, the results should be read with caution. Fourth, the participants of the study performed well with imitation. This could be a potential limitation when trying to generalize the study with other children with autism.

Implications for practice and further research

Since the results of the study are positive, teachers and practitioners are recommended to use the instructional package proposed in this study to teach their children with autism to protect themselves from the lures of strangers. By considering the weaknesses and strengths of the study, as well as the observations of the researchers during implementation, the following suggestions can be proposed for future researchers. First, research replicating the present study and investigating the effects of the instructional package proposed in this study to teach different behavior and different participants is needed. Second, the differential effects of the components of the instructional package should be investigated. Third, since a one-on-one instructional arrangement was used in the study, the same study can be conducted with a small group instructional arrangement. Fourth, studies assessing the long term effects of the instructional package are needed. Fifth, research investigating the effects of other response prompting strategies, such as simultaneous prompting and constant time delay, is needed.

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References

- Alcantra, P.R. (1994) 'Effects of Videotape Instructional Package on Purchasing Skills of Children with Autism', *Exceptional Children* 61: 40–55.
- Bidwell, M.A., & Rehfeldt, R.A. (2004) 'Using Video Modeling to Teach a Domestic Skill with an Embedded Social Skill to Adults with Severe Mental Retardation', *Behavioral Interventions* 19: 263–274.
- Branham, R.S., Collins, B.C., Schuster, J.W., & Kleinert, H. (1999) 'Teaching Community Skills to Students with Moderate Disabilities: Comparing Combined Techniques of Classroom Simulation, Videotape Modeling, and Community-Based Instruction', *Education and Training in Mental Retardation and Developmental Disabilities* 34: 170–81.
- Bryan, L.C., & Gast, D.L. (2000) 'Teaching On-Task and On-Schedule Behaviors to High-Functioning Children with Autism via Picture Activity Schedules', *Journal of Autism and Developmental Disorders* 30: 553–567.
- Cicero, F.R., & Pfadt, A. (2002) 'Investigation of a Reinforcement-Based Toilet Training Procedure for Children with Autism', *Research in Developmental Disabilities* 23: 319–331.
- Clees, T.J., & Gast, D.L. (1994) 'Social Safety Skills Instruction for Individuals with Disabilities: A Sequential Model', *Education & Treatment of Children* 17: 163–185.
- Collins, B.C., Schuster, J.W., & Nelson, C.M. (1992) 'Teaching a Generalized Response to the Lures of Strangers to Adults with Severe Handicaps', *Exceptionality* 3: 67–80.
- Collins, B.C., Stinson, D.M., & Land, L. (1993) 'A Comparison of In Vivo and Simulation Prior to In Vivo Instruction in Teaching Generalized Safety Skills', *Education and Training in Mental Retardation* 28: 128–142.
- Denny, M., Marchand-Martella, N., & Martella, R.C. (2001) 'Using Parent-Delivered Graduated Guidance to Teach Functional Living Skills to a Child with Cri Du Chat Syndrome', *Education and Treatment of Children* 23: 441–454.
- Doyle, B.T., & Doyle-Iland, E. (2004) *Autism Spectrum Disorders from A to Z*. Texas: Future Horizons.
- Duker, P.C., Didden, R., & Sigafoos, J. (2004) *One-to-One Training*. Texas: PRO-ED.
- Gast, D.L., Collins, B.C., Wolery, M., & Jones, R. (1993) 'Teaching Preschool Children with Disabilities to Respond to the Lures of Strangers', *Exceptional Children* 59: 301–311.
- Gursel, O., Tekin-Iftar, E., & Bozkurt, F. (2006) 'Effectiveness of Simultaneous Prompting in Small Group: The Opportunity of Acquiring Non-Target Skills through Observational Learning and Instructive Feedback', *Education and Training in Developmental Disabilities* 41: 225–243.
- Haring, T.G., Kennedy, C.H., Adams, M.J., & Pitts-Conway, V. (1987) 'Teaching Generalization of Purchasing Skills across Community Settings to Autistic Youth Using Videotape Modeling', *Journal of Applied Behavior Analysis* 20: 89–96.
- Haseltine, B., & Miltenberger, R.G. (1990) 'Teaching Self-Protection Skills to Persons with Mental Retardation', *American Journal on Mental Retardation* 95: 188–197.
- Heflin, L.J., & Alaimo, D.F. (2007) *Students With Autism Spectrum Disorders: Effective Instructional Practices*. Upper Saddle River, New Jersey: PEARSON/Merrill Prentice Hall.
- Lumley, V.A., Milenberger, R.G., Long, E.S., Rapp, J.T., & Roberts, J.A. (1998) 'Evaluation of a Sexual Abuse Prevention Program for Adults with Mental Retardation', *Journal of Applied Behavior Analysis* 31: 91–101.
- MacDuff, G.S., Krantz, J.P., & McClannahan, L.E. (1993) 'Teaching Children with Autism to Use Photographic Activity Schedules: Maintenance and Generalization of Complex Response Chains', *Journal of Applied Behavior Analysis* 26: 89–97.

- Matson, J.L. (1984) 'Talking about the Best Kept Secret: Sexual Abuse and Children with Disabilities', *The Exceptional Parent* 14: 15–20.
- Mazzucchelli, T.G. (2001) 'Feel Safe: A Pilot Study of a Protective Behaviors Programme for People with Intellectual Disability', *Journal of Intellectual and Developmental Disabilities* 26: 115–126.
- Mechling, L.C. (2008) 'Thirty Year Review of Safety Skill Instruction for Persons with Intellectual Disabilities', *Education and Training in Developmental Disabilities* 43: 311–323.
- Morse, T.E., & Schuster, J.W. (2000) 'Teaching Elementary Students with Moderate Intellectual Disabilities How to Shop for Groceries', *Exceptional Children* 66: 273–288.
- Nikopoulos, C., & Keenan, M. (2006) *Video Modelling and Behaviour Analysis: A Guide for Teaching Social Skills to Children with Autism*. London: Jessica Kingsley Publishers.
- Reagon, K.A., Higbee, T.S., & Endicott, K. (2006) 'Teaching Pretend Play Skills to a Student with Autism Using videomodeling with a Sibling as Model and Play Partner', *Education and Treatment of Children* 29: 517–528.
- Scheuermann, B., & Webber, J. (2002) *Autism: Teaching Does Make a Difference*. Belmont, CA: Wadsworth/Thomson Learning.
- Shipley-Benamou, R., Lutzker, J.R., & Taubman, M. (2002) 'Teaching Daily Living Skills to Children with Autism through Instructional Videomodeling', *Journal of Positive Behavior Interventions* 4: 163–175.
- Smith, M.S., & Donnelly, J.A. (1998) 'Successful Transition of Students with Autism', in R.L. Simpson & B.S. Myles (eds.), *Educating Children and Youth with Autism. Strategies for Effective Practice*. (pp.257–274). Texas: PRO-ED.
- Stokes, T.F., & Baer, D.M. (1977) 'An Implicit Technology of Generalization', *Journal of Applied Behavior Analysis* 10: 349–367.
- Tawney, J.W., & Gast, D.L. (1984) *Single Subject Research Design in Special Education*. Columbus, OH: Merrill.
- Tekin-Iftar, E. (2008) 'Parent-Delivered Community-Based Instruction with Simultaneous Prompting for Teaching Community Skills to Children with Developmental Disabilities', *Education and Training in Developmental Disabilities* 43: 249–265.
- Tekin-Iftar, E., & Kircaali-Iftar, G. (2006) *Ozel egitimde yanlissiz ogretim yontemleri* (3. Baski) [Errorless teaching methods in special education (3rd Ed.)]. Ankara: Nobel.
- Tekin-Iftar, E., Kurt, O., & Acar, G. (2008) 'Enhancing Instructional Efficiency through Generalization and Instructive Feedback', *International Journal of Special Education* 23: 147–158.
- Unicef (2005) *The State of the World's Children 2005*. Retrieved December 20, 2006, from <http://www.unicef.org/sowc05/english/fullreport.html>
- Watson, M., Bain, A., & Houghton, S. (1992) 'A Preliminary Study in Teaching Self-Protective Skills to Children with Moderate and Severe Mental Retardation', *The Journal of Special Education* 26: 181–194.
- Wolery, M., Ault, M.J., & Doyle, P.M. (1992) *Teaching Students with Moderate to Severe Disabilities: Use of Response Prompting Strategies*. NY: Longman.
- Wolery, M., Bailey, D.B., & Sugai, G.M. (1988) *Effective Teaching: Principles and Procedures of Applied Behavior Analysis with Exceptional Students*. Boston: Allyn and Bacon.
- Woods, J., & Poulson, C.L. (2006) 'The Use of Scripts to Increase the Verbal Initiations of Children with Developmental Disabilities to Typically Developing Peers', *Education and Treatment of Children* 29: 437–457.