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Parent-Delivered Community-Based Instruction with Simultaneous Prompting for Teaching Community Skills to Children with Developmental Disabilities

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Abstract: The present study was designed to determine whether parents (three mothers and one grandmother) could implement CBI with SP reliably for teaching community skills to their children and the effects of parent-delivered intervention on teaching the community skills. Maintenance and generalization effects of the intervention were also analyzed in the study. Lastly, the study was designed to reveal the participants' opinions about the intervention. Four parents and their children participated in the study and mother-child dyad was formed. A multiple probe design across community skills and replicated across children was used. Results showed that all parents implemented the intervention with a high degree of treatment integrity. Parent-delivered intervention was effective on teaching community skills. Participants were able to maintain the acquired community skills over time and generalized the acquired skills to generalization sites. The participants' opinions regarding the social validity aspects of the study were positive in general. Based upon evaluation of the findings and implications of the study, future research needs are discussed.

Parents' participation in education of children has been highly valued by educators and researchers over the past 25 years. Parental involvement has received even more attention in the field of special education. Prior to 1980s, parental involvement in education was an exceptional rather than a routine implementation. After then, considerable number of evidence based research studies or theory papers suggested that parental involvement has positive outcomes on children's learning and adjustment. In the education process of children, parents can take different roles such as program evaluators, decision makers etc.

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The findings of a survey study indicated that parents want to take part in the education program of their children with developmental disabilities besides simply attending parent-teacher meetings (Westling, 1996). Spann, Kohler, and Soenksen (2003) grouped the benefits of involvement of parents in education of their children with disabilities as follows: (a) positive outcomes for the children, (b) greater generalization and maintenance, (c) greater continuity in intervention programs, (d) higher satisfaction on the parents.

Related research has shown that parents successfully implement instructional programs of their children with developmental disabilities. These studies revealed that parents were able to teach language and communication skills (Hancock, Kaiser, & Delaney, 2002; Seung, Ashwell, Elder, & Valcante, 2006; Tait, Sigafos, Woodyatt, O'Reilly, & Lancioni, 2004), age-appropriate restaurant skills (Alvey & Aeschleman, 1990); laundry skills (Morrow & Bates, 1987), functional living skills (Denny et al., 2001), snack preparation skills (Wall & Gast, 1997a), leisure skills (Wall & Gast, 1997b), and purchasing skills (DiPipi-Hoy & Jitendra, 2004).

Literature has shown that many individuals

with developmental disabilities are not well prepared in the schools to live and work in their community (Frank & Sitlington, 2000; Patton, Cronin, & Jairrels, 1997). However, it is well-documented that quality of life is enhanced by the acquisition of life skills such as money management, independent living skills, community adjustment skills, employment and purchasing skills etc. (Xin, Grasso, Dippi-Hoy, & Jitendra, 2005). There should be no doubt on the need to teach purchasing skills to children with developmental disabilities. It is clear in the literature that individuals with disabilities often have difficulty in generalizing the acquired skills from one situation to another (Alberto & Troutman, 1995; Cooper, Heron, & Heward, 1987; Falvey, 1989; Steere, Pancsofar, Powell, & Butterwoth, 1989; Wolery, Bailey, & Sugai, 1988). Therefore, generalization to the novel situations should be planned when designing instruction for individuals with disabilities. Different strategies are suggested in the field when planning generalization such as using indiscriminable contingencies, training sufficient stimuli, loosening control over response contingencies, programming common stimuli, introducing to natural maintaining contingencies (Stokes & Baer, 1977).

Community-based instruction (CBI) is one of the approaches for promoting generalization. CBI is conducted in real settings and generally used to teach community skills such as purchasing skills, using ATM, using public phones etc. 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 resisting the lures of strangers (Gast, Collins, Wolery, & Jones, 1993), crossing a street and using public phone (Collins, Stinson, & Land, 1993), cashing a check, crossing a street, and mailing a letter (Branham, Collins, Schuster, & Kleinert, 1999), and shopping for groceries (Haring, Kennedy, Adams, & Pitts-Conway, 1987; Morse & Schuster, 2004).

Simultaneous prompting (SP) is a response prompting teaching strategy that results in promising outcomes when used to teach both discrete and chained skills to children with developmental disabilities. The teacher delivers the target stimuli and controlling prompt simultaneously in the procedure and probe sessions are needed to test the transfer of stimulus control. A growing number of evidence-based research studies have shown that SP is an effective teaching strategy for teaching discrete skills as well as chained skills (Morse & Schuster, 2004; Tekin-Iftar, 2003). The number of studies on teaching chained skills is limited as compared to the number of studies on teaching discrete skills. These limited number of studies have shown that SP is also used effectively for teaching chained skills such as making juice from frozen concentrate (Schuster & Griffen, 1993); dressing skills (Sewell, Collins, Hemmeter, & Schuster, 1998); vocational skills (Fetko, Schuster, Harley, & Collins, 1999); construction of shipping boxes (Maciag, Schuster, Collins, & Cooper, 2000), and hand washing (Parrott, Schuster, Collins, & Gassaway, 2000). SP was delivered by teachers in all but two studies where intervention was delivered by persons (e.g., peers and siblings) other than teachers (Tekin & Kircaali-Iftar, 2002; Tekin-Iftar, 2003) to teach various discrete skills to children with developmental disabilities. Although teachers and researchers have shown closer attention to the use of SP, the majority of the published studies were conducted in school settings. Therefore, using SP in nonschool settings by uncertified interventionists such as parents and peers needs to be investigated in the field.

The literature provides little guidance as to which instructional procedure to use when implementing parent-delivered CBI on teaching community skills. There is one study conducted by DiPipi-Hoy and Jitendra (2004) on teaching purchasing skills to young adults with disabilities. The authors investigated the effects of parent-delivered constant time delay (CTD) on teaching purchasing skills to their children. Findings indicated that parents were able to implement CTD and their children successfully acquired and maintained the purchasing skills.

SP and CTD are both response prompting procedures and there are similarities as well as differences between these two procedures (Tekin & Kircaali-Iftar, 2002). Main similarities can be listed as follows: (a) user friendly nature, (b) ease of implementation, (c) cost efficiency, and (d) low error rates (less than 5% and 3% for CTD and SP respectively)

during instruction. The differences between these two procedures can be stated as follows: (a) CTD has two types of correct responses whereas SP has only one type of correct response; therefore, using differential reinforcement is recommended in CTD, (b) CTD requires two types of teacher behaviors (0 s trial and delay trial); whereas, there is only one type of teacher behavior in SP (i.e., CTD requires the teacher to shift teaching behavior from 0 s trials to delay trials); (c) CTD requires students to wait for the controlling prompt (Tekin & Kircaali-Iftar). As seen from the above stated differences it could be argued that SP should be much more preferable to recommend interventionists who are not teachers. Moreover, it was also observed that stimulus control is transferred from the controlling prompt to the target discriminative stimulus during 0 s trials of CTD (Schuster, Griffen, & Wolery, 1992; Tekin & Kircaali-Iftar) which means that learning occurred during 0 s trials of CTD. Therefore, it might be argued that delay trials in CTD may not be necessary to implement.

Based on the above discussions it could be concluded that it is important to find out whether SP could be delivered by parents in a community setting and whether the parents could teach purchasing skills to their children. Therefore, the present study aimed to examine the effectiveness of parent delivered CBI with SP on teaching purchasing skills to four children with developmental disabilities. This study was designed to answer the following research questions: (a) Will parents (three mothers and one grandmother) implement CBI with SP reliably in teaching community skills (shopping at a grocery store, ordering a pastry from a pastry shop, and giving a cloth to be cleaned by the dry cleaner) to their daughters and sons? (b) To what extent will daughters and sons acquire the community skills taught by their parents and maintain the acquired skills after the termination of the intervention? (c) To what extent will daughters and sons generalize the acquired community skills taught by their parents into the generalization settings? (d) What are the participants' (parents and children) opinions about the intervention?

Method

Participants

Four parents (three mothers and one grandmother), and four children with developmental disabilities were the participants. All children were attending Developmental Disability Unit of Research Institute for the Handicapped at Anadolu University, Turkey. The mothers/grandmother were selected based on their consents and mother-child dyads were formed. Participants were Fikret, Rana, Nilay, and Fatih and their mothers, Nihal, Melda, Figen, and grandmother, Meral. All the mothers and grandmother were housewives. The mothers were informed about the research project. In order to be included in the study the mothers were asked to explain whether they were interested in (a) learning to deliver instruction, and (b) teaching community skills to their children. In order to be included in the study children were asked to explain whether they were interested in (a) learning community skills, and (b) having the selected skills in their educational programs. All children had been receiving support services from the Research Institute for four years. The researcher conducted informal interviews with mothers and teachers of the children and the results showed that the participants needed extra training on money management, purchasing skill, ordering an item at a restaurant or pastry shop etc.

Fikret was a nine year-old male student with autism and was in the 1st grade. He was diagnosed with autism at a University Hospital. He had an IQ of 92 as measured by Stanford Binet at a local center (Guidance and Research Center). He had age-appropriate self-care skills, fine and gross motor skills, and daily living skills. He had reading and writing skills. His main weaknesses were in social, communication, and play skills. Fikret was paired with his mother, Nihal who was 30 years old and held high school diploma.

Fatih was a seven year-old male student with autism and mental retardation and was a mainstreamed kindergarten student at a public school. He got his diagnosis of autism at a University Hospital. He had an IQ of 60 as measured by Stanford Binet at Guidance and Research Center. Areas of strength included

self-care skills, fine and gross motor skills. Areas of weakness included communication skills, especially expressive language, and social skills. Fatih was paired with his grandmother, Meral, to be a dyad. She was 55 years old and held elementary school diploma.

Rana was a 12 year-old female student with moderate mental retardation and was a student at a special class in a public school. She got her diagnosis at Guidance and Research Center and had an IQ score of 50 on Leiter and 55 on Stanford Binet. Areas of strength included self-care skills, gross motor skills, and communication skills. Areas of weakness included functional academic skills, social skills, and daily living skills. She was paired with her mother, Melda. She was 37 years old and held high school diploma.

Nilay was a 12 year old female student with moderate mental retardation and autism and was a mainstreamed student at a regular classroom in a public school. She had her mental retardation diagnosis at Guidance and Research Center, and her autism was diagnosed at a University Hospital. She had an IQ score of 45 on Leitner. Areas of strength included gross motor skills. Areas of weakness included self care skills, functional academic skills, social skills, daily living skills, and communication skills. She was paired with her mother, Figen. She was 30 years old and graduated from elementary school.

Settings and Materials

The initial parent training session was conducted at the researcher's office whereas parent-delivered CBI occurred in real settings such as a grocery store, a pastry shop, and a dry cleaning store in the university campus. Generalization sessions were conducted at different sites (i.e., convenient grocery store, a pastry shop and a dry cleaning store in the neighborhood area other than those used in the training). The grocery store in the training setting had five aisles and five check out lanes. The pastry shop was about 24 square meters and had one check out lane. The dry cleaning store was approximately 150 square meters and had one check out lane. The grocery store in the generalization site had three aisles and three check out lanes. The pastry shop was about 50 square meters and had one check out lane. The visible store area for the dry cleaning store was approximately 40 square meters in the generalization site. Each child-parent dyad visited both training and generalization sites and made purchases and ordered a pastry or a dry cleaning in the study. The researcher always accompanied them to collect reliability data but was out of their vision. Data collection forms, money, and several cloths to be cleaned provided by the researcher were used in the study.

Task Analyses

Generic task analyses were developed for the sequence of the target skills that each child had to perform. The task analyses were developed by the researcher by performing the skills and observing customers at stores. However, the task analyses were modified by the researcher during the study. The critical and noncritical (social) steps were identified in the modification process. For example, greeting with a cashier was taken as a noncritical step and the performance on the noncritical steps was not required for a student to reach criterion on a skill. For purchasing skill in a grocery store a 15-step, for purchasing skill in a pastry shop an 11-step, and for ordering a dry cleaning at a dry clean center a 13-step task analyses were developed. The steps in the task analyses are in Table 1.

Dependent Measures and Possible Response Definitions

Two dependent measures were taken in the study. First, accuracy of parents' implementation of CBI with SP was used to asses the parents' acquisition of the intervention skill in community settings. The accuracy of the implementation was obtained by treatment integrity. The acquisition of the purchasing skills was the second dependent measure of the study and the percentage of the children's correct responses on the steps of the task analyses during probe sessions were taken into consideration. The possible student responses during probe sessions were as follows: (a) Correct response: The step of the task analysis performed correctly. (b) Incorrect response: The steps of the task analysis performed incorrectly. (c) No response: The students did not

TABLE 1

Task analyses for the community skills

Purchasing Skill at Migros (grocery store)	*Ordering a borek in the pastry shop*	*Ordering dry cleaning*
1. Enters the store.	1. Enters the pastry shop.	1. Enters the building.
2. Passes out tollgate.	2. Gets in line.	2. Goes downstairs.
3. Goes to the place where the item is replaced.	3. Greets with cashier.*	3. Enters the door.
4. Gets one from the shelf.	4. Orders his item by saying "I want a borek".	4. Gets in line (if any).
5. Locates open check-out lane.	5. Asks how much a borek is.	5. Greets with the cashier.*
6. Gets in line.	6. Prepares his/her money.	6. Hands the item in the bag to the cashier.*
7. Puts item on the counter.	7. Hands cashier/puts money on the counter.	7. Tells the cashier that the item needs to be cleaned by saying "This cloth needs to be cleaned".
8. Prepares money.	8. Receives changes and puts them in his/her pocket.	8. Waits the cashier to write a voucher.
9. Greets with cashier.*	9. Gets his order from cashier.	9. Gets the voucher from the cashier.
10. Hands cashier/puts money on the counter.	10. Says "thank you" to the cashier.*	10. Leaves the store.
11. Receives change and puts in his/her pocket.	11. Leaves pasty shop.	11. Goes upstairs.
12. Gets a bag and opens it.		12. Leaves the building.
13. Puts the item into the bag.		
14. Says "thank you" to the cashier.*		
15. Leaves the store.		

* Noncritical (social) steps

commit any responses. Correct responses during daily probe sessions were counted toward criterion. Criterion was 100% correct response for three consecutive sessions.

Social Validation

Both groups of participants, the mothers and the children, completed a social validity questionnaire individually at the end of the intervention to share their opinions about the goals, procedures, and results of the study. Questionnaires were provided to participants in envelopes and the mothers were asked to return the questionnaires in sealed envelopes. The parent version of the questionnaire was designed to reveal the opinions of the parents on (a) the significance of the target behaviors, (b) the effectiveness of the intervention, (c) the ease of the intervention, (d) the necessity of CBI, (e) the intervention's impact on parent-child relationship, (f) the possibility of using the intervention in their daily life, and (g) whether they enjoyed the instructional procedures and acting as teachers. Parent version of the questionnaire consisted of 5-point Likert-type items ranging from 1 (strongly disagree) to 5 (strongly agree). The child version of the questionnaire had almost the same topics with yes-no questions and mothers were asked to read the questions and note their children's responses. In addition to these seven closed ended questions, one open ended question was administered asking what, if any, were the strengths and the weaknesses of the intervention.

Experimental Design

A multiple probe design with probe trials across behaviors was used and replicated across subjects. The dependent variable was percentage of correct responses on performing the steps of the task analyses of the skills and, the independent variable was parent-delivered CBI with SP and introduced to one community skill at a time. The effectiveness of the intervention was built in when the student 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 & Kircaali-Iftar, 2006; Wolery et al., 1988).

General Procedures

Prior to baseline a parent training session was administrated in a group format to mothers. Baseline, intervention, generalization, and maintenance sessions were conducted in the study in 1:1 teaching arrangement. Mother-child dyads were formed. Two sessions were conducted in the study depending on the children's schedules of coming to Research Institute. Transportation to the stores was provided by the researcher. There was one trial in a session. Daily probe sessions were conducted to test the acquisition. Data were collected by the mothers. The parents were provided the exact change for the planned purchases listed just before entering the grocery or pastry shop; and the cloth just before entering the dry cleaning center by the researcher when they got off the car. The researcher usually stood at approximately 150 cm (5 feet) behind the mother-child dyad and collected the reliability data. Correct responses resulted with verbal praise and incorrect responses and no response resulted with ignorance during all experimental sessions. Parent-selected social reinforcers were used in the study. The purchased items (from grocery and pastry shop) were given to the children as tangible reinforcers at the end of the sessions. Feedbacks were given to parents upon their performance by the researcher.

Parent training sessions. The parents were trained through - verbal description, role modeling, guided practice, and performance feedback - sequence in a small group teaching arrangement (Tekin-Iftar, 2003). Prior to training, the researcher asked what they knew about CBI and SP to determine their entry performance. The parents reported that they neither had any knowledge nor experience with the intervention. Parent training took 75 minutes. First, instructional concepts (i.e., controlling prompt, target stimulus, response interval, inter-trial interval, reinforcement, probe, data collection, CBI) were described with verbal instruction in nontechnical terms. Then, the parents were asked to respond to the questions raised by the researcher about each concept. Second, the researcher role-played and modeled SP, and provided negative examples of SP. Mothers were asked to discuss every single negative example that was performed by the researcher. Third, the researcher took the role of being a learner and let all parents be her teacher and deliver SP. The researcher delivered feedback to each parent until each of them delivered SP with 100% accuracy. Also, during guided practice each mother took the role of being a learner and the researcher let the parents be the teacher of her partner. Fourth, the researcher delivered feedback to each parent until each of them delivered the procedure with 100% accuracy.

Baseline/Probe sessions. Baseline sessions were conducted before introducing the intervention to the first community skill until stable data were recorded for at least three consecutive sessions. During baseline/probe sessions the parent (a) had materials ready, (b) secured her child's attention (e.g., "Are you ready? We will practice shopping at Migros in a minute. Shall we start?"), (c) delivered verbal praise for her child's attentional behavior (e.g., "Very good!" (d) provided the target stimulus (e.g.," Nilay, please go get milk from Migros."), (e) delivered appropriate behavioral consequences to her child's response (i.e., Correct responses resulted in verbal praise; incorrect or no responses were ignored). Single opportunity method was used during the sessions. Data for the error analysis were collected in the study (topography errors, sequence errors, and duration error). Corrective feedbacks were given to the parents upon their performance by the researcher.

Daily probe sessions. Since the controlling prompt was presented immediately in each trial, the children did not have the opportunity to respond to task direction independently during training sessions. Therefore, daily probe sessions were conducted to test the acquisition on the skill that was currently being taught. There was no daily probe session prior to the first training session with each community skill. These sessions were conducted just like baseline sessions.

SECBI with SP instruction. During the intervention sessions parents delivered SP for teaching purchasing skills to their daughters/sons in the community. During intervention sessions the parent (a) had materials ready, (b) secured her child's attention (e.g., "Are you ready? We will practice shopping at Migros in a minute. Shall we start?"), (c) delivered verbal praise for her child's attentional behavior, (d) provided the target stimulus (e.g.," Nilay, please go get milk from Migros"), (e) provided controlling prompt followed by the target stimulus (e.g., parents modeled the steps with verbal description), (f) waited her child to imitate the prompt, (g) delivered appropriate behavioral consequences to her child's responses. Model prompt with verbal description was used during the intervention with all children. A trial was conducted for each session and total task format was used during instruction. Due to a possible sequence effect, the teaching sequence of the community skills was changed for each child.

Generalization and maintenance. Generalization probes were conducted at different sites out of university campus during baseline and after intervention. The generic task analyses developed for the training sites were modified for the generalization sites. The criteria for generalization sites were 100% accuracy. If a child did not achieve criteria, CBI with SP sessions were planned to teach the mastery in generalization sites.

Two and five weeks after acquisition, maintenance probe sessions were conducted. Maintenance probe sessions occurred in the community where the children were initially trained (one maintenance session was conducted for each child for the first community skill). Generalization and maintenance probe trials were conducted just like baseline/probe trials and the same response definitions and behavioral consequences were used.

Reliability

Interobserver agreement and treatment integrity were calculated in the study. A point by point formula was used to analyze interobserver agreement (Tawney & Gast, 1984). Treatment integrity data were collected to estimate whether or not parents delivered CBI with SP reliably. Task analyses of the experimental sessions were used to assess the occurrences and nonoccurrences of the planned steps of all experimental sessions. Planned steps that parents were expected to demonstrate for SP were (a) having the child and materials ready in the community setting, (b) securing the child's attention, (c) presenting task direction, (d) providing controlling prompt immediately after the task direction, (e) delivering appropriate behavioral consequences. Observed parent behaviors/planned parent behaviors X 100 formula was used for calculating treatment integrity (Billingsley, White, & Munson, 1980; Tekin-Iftar & Kircaali-Iftar, 2006).

Interobserver agreement reliability data across behaviors and children was 100% agreement during baseline/probe sessions, daily, and maintenance probe sessions, and 93% during intervention. Interobserver agreement reliability data analyses showed 92% agreement for generalization probe sessions across students and behaviors.

Results

Reliability Estimates

Treatment integrity analyses demonstrated that the parents implemented the planned steps of intervention with high accuracy. Parents delivered the intervention with an average of 91% (range = 84% - 94%) compliance of the planned steps of the instruction; baseline, daily and maintenance probe sessions with 100% compliance; generalization probe sessions with an average of 94% (range = 90% - 98%) compliance of the planned steps of the session. The individual treatment integrity data for each parent during baseline and daily probe sessions, intervention, maintenance

and generalization probe sessions are in Table 2.

Effectiveness on Acquisition and Maintenance

Figures 1 through 4 illustrate the effectiveness of CBI with SP delivered by parents on skill acquisition and maintenance for three community skills for Fikret, Fatih, Rana, and Nilay respectively. Data indicated that CBI with SP delivered by parents was effective in teaching three community skills to children with developmental disabilities and maintaining the acquired skills over time. No procedural modification was needed during training other than the modifications in the task analyses (i.e., identifying the noncritical steps of the task analyses). The introduction of CBI with SP by parents in each instructional session resulted in criterion level responding on the skill performance of the children. Furthermore, all students maintained the criterion level responding during the maintenance probe sessions.

Efficiency

Efficiency data of the study are summarized in Table 3. Measures of efficiency are number of training sessions and trials, number and percent of training errors, total training time, total probe time, and number and percent of probe errors through criterion. Fikret needed 10 training sessions and 10 trials with a total of 52 min and 32 s training time to reach the criterion across three community skills. He needed 33 min and 30 s probe time for reaching criterion across his skills. He had 56 errors during probe sessions with 18% mean probe error across three community skills. Fatih had nine training sessions and nine trials with a total of 1 h 4 min and 7 s training time to reach criterion across three community skills. He needed 35 min and 49 s probe time to reach criterion in his skills. He performed 42 errors during probe sessions with 19% mean probe error across the skills. Rana needed six training sessions and six trials with a total of 46 min and 30 s training time to reach the criterion across three community skills. She needed 27 min and 48 s probe time for reaching criterion across her skills. She had 25 errors during probe sessions with 14% mean probe error across three community skills. Nilay had nine training sessions and nine trials with a total of 1 h and 14 s training time to reach the criterion across three community skills. She needed 32 min and 17 s probe time for reaching criterion across her skills. She had 38 errors during probe sessions with 18% mean probe error across three community skills. None of the children committed any errors during training sessions. Error analysis was conducted for the errors during probe sessions. Error analyses showed that children committed 47% topographical errors, 37% sequence errors and 16% duration errors in the study.

Effectiveness on Generalization

Prior to instruction the mean percentage of correct responding for the community skills in the generalization sites was 11% accuracy (range = 0% - 27%) across all children. After obtaining criterion level responding in the training sites, the children generalized the community skills they learned to generalization sites with 100% accuracy. In addition, children maintained the generalized community skills during maintenance probe sessions on criterion level responding.

Social Validation

All participants returned their questionnaires. Parents reported that acquiring the target behaviors selected in the study were important for their children and themselves and explained the positive effects of the intervention. Three out of four parents marked 5 for the ease of the intervention and the necessity of delivering CBI. In other words, three of them found the intervention easy to implement whereas one parent (grandparent) was undecided regarding the ease of the intervention. All parents explained that they had positive and nurturing relationship with their children during the intervention. All parents marked 5 for the possibility of using the intervention, enjoying the instructional procedures, and acting as a teacher. All parents reported that providing instruction in the community settings and presenting the prompt immediately during the instruction was the most helpful part of the study and they

TABLE 2

Treatment integrity data during the experimental sessions

Parents	*Baseline/DailyProbe Sessions*		*CBI with SP*		*Generalization*		*Maintenance*	
Nihal	Having ready	100%	Having ready	100%	Having ready	100%	Having ready	100%
	Securing attention	100%	Securing attention	100%	Securing attention	100%	Securing attention	100%
	Presenting direction	100%	Presenting direction	78%	Presenting direction	100%	Presenting direction	100%
			Providing prompt	82%	Providing prompt	85%		
	Presenting consequences		Presenting consequences	100%	Presenting consequences	65%	Presenting consequences	100%
Across Steps		100%		92%		90%		100%
Melda	Having ready	100%	Having ready	100%	Having ready	100%	Having ready	100%
	Securing attention	100%	Securing attention	100%	Securing attention	100%	Securing attention	100%
	Presenting direction	100%	Presenting direction	100%	Presenting direction	100%	Presenting direction	100%
			Providing prompt	80%	Providing prompt	90%		
	Presenting consequences		Presenting consequences	90%	Presenting consequences	100%	Presenting consequences	100%
Across Steps		100%		94%		98%		100%
Figen	Having ready	100%	Having ready	100%	Having ready	100%	Having ready	100%
	Securing attention	100%	Securing attention	100%	Securing attention	100%	Securing attention	100%
	Presenting direction	100%	Presenting direction	100%	Presenting direction	100%	Presenting direction	100%
			Providing prompt	70%	Providing prompt	%85		
	Presenting consequences		Presenting consequences	100%	Presenting consequences	100%	Presenting consequences	100%
Across Steps		100%		94%		97%		100%
Meral	Having ready	100%	Having ready	100%	Having ready	100%	Having ready	100%
	Securing attention	100%	Securing attention	100%	Securing attention	100%	Securing attention	100%
	Presenting direction	100%	Presenting direction	80%	Presenting direction	100%	Presenting direction	100%
			Providing prompt	63%	Providing prompt	90%		
	Presenting consequences		Presenting consequences	77%	Presenting consequences	100%	Presenting consequences	100%
Across Steps		100%		54%		98%		100%

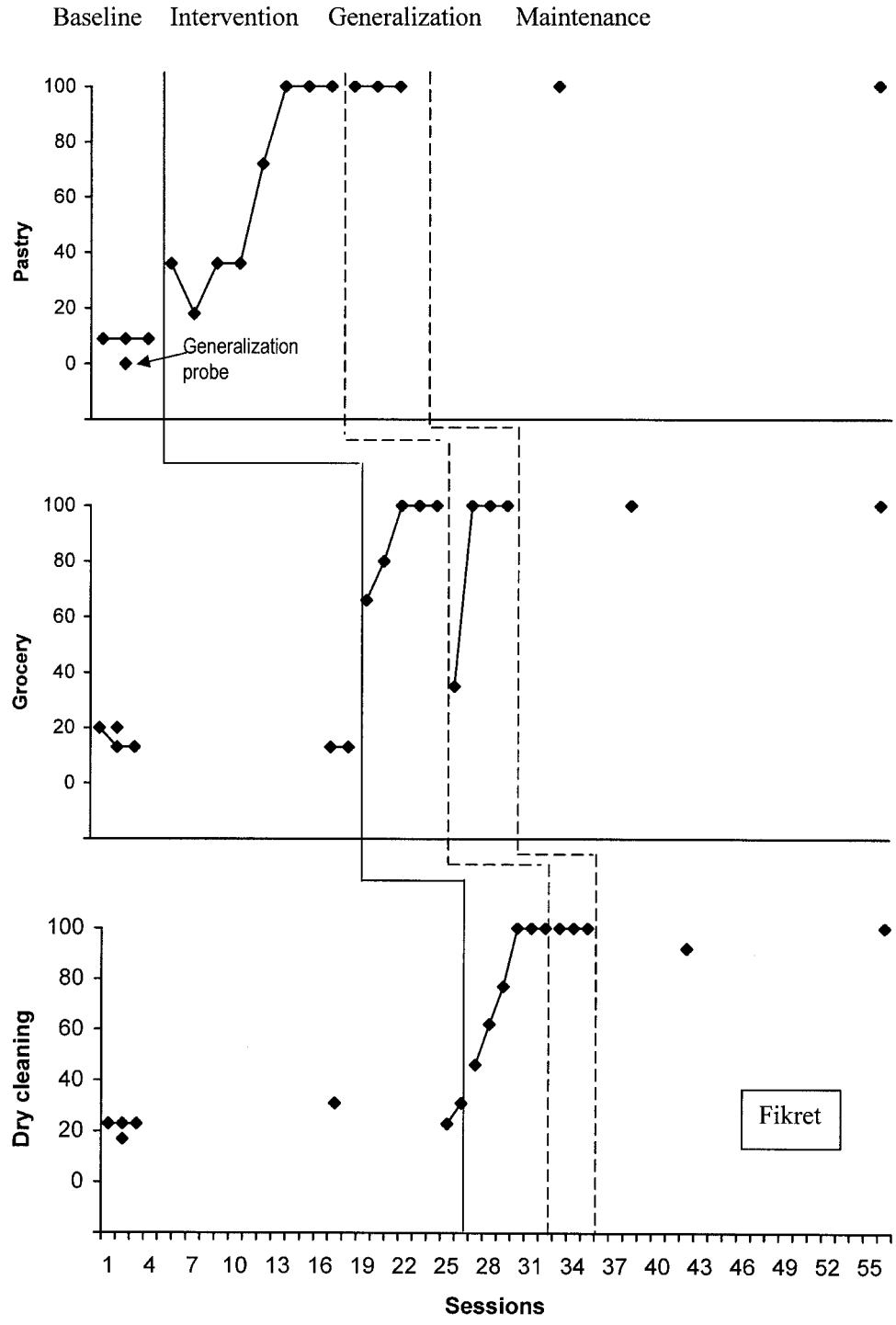

Figure 1. Percentage of correct responses without prompt for the community skills for Fikret during baseline, intervention, generalization and maintenance probe sessions. Data collected during daily probe sessions are plotted for the intervention sessions.

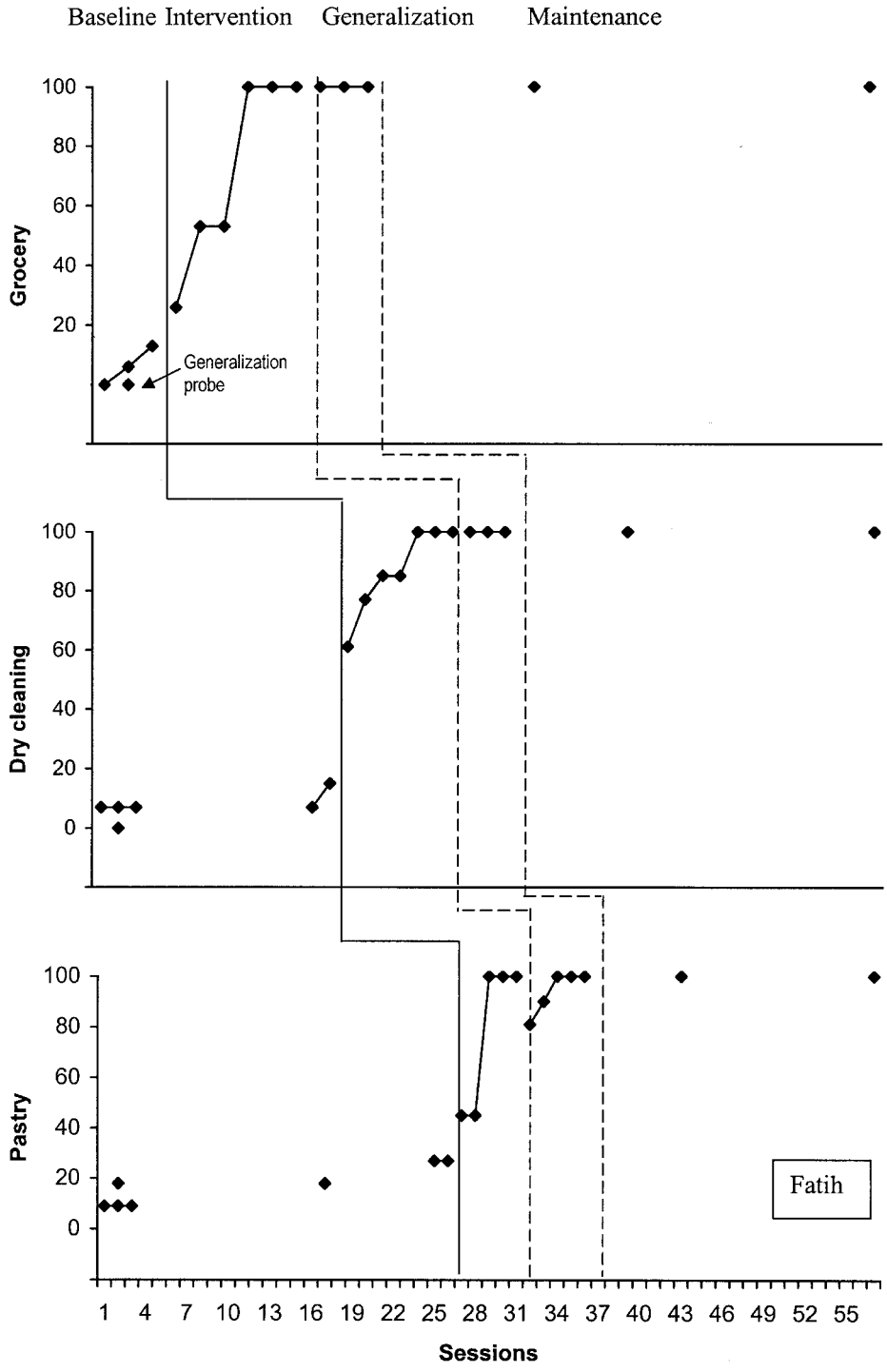

Figure 2. Percentage of correct responses without prompt for the community skills for Fatih during baseline, intervention, generalization and maintenance probe sessions. Data collected during daily probe sessions are plotted for the intervention sessions.

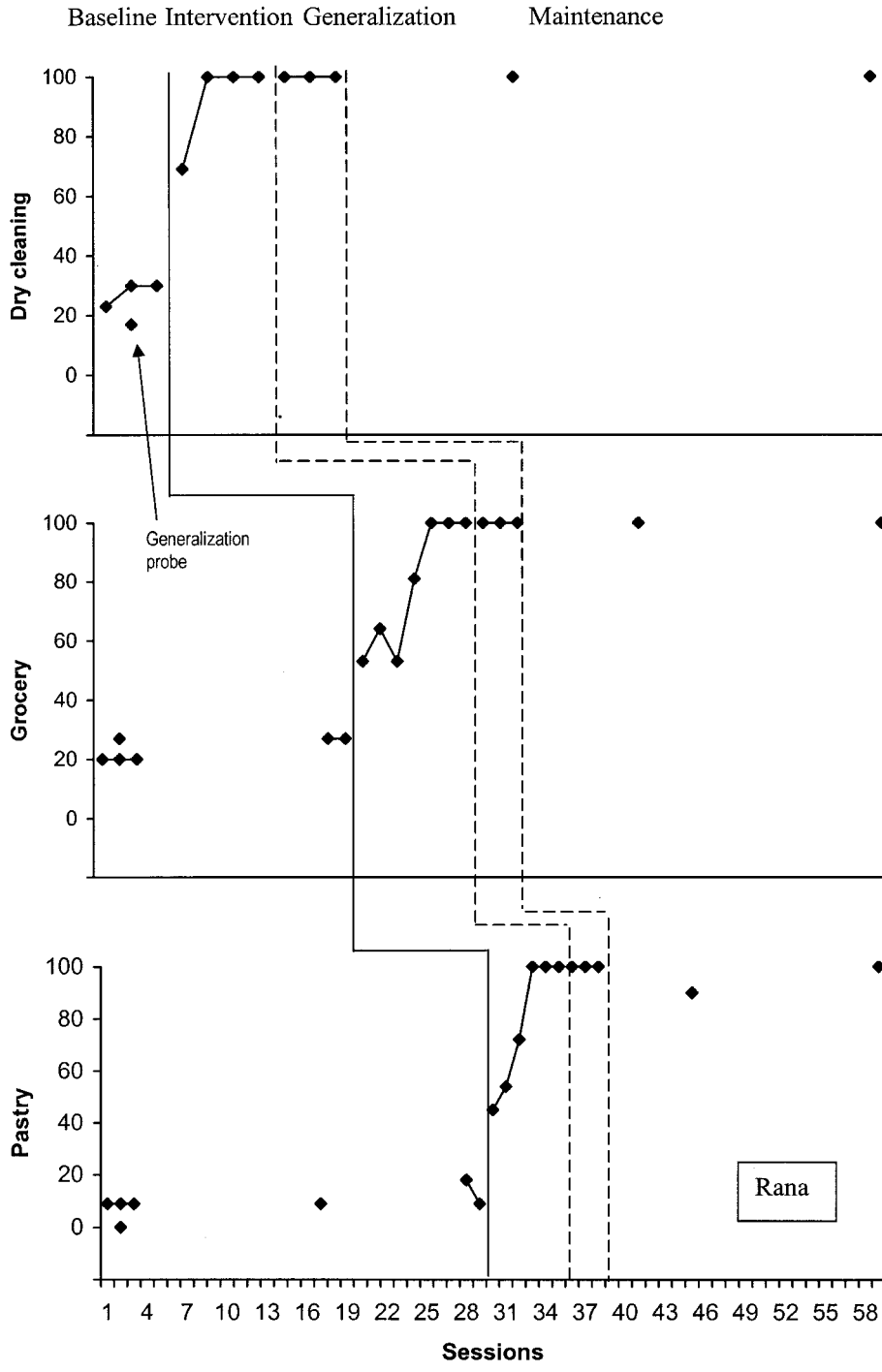

Figure 3. Percentage of correct responses without prompt for the community skills for Rana during baseline, intervention, generalization and maintenance probe sessions. Data collected during daily probe sessions are plotted for the intervention sessions.

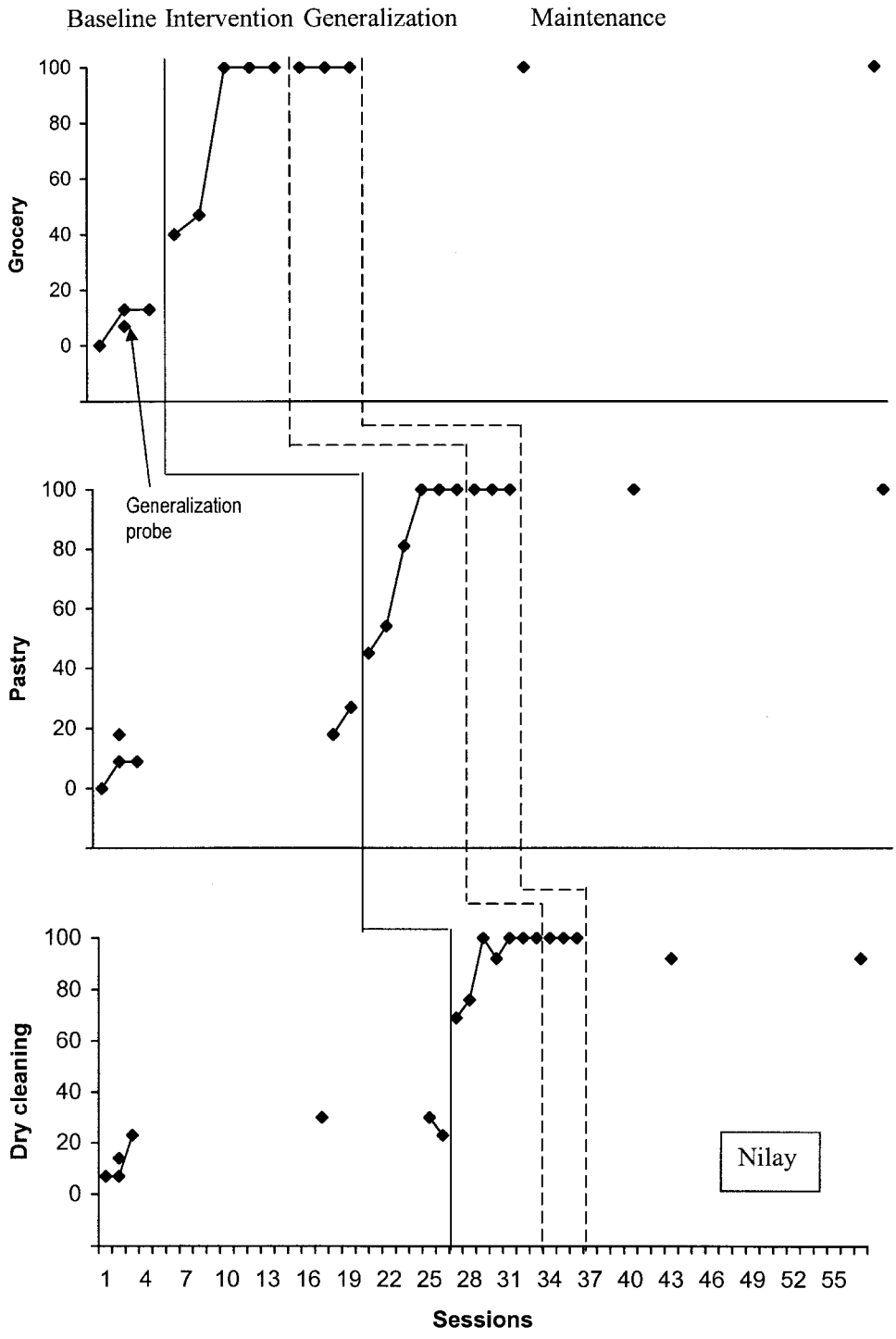

Figure 4. **Percentage of correct responses without prompt for the community skills for Nilay during baseline, intervention, generalization and maintenance probe sessions. Data collected during daily probe sessions are plotted for the intervention sessions.**

TABLE 3

Efficiency Data

Children	*Skill*	*Number of Training Sessions/Trials*	*Number and Percent of Training Errors*	*Training Time (h:m:s)*	*Probe Time (h:m:s)*	*Number* and Percent of Probe Error*
Fikret	Pastry	5/5	0/0	13:17	6:22	33/38
	Grocery	2/2	0/0	18:43	12:42	8/11
	Dry Cleaning	3/3	0/0	20:32	14:26	15/5
Total		10/10		52:32	33:30	56/18**
Fatih	Grocery	3/3	0/0	18:50	10:20	18/27
	Dry Cleaning	4/4	0/0	31:38	18:23	12/13
	Pastry	2/2	0/0	13:39	7:06	12/16
		9/9		1:04:07	35:49	42/19**
Rana	Dry Cleaning	1/1	0/0	19:18	10:58	4/8
	Grocery	2/2	0/0	17:48	11:22	7/12
	Pastry	3/3	0/0	9:24	5:28	14/21
		6/6		46:30	27:48	25/14*
Nilay	Grocery	2/2	0/0	18:05	09:24	16/21
	Pastry	3/3	0/0	14:11	8:32	14/21
	Dry Cleaning	4/3	0/0	27:58	14:21	8/11
Total		9/9		1:00:14	32:17	38/18**

* : Number of incorrect responses on the steps of the task analyses are taken by single-opportunity method.
** : Mean percent errors are taken across community skill.

did not mention any limitation regarding the implementation. The children also answered the social validity questions very positively by choosing the "yes" options for all items without any exception.

Cost

The cost for the study was $546: $146 for the expenses for grocery and pastry, and $400 for the transportation. Transportation cost was calculated at $0.12 a kilometer. Transportation was provided by the author. Expenses for the grocery and pastry were provided by the author and the transportation expenses were provided by the Turkish Academy of Sciences.

Discussion

The purpose of the study was to determine whether parents (three mothers and one grandmother) could implement CBI with SP reliably for teaching community skills to their children and the effects of parent-delivered intervention on teaching the community skills. Maintenance and generalization effects of the intervention were also analyzed in the study. Lastly, the study was designed to reveal the participants' opinions about the intervention. Based on the results of this study several findings are worthy of discussion.

First, the treatment integrity data showed that all parents implemented the intervention with a high degree of treatment integrity. There are two studies where intervention was provided either by siblings or peer tutors and in both studies SP was delivered with high accuracy (Tekin & Kircaali-Iftar, 2002; Tekin-Iftar, 2003). The findings of the present study are consistent with the findings of these previous studies. Moreover, this is the first study that combines SP with CBI and parent delivery. Therefore, the present study is assumed to extend the current literature on the use of SP.

Second, based on visual analyses of the data, it can be stated that the parent-delivered CBI with SP was effective on teaching three community skills to four children with developmental disabilities. Additionally, the visual analyses of the data showed that the effects of CBI instruction with SP were maintained over time for all children as evidenced by perfor-

mances during the 2-and-4 week maintenance probes. Furthermore, during a telephone interview about eight months after the intervention, parents reported that their children maintained the acquired community skills. These findings confirm previous investigations with results showing that SP was effective on teaching and maintaining the acquired chained tasks to children with disabilities in more controlled educational settings (Fetko et al., 1999; Maciag et al., 2000; Parrott et al., 2000; Schuster & Griffen, 1993; Sewell et al., 1998).

Third, the generalization effects of CBI with SP on generalizing the acquired community skills to natural environments were positive. The participants could generalize the acquired skills to generalization sites with high acquracy. The generalization range for students was between 81% and 100%. Therefore, it can be argued that generalization effects of SP were positive in general. This is the first study that utilizes CBI when delivering instruction with SP. Hence, the findings of the study extend the current literature on SP by adding CBI.

Fourth, the social validity of the study regarding the importance of the target behaviors, the ease of the procedure, and the significance of the findings were positive overall for both parents and the children. These findings are consistent with the findings of the previous studies examining the social validity aspects (Dogan & Tekin-Iftar, 2002; Singleton, Schuster, & Ault, 1995; Tekin & Kircaali-Iftar, 2002).

The present study has several strengths. First, this is the only study on SP investigating the role of parents as teachers. The present investigation contributes to the existing literature letting the parents teach their children using CBI with SP. This study provides further evidence that even parents with limited educational backgrounds can serve as effective instructors for their children with disabilities. Second, desirable treatment integrity findings were obtained in the study. There are two published studies where SP was implemented by persons who are not teachers. Peers (Tekin-Iftar, 2003) and siblings (Tekin & Kircaali-Iftar, 2002) took the role of teachers in these studies. Especially when considering the educational background of the parents participated in this study it would not be wrong to say that SP is easy to implement. Parents were able to acquire the intervention in a very short time (75 min) and apply it in the community settings right after the training. Third, when the findings of the study are considered, the following encouraging implication for practice can be offered. The gap between the school and home has always been an issue in the education of children with disabilities. Involving the parents in instruction of their children can prove to be an efficient bridge over this gap.

There are several issues on the limitations of the study that may have affected the overall results and interpretations and are thought to be worthy of sharing with readers. First, this study was conducted with four children with autism and mental retardation and their parents. Therefore, the results are limited in this sense. Second, since none of the participants were fluent with money skills, change for the exact cost of the purchase was given to the children in the study. In other words, money skills were not taken into consideration. Third, the author served as the reliability observer. The potential for the observer bias should be taken into consideration when interpreting the overall results. Fourth, single opportunity method was used to reduce the chance of learning in the baseline/probe sessions. Therefore, the probe data could not be considered as an indicator of the participants' actual performance. The participants might have performed more steps if they had the opportunity to continue. Teachers or practitioners who are not research-minded may wish to use multiple opportunity rather than single opportunity method in their interventions.

Based on the findings and the limitations following suggestions can be raised for future research. Further research is needed to verify the results of this study. Therefore, replication of the study with children and parents having different characteristics can be recommended. Even if CBI is effective, it is not the most efficient arrangement in terms of cost and scheduling. Therefore, the effects of conducting CBI less often than the present study can be investigated. CBI can be added to other arrangements such as classroom simulation or video modeling and the combined effects can be investigated in the future. Par-

ticipants who already have money skills can be included in the future studies and the efficiency of this intervention can be examined. This study showed that parents can deliver the intervention reliably to their children. However, whether parents would maintain the acquired implementation skill and generalize it to different teaching incidences in different settings were not investigated in the study. Hence, future research is needed to examine the maintenance and generalization effects of the parent training.

As shown by the results of this study, CBI with SP appears to be a promising intervention to promote generalization and this implementation may offer an avenue for bridging the gap between home and school.

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