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The Effects of Simultaneous Prompting on Teaching Expressive Identification of Objects: an instructive feedback study

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ABSTRACT *The present study examined whether the use of a simultaneous prompting procedure would result in an increase in the percentage of correct responses when expressively identifying first aid materials. A multiple probe design across behaviours and replicated across students was used. Three training sets with a total of nine first aid materials were presented to three students. Also, instructive feedback stimuli were presented during consequent events to increase the efficiency of instruction. The instructive feedback contained the functions of the instructional materials. Maintenance effects were assessed 1, 2, and 4 weeks after training. The results showed that all students learned expressive identification of first aid materials and maintained them after training. Furthermore, all students acquired and maintained some of the instructive feedback stimuli presented to them during instruction.*

Introduction

In the past 30 years, considerable research has examined the effectiveness of different instructional procedures on teaching various skills to students with intellectual disabilities (Werts, Wolery, Holcombe, & Gast, 1995). One of these procedures, simultaneous prompting, has been investigated in the past decade. There is a limited number of studies indicating the effectiveness of simultaneous prompting (e.g., Dogan & Tekin-Iftar, 2002; Griffen, Schuster, & Morse, 1998; Schuster & Griffen 1993; Schuster, Griffen, & Wolery, 1992; K.C. Singleton, Schuster, & Ault, 1995; Tekin & Kircaali-Iftar, 2002; Tekin-Iftar, 2003) and further research is needed.

Simultaneous prompting is an instructional procedure which involves presenting the discriminative stimulus and immediately providing a controlling prompt. In other words, when using the simultaneous prompting procedure, there is a zero second delay between the discriminative stimulus and the controlling prompt. The teacher prompts the correct response with the discriminative stimulus. Independent student responding can not occur when using simultaneous prompting since the

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controlling prompt is always presented with the discriminative stimulus during training sessions. After the first training session, probe sessions are needed to test the transfer of the stimulus control from the controlling prompt to the natural stimulus (Griffen et al., 1998; Maciag, Schuster, Collins, & Cooper, 2000; Parrott, Schuster, Collins, & Gassaway, 2000; D.K. Singleton, Schuster, Morse, & Collins, 1999; K.C. Singleton et al., 1995).

Studies have examined the effectiveness of the simultaneous prompting procedure on teaching discrete tasks, such as identifying national flags, stating addition facts, identifying unlabelled outlines of the states from a US map, demonstrating manual signs for communication of picture symbols (Fickel, Schuster, & Collins, 1998), object naming (MacFarland-Smith, Schuster, & Stevens, 1993), science vocabulary words (Johnson, Schuster, & Bell, 1996), word identification (Gibson & Schuster, 1992; Griffen et al., 1998; Schuster et al., 1992; K.C. Singleton et al., 1995; Wolery, Holcombe, Werts, & Cipollone, 1993), identifying animals (Tekin & Kircaali-Iftar, 2002), identifying occupations from picture cards (Dogan & Tekin-Iftar, 2002), identifying community signs (Tekin-Iftar, 2003) and chained tasks, such as cooking skills (Schuster & Griffen, 1993), dressing skills (Sewell, Collins, Hemmeter, & Schuster, 1998), vocational skills (Fetko, Schuster, Harley, & Collins, 1999), assembly of shipping boxes skills (Maciag et al., 2000), and hand washing (Parrott et al., 2000). Wolery, Ault, and Doyle (1992) stated that simultaneous prompting is a systematic form of the antecedent prompt and testing procedure. The controlling prompt and the discriminative stimulus are presented at the same time in simultaneous prompting. In other words, the teacher presents the target stimulus (e.g., "What does this sign mean?") and immediately presents the controlling prompt (e.g., "This sign means go out."). The controlling prompt is immediately presented during instruction, and the student does not have the opportunity to respond to the task direction independently. Therefore, separate probe sessions are needed to test the establishment and transfer of the stimulus control.

However, the effectiveness of any procedure should not be the only reason to utilise that procedure to provide instruction to students with disabilities. Efficiency is another key factor when selecting the "best" procedure for students. Wolery and Gast (1990) defined five aspects of efficiency as follows: efficiency can be viewed as (a) the rapidity of learning, (b) providing more generalised performance, (c) producing broader learning, (d) providing the emergence of relationships that are not directly taught, and (e) positively influencing later learning. Given these definitions, it can be stated that providing instructive feedback during consequent events meets at least two dimensions of efficiency: (a) producing broader learning and (b) positively influencing later learning. Instructive feedback increases the number of behaviours learned during direct instruction which means that it increases the efficiency of instruction.

Instructive feedback is a manipulation of instructional trials designed to increase the efficiency of instruction. Instructive feedback is extra, non-target information (stimuli) presented in the consequent events of instructional trials. These stimuli are presented but students are not asked to respond to those stimuli and programmed reinforcers are not provided if they do respond (Schuster, Morse, Griffen, Wolery,

1996; Werts et al., 1995; Werts, Wolery, Holcombe-Ligon, Vassilaros, & Billings, 1992). For example, with the simultaneous prompting procedure and instructive feedback, the trial sequence would be as follows: The teacher presents the task direction (e.g., "What is this?"), provides a controlling prompt (e.g., "car"), provides a response interval for the student to respond to the prompt, delivers praise for correct responding ("Great, this is car"), delivers the instructive feedback (e.g., "We ride in cars" or "Car is spelled 'c', 'a', 'r.'), and then provides the inter-trial interval and the next trial.

Some studies have investigated the acquisition of instructive feedback during direct instruction. In these studies students have usually acquired some of the instructive feedback stimuli (e.g., Doyle, Gast, Wolery, Ault, & Farmer, 1990; Doyle, Gast, Wolery, Ault, & Meyer, 1992; Doyle, Schuster, & Meyer, 1996; Gast, Doyle, Wolery, Ault, & Baklarz, 1991; Holcombe, 1991; Schuster et al., 1996; Wall & Gast, 1999; Werts, Wolery, Holcombe, & Frederick, 1993; Wolery et al., 1991).

Werts et al. (1995) described three types of instructive feedback: (a) parallel instructive feedback stimuli that require the same responses as the target stimuli (e.g., equivalent fractions and percentages, Arabic and Roman numerals); (b) expansion instructive feedback stimuli that require different responses from the target stimuli (e.g., expressively identifying the objects and functions of those objects); and (c) novel instructive stimuli that require different responses from the target stimuli and usually from a different curriculum domain conceptually unrelated to the target stimuli (e.g., science facts and geography facts).

There are only five studies examining the acquisition of instructive feedback while using simultaneous prompting (Griffen et al., 1998; Parrott et al., 2000; Schuster & Griffen, 1993; K.C. Singleton et al., 1995; Wolery et al., 1993). Among the five studies examining the acquisition of instructive feedback while using simultaneous prompting, four were conducted with primary school students (Griffen et al., 1998; Parrott et al., 2000; Schuster & Griffen, 1993; K.C. Singleton et al., 1995) and one was conducted with preschool students (Wolery et al., 1993).

There is only one study published which has investigated the effects of simultaneous prompting with middle school students (Fickel et al., 1998). In this study, the effectiveness of simultaneous prompting was assessed in a heterogeneous small group arrangement by teaching different tasks using different stimuli. Students ranged from typically developing students to those with mild/moderate intellectual disabilities. Simultaneous prompting was found to be effective in teaching this group of middle school students using different tasks with different stimuli. To date, there is no published study that has investigated the effects of simultaneous prompting with instructive feedback with middle school students. Therefore, the present study is expected to contribute to the existing research literature on simultaneous prompting. The purpose of this present study was twofold: (a) to examine the effectiveness of simultaneous prompting on teaching middle school students with a mild intellectual disability and learning disabilities to expressively identify first aid materials, and (b) to examine whether these students would acquire instructive feedback stimuli presented in the consequent events after the correct responses.

Method

Participants

Three students (2 males and 1 female) enrolled in a classroom at a public special school serving students from kindergarten to Grade 8 participated in this study. Their ages ranged from 13 years 10 months to 14 years 5 months. None of the students took medication. All students attended the program each school day from 9:00 a.m. to 2:30 p.m. The students were in the same classroom where there was a total of seven students. All three students had been previously diagnosed by a psychologist as having an intellectual disability. None of the students had a history with simultaneous prompting.

Ahmet (male) was aged 14 years 3 months. He had an IQ score of 73 on the Stanford Binet Intelligence Scale (Ugurel-Semin, 1972 cited in Oner, 1997). He had an attention disorder and had been diagnosed as having articulation problems. Ahmet was able to follow most directions and work with supervision in a wood-working class.

Sezgin (male) was aged 14 years 5 months. He was not responsive when the intelligence test was administered and, therefore, no information could be collected. Sezgin was able to follow most directions and use a telephone whenever he needed.

Selma (female) was aged 13 years 10 months and functioned in the mild range of cognitive disabilities with an IQ score of 65 on the Stanford Binet Intelligence Scale. She was able to follow most directions and complete household chores (e.g., ironing and washing dishes).

All of the students were verbal and could read and write at a 6th-grade level.

The prerequisite skills students needed for this study were as follows: (a) pay attention to audio-visual stimuli for at least 5 min; (b) follow verbal instructions, such as answering questions and asking questions; and (c) select reinforcers. The prerequisite skill of paying attention was assessed through reviewing school records as well as interviewing the classroom teacher. Following verbal instructions was assessed by delivering a simple instruction such as asking the students their home address and interviewing the teacher and school counselor. Reinforcer selection skills were assessed by conducting observations during group instruction and asking the students their preferences.

The classroom teacher (i.e., the second author) conducted all experimental sessions. Four researchers collected reliability data.

Settings and Materials

All screening, probe, instructional, and maintenance sessions occurred in a separate room of the special school. There was a blackboard at the left of the door, a rectangular desk (70 cm $\times$ 1 m) in front of the blackboard, another desk opposite the door, and two chairs at the left of the door. No persons other than the participants were present during the sessions. All sessions occurred in a 1:1 instructional format. The teacher and the student sat face to face at the desk. The room doubled as a first aid room, so first aid materials were readily available. The first aid room of the

school was chosen because it was a natural instructional setting for teaching about first aid materials.

Real first aid materials were used during all experimental sessions. A handycam camera and data collection forms were used during the study.

Screening Procedures

Expressive identification of the names of first aid materials was the target skill in this study. Identification of the first aid materials was one of the objectives of the students' Individual Education Programs. Prior to baseline conditions (first full probe conditions), 21 first aid materials were selected from a Health Information textbook. From this pool of first aid materials, nine unknown first aid materials were selected for each student. There were two screening sessions prior to baseline with a trial for each prospective target first aid material. The trials were presented in random order determined by the first author and given to the teacher immediately before the sessions. Screening sessions occurred over two consecutive days, and instructive feedback also was screened in those sessions. The screening sessions were conducted as follows. The teacher had the materials ready and explained the rules (e.g., "Selma, I am going to present you with some objects and ask you to say the name of these objects. If you think you know the name, please say the name. Otherwise, please wait. I am going to present you with another object and ask you to say the name of that object."). The teacher then obtained the student's attention. After receiving an affirmative answer to the question (e.g., "Selma, are you ready to work?"), the teacher placed the first aid material on the desk, asked the student (e.g., "Selma, tell me, what is the name of this?"), and waited 4 s. After waiting 4 s, the teacher asked the function of each first aid material (e.g., "Selma, tell me why do we use this?"). Correct and incorrect responses for the target behaviours as well as instructive feedback were ignored during the screening sessions. The nine first aid materials to which the students did not respond correctly were chosen as target behaviours. Three training sets were prepared for each student and each training set had three target behaviours. There were two criteria for distributing the first aid materials into the training sets: (a) not starting with the same letter of another material in the same set and (b) the number of the syllables in the name. The target behaviours and the instructive feedback presented with each target behaviour are in Table I.

The students' attention and cooperation were reinforced verbally at the end of each session by stating that they were attentive and cooperative with the teacher during the session (e.g., "Very good Selma. You paid attention and were cooperative with me today.").

General Procedures

All experimental sessions occurred in a 1 : 1 instructional format. A total of nine first aid materials were taught. A full probe condition across sets was conducted before

TABLE I. Students, training sets, targeted first aid materials, and instructive feedback stimuli

Student	Training sets	First aid materials	Instructive feedback
Ahmet	1	Plaster	We put the plaster and gauze on the cut.
		Bandage	We wrap the bandage around the injured area.
		Thermometer	We take our temperature with the thermometer.
	2	Stethoscope	We listen to our lungs with the stethoscope.
		Tweezers	We hold the gauze with the tweezers.
		Hypodermic needle	We use the hypodermic needle for injections.
	3	Tourniquet	We wrap the tourniquet around the bleeding arm.
		Clips	We attach the clips to the bandage.
		Respiration mask	We cover our mouth with the respiration mask to prevent infections.
Sezgin	1	Plaster	We put the plaster and gauze on the cut.
		Stethoscope	We listen to our lungs with the stethoscope.
		Sponge	We clean the wound with the sponge.
	2	Bandage	We wrap the bandage around the injured area.
		Tourniquet	We wrap the tourniquet around the bleeding arm.
		Hypodermic needle	We use the hypodermic needle for injections.
	3	Clips	We attach the clips to the bandage.
		Burn ointment	We put the burn ointment on the burned area.
		Tongue depressor	The tongue depressor is used to examine our throat.
Selma	1	Gauze	We put the gauze on the wound.
		Thermometer	We take our temperature with the thermometer.
		Hypodermic needle	We use the hypodermic needle for injections.
	2	Plaster	We put the plaster and gauze on the cut.
		Tourniquet	We wrap the tourniquet around the bleeding arm.
		Respiration mask	We cover our mouth with the respiration mask to prevent infections.
	3	Burn ointment	We put the burn ointment on the burned area.
		Tweezers	We hold the gauze with the tweezers.
		Stethoscope	We listen to our lungs with the stethoscope.

the instruction of each training set and after criterion was reached for each set. A minimum of three consecutive full probe sessions were conducted in each full probe condition. Instructive feedback was assessed at least 30 min after the last full probe session in every full probe condition. During instruction, one daily probe and one training session were conducted in the morning and one daily probe and one training session were conducted in the afternoon during each school day. The daily probe sessions were conducted right before the training sessions. A daily probe session did not take place on the first training day. The morning sessions were conducted between 9:30 and 10:15 a.m. and the afternoon sessions were conducted between 2:30 and 3:15 p.m.

Experimental Design

A multiple probe design across first aid material sets and replicated across students was used to assess the effectiveness of simultaneous prompting on teaching expressive identification of first aid materials. The dependent variable of the study was the percent of correct responses (i.e., expressive identification of first aid materials) and the independent variable of the study was the simultaneous prompting procedure. The independent variable was introduced one first aid training set at a time. Experimental control was established when the student was responding at or near to zero during full probe conditions before the intervention had been introduced and then reached criterion only after the intervention was introduced (Tekin & Kircaali-Iftar, 2001; Wolery, Bailey, & Sugai, 1988).

Full Probe Conditions

Full probe conditions occurred prior to teaching each first aid material set and after the criterion was met in that set. Each full probe condition had a minimum of three full probe sessions. All sessions occurred in a 1 : 1 instructional format. Each targeted first aid material was presented twice in a random order for a total of 18 trials. The intertrial interval was 2 s. Each full probe session was conducted as follows. The teacher had the materials ready and explained the rules (e.g., "Selma, I am going to present you with some objects and ask you to say the name of these objects. If you think you know the name, please say the name. Otherwise, please wait. I am going to present you with another object and ask you to say the name of that object."). The teacher then delivered the attentional cue to the student and, after receiving an affirmative response to the question (e.g., "Selma, are you ready to work?"), the teacher presented the first aid material and gave the task direction (e.g., "Selma, tell me the name of this?"). The teacher waited 4 s for a student response. Correct responses within 4 s (e.g., "That is an hypodermic needle.") resulted in verbal praise (e.g., "Very good Selma, that is an hypodermic needle."). Incorrect responses or no responses within 4 s were ignored and the teacher presented the next trial. Students' attention and their cooperative behaviours were reinforced verbally at the end of each session by explaining that they were attentive and cooperative with the teacher during the sessions (e.g., "Very good Selma. You paid attention and were cooperative with me today.").

Instructive Feedback Probe Sessions

Following the full probe condition, an instructive feedback probe session was conducted to assess the acquisition of instructive feedback. Nine trials occurred in each instructive feedback session. This session was conducted in the same manner as a full probe session, except that the focus was now on the use of the first aid material. The teacher had the materials ready, explained the rules (e.g., "Selma, I am going to present you with some objects and ask you to say why do we use this object. If you think you know the answer please tell me. Otherwise, please wait. I am

going to present you with another object and ask you to tell me why do we use that object."). All other procedures were the same as in the full probe session.

Daily Probe Sessions

Since the controlling prompt is presented immediately in each trial in simultaneous prompting, the student does not have the opportunity to respond to the task direction independently. Therefore, a daily probe session is conducted prior to the training sessions to assess the acquisition level of the target behaviours. There was no daily probe session prior to the first training session with each set. Each targeted first aid material in the training set was presented twice for a total of six trials in each daily probe session. The daily probe sessions were the same as the full probe sessions with one exception. In daily probe sessions, only the training set that was currently being taught was assessed. A continuous reinforcement schedule was used until the criterion was reached, and the criterion was 100% correct responding for at least three consecutive daily probe sessions. Students' attention and their cooperative behaviours were reinforced at the end of the sessions in the same manner.

Training Sessions

Simultaneous prompting and instructive feedback were introduced during training sessions. After getting stable data during the first full probe condition, the teacher started to teach the first training set. Training occurred in a 1 : 1 instructional format. Each targeted first aid material in the training set was presented five times. Thus, there were 15 trials in each training session. Each student was taught one training set at a time. Two training sessions (one in the morning and one in the afternoon) were conducted each school day after the daily probe session. Training sessions were conducted as follows. The teacher had the materials ready and explained the rules (e.g., "Selma, I am going to present you with some objects and immediately tell you the name of the object. Please, repeat the name after me. If you repeat it correctly I'll provide a reinforcer and explain why we use this object. If you respond incorrectly I'll present the next object."). The teacher secured the student's attention and after receiving an affirmative response to the question (e.g., "Selma, are you ready for work?"), the teacher placed the first aid material on the table and presented the task direction (e.g., "Selma, tell me what is the name of this?"), and then immediately provided the controlling prompt (e.g., "Selma, this is an hypodermic needle.") and waited 4 s for a response. If the student imitated the controlling prompt within 4 s, the teacher verbally praised his/her response and then provided the instructive feedback (e.g., "Very good, Selma. It is a hypodermic needle and we use it for injection."). Incorrect responses or no responses within 4 s were ignored and the teacher presented the next trial. The intertrial interval was 2 s. Students' attention and their cooperation were reinforced at the end of the sessions by explaining that they were attentive and cooperative with the teacher in the usual manner.

Maintenance Probe Sessions

Maintenance sessions were conducted 1, 2, and 4 weeks after the final full probe condition. Maintenance of instructive feedback also was assessed 1, 2, and 4 weeks after the final full probe condition.

Maintenance sessions for the target behaviour and instructive feedback were identical to the full probe sessions. Reinforcement was thinned to a variable ratio three (VR3) schedule during maintenance sessions.

Reliability

Reliability data were collected during at least 25% of all experimental sessions (25% of full probe sessions, 36% of daily probe and training sessions, 33% of maintenance sessions, and 25% of instructive feedback sessions). Dependent variable reliability agreement was calculated by using the point-by-point method with a formula of the number of agreements divided by the number of agreements plus disagreements multiplied by 100 (Tawney & Gast, 1984; Tekin & Kircaali-Iftar, 2001). The dependent variable reliability data indicated 100% agreement during all sessions across all students.

The independent variable reliability (procedural reliability) data were calculated by dividing the number of teacher behaviours observed by the number of teacher behaviours planned and multiplying by 100 (Billingsley, White, & Munson, 1980; Tekin & Kircaali-Iftar, 2001). The following teacher behaviours were observed for procedural reliability: (a) having the materials ready, (b) securing the student's attention, (c) delivering the task direction, (d) delivering the controlling prompt (if appropriate), (e) waiting for the response interval, (f) delivering the correct consequences (including instructive feedback, if appropriate), (g) waiting for the intertrial interval, and (h) providing praise for attention and cooperation. Procedural reliability measures resulted in an overall percentage of 99.4 (range = 97% to 100%) accuracy during full and daily probe sessions. All teacher behaviours during full and daily probe sessions occurred with 100% accuracy, except for delivering the correct consequences ($M = 97\%$, range = 97% to 100%). Procedural reliability measures resulted in an overall percentage of 99 (range = 93% to 100%) accuracy during training sessions. All teacher behaviours during training sessions occurred with 100% accuracy, except for delivering the correct consequences ($M = 93\%$, range = 85% to 97%). Procedural reliability data for maintenance sessions for targeted behaviours and instructive feedback showed that the teacher implemented the procedure with 100% accuracy.

Results

Instructional Data

Figures 1, 2, and 3 depict the percent of correct responses during full probe, daily probe, and maintenance sessions. Daily probe data were used to assess transfer of stimulus control. Data indicate that simultaneous prompting was effective in teach-

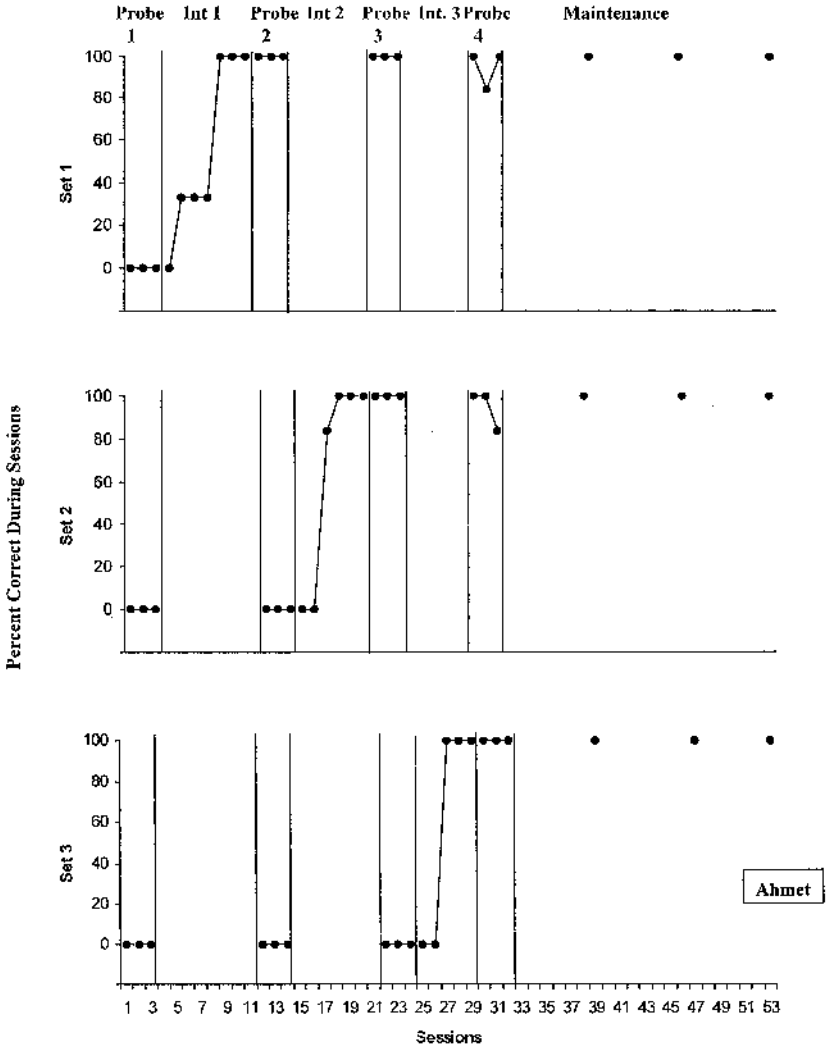

FIG. 1. The percentage of correct responses by Ahmet during full, daily, and maintenance probe sessions.

ing expressive identification of first aid materials to the three middle school students with mild intellectual disability without administering any procedural modifications.

The instructional data for each student, including the number of training sessions, the number of training trials, the number and percentage of training errors, amount of training and probe time, and the number and percentage of probe errors appear in Table II. A total of 52 training sessions and 780 training trials were required for the three students to reach criterion on the three first aid sets. Ahmet needed 19 training sessions and 285 training trials, Sezgin required 12 training sessions and 180 training trials, and Selma required 21 training sessions and 315 training trials to reach criterion on all targeted first aid sets. A total of 2 hr 45 min of training time

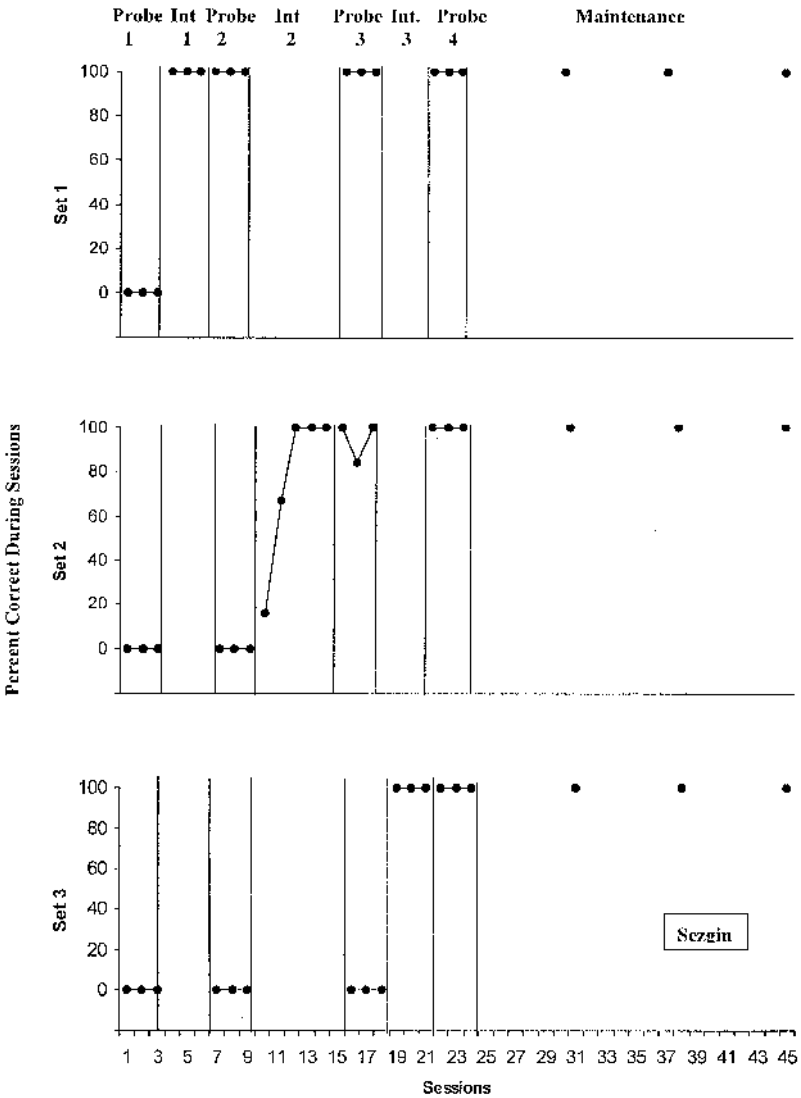

FIG. 2. The percentage of correct responses by Sezgin during full, daily, and maintenance probe sessions.

was required to reach criterion on all three sets of targeted first aid materials for all students. Ahmet and Selma required approximately 1 hr and Sezgin required approximately 40 min of training time to reach criterion on all three targeted first aid sets. Individual sets required 13 to 29 min of training time to reach criterion. Approximately 45 min of probe time was required to reach criterion for all students. No training errors occurred during training sessions. The mean of probe errors across training sets were 37%, 9%, and 42% for Ahmet, Sezgin and Selma respectively. The mean of probe errors across the students was 29%. The number of probe errors across the students was 103 out of 312 trials during probe sessions.

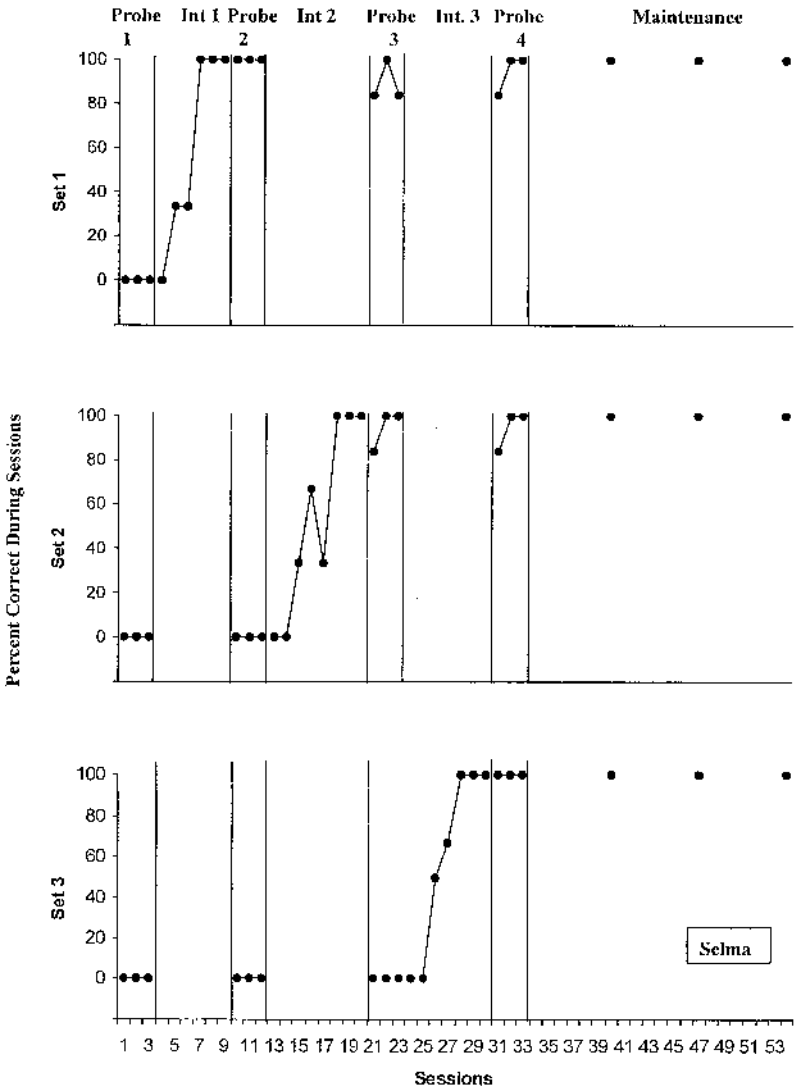

FIG. 3. The percentage of correct responses by Selma during full, daily, and maintenance probe sessions.

Instructive Feedback Data

Data indicate that each student acquired some of his/her own instructive feedback stimuli. The mean percentage of correct responding on instructive feedback stimuli for each training set for each student during full probe and maintenance sessions are presented in Table III. Maintenance data collected for instructive feedback can be summarised as follows. First, Ahmet maintained the first training set with 67% accuracy during the first maintenance probe session (i.e., 1 week after the instruction) and 100% for the last two maintenance probes (i.e., 2 and 4 weeks after the instruction), maintained the second training set with 100% accuracy across all three

TABLE II. Instructional data for each student and training set through criterion

Student/set	Number of training sessions	Number of training trials	Number of training errors	Percentage training errors	Training time (min:sec)	Daily probe time (min:sec)	Number of probe trials	Number of probe errors	Percentage probe errors
Ahmet									
1	8	120	0	0	29:36	06:03	48	18	43
2	6	90	0	0	18:23	05:43	36	13	36
3	5	75	0	0	14:55	04:38	30	12	40
Total	19	285	0	0	62:04	16:24	114	43	119
Sezgin									
1	3	45	0	0	13:10	02:53	18	0	0
2	6	90	0	0	18:23	05:05	36	7	23
3	3	45	0	0	08:30	02:05	18	0	0
Total	12	180	0	0	40:03	10:03	72	7	23
Selma									
1	6	90	0	0	21:22	05:01	36	14	39
2	8	120	0	0	21:12	06:46	48	22	46
3	7	105	0	0	21:06	06:10	42	17	40
Total	21	315	0	0	63:40	17:57	126	53	125
Grand Total	52	780	0	0	165:47	44:24	312	103	89

TABLE III. Accuracy of responding to instructive feedback during full probe conditions

Student/ set	Probe I	Probe II	Probe III	Probe IV	Maintenance I	Maintenance II	Maintenance III
Ahmet							
1	0%	100%	100%	100%	67%	100%	100%
2	0%	0%	100%	100%	100%	100%	100%
3	0%	0%	0%	67%	67%	67%	100%
Sezgin							
1	0%	0%	67%	100%	100%	100%	100%
2	0%	0%	100%	100%	100%	100%	100%
3	0%	0%	0%	100%	100%	100%	100%
Selma							
1	0%	33%	67%	100%	100%	100%	100%
2	0%	0%	0%	0%	67%	100%	100%
3	0%	0%	0%	0%	33%	67%	67%

maintenance probe sessions, and maintained the third training set with 67% accuracy for the first two maintenance probe sessions and 100% accuracy for the last maintenance session. Second, Sezgin maintained all training sets with 100% accuracy across all maintenance probe sessions. Finally, Selma maintained the first training set with 100% accuracy during the first and third maintenance probe sessions and 67% accuracy for the second maintenance probe, maintained the second training set with 67% accuracy for the first maintenance probe session and 100% accuracy for the last two maintenance probe sessions, and maintained the third training set with 33% accuracy for the first maintenance probe session and 67% accuracy for the last two maintenance sessions.

Maintenance Data

Maintenance data were collected 1, 2, and 4 weeks after the instruction had stopped. All students maintained expressive identification of first aid material sets with 100% accuracy 1, 2 and 4 weeks after instruction.

Discussion

The purpose of this study was to investigate the effectiveness of a simultaneous prompting procedure on teaching middle school students with mild intellectual disability to expressively identify first aid materials. Whether these students would acquire instructive feedback stimuli presented in consequent events after correct responses was also examined in the study. Based on the data collected, the following findings and contributions are evident.

First, the data collected indicate that simultaneous prompting was effective in teaching these middle school students with intellectual disability to expressively identify first aid materials. The findings regarding the effectiveness of simultaneous

prompting are consistent with the findings of previous studies (Gibson & Schuster, 1992; Griffen et al., 1998; Johnson et al., 1996; MacFarland-Smith et al., 1993; Schuster et al., 1992; K.C. Singleton et al., 1995; Wolery et al., 1993). Hence, this study enhances the existing but limited simultaneous prompting literature.

Second, most of the simultaneous prompting studies have been conducted with preschool or primary school age students and there is only one study conducted with middle school students (i.e., Fickel et al., 1998). Hence, the results of the present study may enhance and support the findings of Fickel et al. and the paucity of existing studies with middle school students. That is, practitioners and teachers could be advised to use simultaneous prompting for teaching various discrete behaviours to middle school students with intellectual disabilities.

Third, the data showed that students maintained the skill they acquired with 100% accuracy during follow-up sessions. In other words, it was observed that simultaneous prompting had positive effects on the maintenance of the acquired skills. This finding extends the literature on maintenance effects of simultaneous prompting with middle school students.

Fourth, the instructional data indicate that simultaneous prompting appears to be an efficient procedure in terms of facilitating the acquisition of instructive feedback. Efficiency also is described as producing broader learning and enhancing future learning. The students in this study acquired some of the instructive feedback stimuli that were not directly taught to them. These findings are consistent with other studies examining the acquisition of instructive feedback with simultaneous prompting (Griffen et al., 1998; Parrott et al., 2000; Schuster & Griffen, 1993; K.C. Singleton et al., 1995; Wolery et al., 1993). The instructive feedback stimuli used in this study are commonly found in a variety of home and school settings. It is evident that simultaneous prompting does not prevent a learner from acquiring instructive feedback and, as a result, it can be said that broader learning occurred during instruction with simultaneous prompting.

Although the results regarding the acquisition of instructive feedback were quite positive, the data seemed unstable. Possible reasons for the instability of these data need to be discussed. For example, the performance of Sezgin on instructive feedback on the first set, the first probe after instruction was 0%, the next probe 67%, and the following probe was 100%. Selma showed the same response pattern. Three reasons are suggested for these data. First, students' behavioural problems could account for these data. It was reported by the teacher that Selma and Sezgin showed resistance and inappropriate behaviours such as occasionally not responding or consciously responding incorrectly. Second, delivering reinforcement for the correct response during instructive feedback probe sessions could account for this data pattern. In other words, delivering reinforcement for the correct responses could lead to and motivate the students to acquire the instructive feedback stimuli as well as the exposure to the instructive feedback. Finally, students' characteristics such as their learning histories could account for this data pattern. The differential effects of student characteristics could be investigated in future studies.

Fifth, as indicated by the procedural reliability data, reliability agreement was found to be high (99%). This finding has special importance in this study since

response prompting strategies are relatively new for practitioners, teachers, and researchers in Turkey. Even though the teacher in this study had no history of delivering instruction with response prompting procedures, he implemented the procedure with high procedural reliability. These findings have encouraged the authors to recommend that teachers use the simultaneous prompting procedure when working with students with intellectual disability.

Sixth, students with intellectual disabilities usually exhibit training errors while receiving instruction using more traditional approaches (e.g., question–answer method). Since the controlling prompt was presented to students immediately with the discriminative stimulus on each trial in this study, no errors occurred during training. This is very important for the teacher as well as the students. It was observed that the students did not show any signs of boredom or frustration during the study. Therefore, it could be argued that providing instruction in this manner was more enjoyable both for the teacher and the students. However, the daily probe errors were excessive in the study. Any prompt or corrective feedback for the incorrect response was available during probe trials and this might have caused the excessive error rate. In future studies researchers should look for ways of decreasing or at least controlling the daily probe errors. Researchers might investigate whether intermittent probe schedules (e.g., conducting probe sessions every other day, once or twice a week) would decrease the probe errors or not. To decrease the number of errors researchers could also investigate the effects of error correction during the daily probe sessions.

There are a number of limitations to this study. First, this study was limited to teaching first aid materials to only three students with mild intellectual disability. Working with more students, who have different disabilities would be desirable. Second, there was limited information regarding the students' characteristics. For example, there was no information related to their adaptive behaviour functioning. This lack of information related to the students' characteristics means that the reader should interpret the results cautiously. Third, generalisation effects of simultaneous prompting were not examined in the study. This should be investigated in future studies.

In summary, as delivering simultaneous prompting with instructive feedback to middle school students is relatively new, additional research is needed to replicate the findings of this study. In addition, research is needed to compare the effectiveness and efficiency of other response prompting strategies (e.g., antecedent prompt and testing) with students with different characteristics (e.g., different ages, different special needs). Second, the use of different instructional formats (e.g., group format, in class) and teaching chained tasks with simultaneous prompting and instructive feedback could be examined. Third, investigations into mechanisms which assist students to acquire responses to the instructive feedback stimuli are needed. Fourth, since our procedural reliability results showed that delivering instruction with simultaneous prompting was easy, the effects of peer-delivered simultaneous prompting could be investigated. Researchers also might investigate the effectiveness and efficiency of peer-delivered and teacher-delivered simultaneous prompting on teaching skills to students with intellectual disabilities.

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