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ORIGINAL ARTICLE

The Effectiveness of Video Prompting in Teaching Children with Autism the Skill of Drawing a Six-Part Person

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Abstract

This study aimed to find out the effectiveness of the video prompting procedure via iPad in teaching children with autism the skill of drawing a six-part person, and also to examine its maintenance and generalization. The research used a multiple probe design (days) across participants, which is one of the single-subject designs. The participants of the research were three male subjects at 5 and 6 years of age with autism diagnoses. The research results indicated that all three subjects learned the skill of drawing a six-part person with the video prompting procedure via iPad, and that they generalized the skill with different settings, materials and persons. Social validity results showed that the children's parents held positive opinions regarding the research study.

Keywords Autism · Video prompting · Training via iPad · Motor skill · Person drawing skill

Autism, which constitutes the greatest developmental disorder category after mental disorder, is characterized as a developmental disorder that is expressed by disabilities in reciprocal social communication and social interaction, repetitive patterns of behavior, interests and activities, and whose symptoms are known to be seen in early childhood years and to continue for a lifetime (American Psychiatric Association [APA] 2013; Center for Disease Control and Prevention [CDC] 2016; Odom et al. 2013). Children with autism are known to have different behavioral characteristics in almost all of the development fields, such as cognitive development and motor development, as compared to their peers with normal development, as well as disabilities in social and

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language development, which are among their diagnoses criteria (Davidovitch et al. 2000; Ülke-Kürkçüoğlu and Kırcaali-İftar 2010).

Studies have shown that many children with autism lack basic cognitive and academic skills, language and communication skills, and skills based on social and emotional development. In addition, they also suffer from delays in motor development; these delays are classified as "associated symptoms" in the literature (Eliöz et al. 2016; Ming et al. 2007; Provost et al. 2007; Webber and Scheuermann 2008; Yanardag et al. 2013; Pan et al. 2009). Experimental studies conducted in recent years have similarly indicated that many children with autism suffer from delays in both gross and fine motor skills, and that they generally show motor disabilities and motor behaviors which are incompatible with normal development (atypical, Green et al. 2002; Ozonoff et al. 2008; Vernazza-Martin et al. 2005; Yanardag et al. 2013).

Because motor development is related to other development fields, developmental delays are considered to influence cognitive development of children with autism as well as their social interaction and language-communication skills (Bhat et al. 2011; Bo et al. 2016; Cossu et al. 2012; Ülke-Kürkçüoğlu 2007; Dziuk et al. 2007). Recent research studies have shown that there is a strong relation between the cognitive and social skills of children with normal development and the activities involving their use of the fine motor skills, particularly hands and fingers (e.g. drawing a picture, cutting with scissors, painting, writing), compared to their gross motor skills (Hellendoorn et al. 2015; Kim et al. 2016; Thelen 2000). A research study conducted by Houwen et al. (2016) examined the relation among the fields of fine motor and gross motor developments, cognitive development, and receptive language and expressive language developments. The findings of Houwen et al. (2016) indicated that the relation among these development fields is very strong and that early period interventions in both motor and cognitive developments will support language development as well.

The development in fine motor skills in the early period is also considered as connected with academic skills, which is another skill field connected with cognitive development (Piek et al. 2006). The research conducted by Grissmer et al. (2010) studied the relationship between the pre-school children's fine motor skills and their school success in the following years of education. The findings of Grissmer et al. (2010) showed that fine motor skills in early period supported their developments of attention skills, literacy skills and mathematics skills and consequently increased their school success.

Literacy development involves two key concepts, one of which is readiness and the other emergent literacy. Readiness refers to the learning of literacy in a certain developmental order systematically. Beyond readiness, emergent literacy is a process that develops from birth to five years of age and supports literacy development (Atlar and Uzuner 2018; Baydık 2003; Rohde 2015; Whitehurst and Lonigan 2002). In terms of the order of writing skill development, the child first makes a drawing which represents an object, person or place (e.g. the skill of drawing a person). The shapes in child's mind in this period are not the symbols representing the names of abstract concepts but the representation of the environment he is in (National Institute for Literacy 2008; Sturm et al. 2012). Having learned how to draw the representation of a concrete entity the child starts to study drawing lines (Adi-Japha et al. 1998; National Institute for Literacy 2008; Slegers 1996; Sturm et al. 2012). Research studies have demonstrated findings which indicate that emergent literacy skills are not only

important for academic skills but also a determining factor in children's display of positive behavior, and that children having emergent skills display less problem behaviors in the first year of school (Spira et al. 2005). As a result, evaluation of disabilities regarding fine motor skills in the early period and providing appropriate interventions are significant for supporting the other development fields as well.

It is known that one of the fields where many children with autism are the most competent is that they are able to notice and recognize visual stimuli more easily than other stimuli and that they use visual stimuli more meaningfully (Schneider and Goldstein 2010). Indeed, there are also research findings which state that watching a video is a pleasurable activity for these children (Nikopoulos and Keenan 2006; Quill 1997). It has also been suggested that children with autism prefer visual stimuli and they react to visual treatments more positively (Prelock et al. 2011). Therefore, video modeling is among the evidence-based practices effectively used in the instruction of children with autism (National Autism Center 2015; National Professional Developmental Center on Autism Spectrum Disorder 2014).

Video-based instruction, which is principally based on observational learning theory, includes watching and modeling a person in the video recording with the aim of gaining a new behavior or changing an existing behavior (Corbett and Abdullah 2005). Video-based instructions, which are effectively employed in the instruction of children with autism, are composed of five groups including (a) video modeling, (b) video feedback, (c) video self-modeling, (d) subjective point of view and (e) video prompting (Ayres and Langone 2005; Hughes and Yakubova 2016; Mechling 2005).

Video prompting procedure include recording a short video of each step of the skills to be taught separately, the individual's watching the video prompt related to a single step at a time, and subsequently emitting the behavior they had viewed in the video (Hughes and Yakubova 2016; Sigafoos et al. 2007; Wu et al. 2016; Yanardag et al. 2013). Video prompting does not require the learner to watch the video entirely, or to perform all the steps related to the targeted behavior after the video ends, as opposed to other procedures with video (Aykut et al. 2014). The video prompting procedure includes dividing complex skills into smaller skill steps and the learner does not have to perform more than one step at a time. Consequently, by decreasing the difficulty level of the targeted behavior, the video prompting procedure introduces the opportunity for individualization appropriate for children who cannot perform the whole skill (Hughes and Yakubova 2016).

Review studies (Banda et al. 2011; Domire and Wolfe 2014; Gardner and Wolfe 2013) examining published research using video prompting have indicated that video prompting procedures has been effective in teaching daily life and other skills to individuals with autism. Moreover, Gardner and Wolfe (2013) suggested that video prompting may be more effective than video modeling for teaching daily life skills to individuals with autism.

The related literature points out that the video prompting procedure is used to teach individuals with autism daily living skills (Aykut et al. 2014; Bennet et al. 2017; Bereznak et al. 2012; Grab and Belfiore 2016; Horn et al. 2008; Johnson et al. 2013; Kellems et al. 2018a, b; Mechling et al. 2013; Payne et al. 2012; Rayner 2011; Van Laarhoven et al. 2016; Wu et al. 2016; Yavuz and Şafak 2017), vocational skills (Bennet et al. 2016; Bennett et al. 2013; Burke et al. 2013; Weng and Bouck 2014), leisure skills (Cannella-Malone et al. 2016; Chan et al. 2013; Edrisinha et al. 2011),

motor skills (Yanardag et al. 2013), play skills (Gutierrez et al. 2016) and academic skills (Jowett et al. 2012; Kellems et al. 2016; Knight et al. 2018).

Recently, numerous research studies have been conducted using video prompting with individuals with developmental disorders. These studies have suggested that the video prompting procedure may be more effective on its own in teaching individuals with autism diagnoses and that it may produced more positive results when compared to video modeling according to the characteristics of the targeted skill and the individual (Banda et al. 2011; Burke et al. 2013; Cannella-Malone et al. 2016; Domire and Wolfe 2014; Gardner and Wolfe 2013; Yavuz and Şafak 2017).

As a result of technological advances and the higher accessibility of applications, scenes used in video-based instruction have begun to be presented with various mobile and more technological devices such as tablet computers, smart phones, laptop computers, and iPod. These devices may also pave the way for video-based instruction by trainers working with children with autism. Among the published research studies concerning the effectiveness of the video prompting procedure via computer on motor skills for children with autism, one included the teaching of play skills to develop gross motor skills (Yanardag et al. 2013). In terms of the existing literature concerning the instruction of academic skills, only academic skills at the level of mathematics and primary education (Jowett et al. 2012; Kellems et al. 2016; Knight et al. 2018) have been conducted; to our knowledge no studies have been conducted concerning the effectiveness of video prompting procedures via iPad for the instruction of fine motor skills with basic academic skills.

The purpose of this study was to determine whether a video prompting procedure via iPad would be effective in teaching children with autism the skill of drawing a six-part person. Thus, the following research questions guided our study: (1) would a video prompting procedure via iPad be effective for children with autism to (a) gain the skill of drawing a six-part person, (b) maintain it after two, four and six weeks and (c) generalize the gained skill to different materials, settings and persons? And, (2) what would the participating children's parents' opinions (social validity) be regarding the research?

Method

Participants

Subjects Three male subjects, 5 and 6 years of age and with autism diagnoses, participated in the study. All three subjects received group-based special education programming every weekday at a local university-based program for individuals with disabilities along with inclusive education in a local pre-school education institution. Before the study was initiated, all three subjects were given the Gilliam Autism Rating Scale-2 Turkish Version (GARS-2-TV), which was developed by Gilliam (1995) and adapted to Turkish and standardized by Diken, Ardıç, and Diken et al. (2012), and the autistic disorder score was calculated.

Subject prerequisite skills included the ability to (a) pay attention to and view a scene on the iPad for at least 2 min, (b) draw simple, scribbled pictures on the paper, (c) discriminate simple visual and verbal instructions and follow the instructions, (d)

recognize simple geometric shapes, (e) imitate the visual drawing skills they viewed and (f) pay attention to an activity for at least 3 to 4 min. To determine whether the subjects possessed these skills, the class teachers were interviewed and the subjects were observed in their classes. Subsequently, the researcher assessed these skills and it was determined whether or not the subjects possessed these skills which were required to participate in the study.

Bora was 6 years and 1 month of age. An expert applied GARS-2-TV and calculated his autistic disorder score as 90. This score indicated that Bora was highly likely to have Autism Spectrum Disorder (ASD).

Ümit was 6 years and 4 months of age. An expert applied GARS-2-TV and calculated his autistic disorder score as 94. This score shows that Ümit is highly likely to have ASD.

Kamil was 5 years and 4 months of age. An expert applied GARS-2-TV and calculated his autistic disorder score as 92. This score shows that Kamil is highly likely to have ASD.

All three subjects could perform instructions that included two and three actions, and could speak by building sentences composed of at least two words. However, the subjects were not capable of initiating communication and were not capable of using verbal language according to the context. According to the results of the developmental assessment (i.e., DENVER II and GEÇDA) conducted with the subjects, all were observed to have significant deficits in fine motor skills as compared to their peers and incapable of drawing a six-part person. None of the subjects had had any experience with video prompting procedures.

Model A 29-year-old female model participated in the research to model the target skill in the training video scenes. The model was informed about the research procedure.

Settings

Training and probe sessions were conducted in one of the classrooms for individualized instruction at the university-based program. A two-way mirror, a rectangular table, two chairs, a cabinet holding class materials, and shelves were present in the room during sessions.

The setting where generalization probes were conducted was different from the training setting in terms of room size, physical arrangement and existing materials.

Materials

Materials used in training and probe sessions during the research study included (a) a digital video camera, (b) a tripod, (c) a laptop computer to organize the video scenes, (d) video recordings containing training scenes, (e) an iPad, (f) white A4 size paper, (g) a marking pen, (h) a clipboard, and (i) data collection forms.

For the training of the target skill, six video scenes were created. Video scenes were prepared by zooming in on the target skill and including only the hands of the model in the video. This was done to enhance the clarity with which the subjects could see each step of the skill being performed. During generalization sessions, in addition to the

other materials used, we utilized straw paper and a pencil that were different from the pen and paper used in training and probe sessions.

To determine the validity of the training videos, a Training Videos Validity Form was prepared and utilized. Questions on the form included (a) *are the skill steps clearly seen in the videos that you watched*, (b) *are the skill steps shown in an appropriate order for skill analysis in the videos that you watched*, and, (c) *are the skill instructions vocalized comprehensibly and audibly in the videos that you watched*? Two experts who have at least one publication in the field of teaching through video technology watched the training videos and filled completed the validity form. Both experts determined that the video scenes were prepared in accordance with the purpose of the research.

Experimental Design

A multiple probe design (days; Gast et al. 2014; Kennedy 2005) across participants was utilized to evaluate the effects of the video prompting procedure. Several steps were taken to control for external factors that might have influenced internal validity with the aim of ensuring experimental control. First, before the start of the study, the researcher informed the subjects' teachers in the education institution and parents about the study and asked them not to provide any training related to the target behavior until the completion of the research. Second interobserver agreement data were collected on at least 40% of all of the sessions throughout the research. To prevent loss of subjects in the research, the parents' participation in the study was ensured to be on a voluntary basis and they were informed about the research in detail before the start of the study.

Dependent Variable The dependent variable was defined as the subject's drawing of a six-part person on paper by following the steps in the skill analysis when provided with the direction: "draw a person" (See Table 1). The target skill of drawing a six-part person was selected as the dependent variable because of its frequent appearance in development tests (e.g., DENVER II and GEÇDA).

Procedures

Probe Sessions The probe sessions were organized as (a) baseline probe sessions and (b) daily probe sessions.

Table 1 Skill analysis of the skill of drawing a six-part person to be trained in the study

1. The learner draws the head of the person by centering it on the blank paper provided.
2. The learner draws the eyes of the person as two small hollow juxtaposing circles in the head.
3. The learner draws the mouth of the person as a straight line below the eyes.
4. The learner draws the body of the person below and adjacent to the head as either a vertical quadrangle, oval or line.
5. The learner draws the arms of the person on the right and left side of and adjacent to the body.
6. The learner draws the legs of the person on the right and left side of and adjacent to the lower part of the body.

Baseline sessions. Baseline probe sessions were conducted until stable data were observed during at least three consecutive sessions. In each baseline session, one trial was conducted with a single-opportunity method. The subject was first provided with the direction to perform the steps in the skills analysis. The subject's correct responses were reinforced using vocal reinforcers (e.g. "You are great!") on a continuous reinforcement schedule. Incorrect responses were ignored and subsequent to the first incorrectly performed step, the session was terminated. The subject's participation, attention, and cooperation were reinforced with vocal and social reinforcers at the end of each session (e.g. "Ümit, you worked with me very well, you are great!" and giving a high-five).

In baseline sessions the trainer provided a prompt (e.g. "Now we'll work with you. Are you ready?") to obtain the subject's attention. When the subject indicated that he was ready to work, he was reinforced by the trainer and provided with the training instruction (e.g. "Very well, draw a person"). If the subject initiated performance within 5 s of the instruction and completed at least one skill step, trainer provided vocal praise (e.g. "Well done, you drew very well"). After the first incorrect response, the assessment was terminated.

Daily probe sessions. Daily probe sessions were designed to determine the subjects' performances regarding the skill being trained and the data obtained from these sessions form the data in the training phase on the graphic. The procedures for daily probe sessions were identical to those used during baseline session. Training sessions were continued until the subjects displayed 100% correct responses for three consecutive sessions.

Training Sessions Training sessions were conducted every day during the week. Two training sessions were conducted per day. A 45-min interval was implemented between the two training sessions. Training sessions were conducted using forward chaining methods within a one-to-one instruction format. During the training process, the subject viewed the video scenes, which included video prompts, via iPad. During each training session, three trials were conducted for each step in the task analysis. After giving the instruction to the subject, the trainer waited for 5 s. Each step of the task analysis was trained separately. Training sessions were continued until subjects displayed 100% correct responses for each step of the task analysis. Correct responses were praised on a continuous reinforcement schedule. On-task behavior was also continuously reinforced with praise.

During training sessions, the trainer and the subject sat at a table next to each other. The trainer first provided the subject with a brief explanation regarding the scene (e.g. "Now we'll watch a video with you. Look, someone is drawing a person here, now we'll watch that. Are you ready?"). When the subject indicated that he was ready to work, the trainer provided vocal praise (e.g. "You are great!"). Next, the trainer started the video scene and provided the target stimulus (e.g. "Ümit, watch the video."). The subject viewed the first step of the task analysis. After the subject viewed the video, the trainer praised the subject for viewed the video, provided a pen and A4 size paper, and prompted the subject to complete the first step (e.g. "Ümit, draw the head of the person."). If the subject completed the first step of the task analysis within 5 s of the prompt, the trainer provided praise (e.g. "Bravo!") and initiated the second trial. The subject's not being able to complete the task step within 5 s was considered an incorrect response and the three trials for the first step were realized again. At the end of the training session, which was composed of three trials, the trainer praised the subject's participation behavior (e.g. "You participated in the study very well, thanks."). After

the subject completed the task step being trained in the first step in all of the three trials with 100% criterion, the trainer initiated training of the second step. The trainer first had the subject view the video of the first step and subsequently prompted him to complete the step. If the subject correctly completed the first step, the training of the second step was immediately initiated and three training trials were implemented as was done with Step 1. If the subject displayed an incorrect response with Step 1, three training trials were conducted until the subject correctly completed the step and the training trials were then initiated with Step 2. The training procedures for the Step 2 were identical to those used for Step 1. After the subject met mastery criterion with Step 2, the trainer initiated training of the third step. When training of Step 3 was initiated, the trainer first had the subject view the video of the Step 1 and then prompted him to complete the step. When the subject displayed a correct response, the trainer immediately had the subject view the video of Step 2 and then prompted him to complete the step. If the subject displayed a correct response, the trainer immediately initiated training of the Step 3. If the subject displayed an incorrect response with Steps 1 or 2, three training trials were conducted until a correct response with the step was displayed. The trainer then initiated training trials for Step 3. Training of all other steps of the task analysis was conducted identically.

Maintenance and Generalization Maintenance sessions were conducted two, four, and six weeks after the subject achieved mastery criterion for the entire skill. Pre-and post-tests were conducted to assess maintenance and generalization. During maintenance/generalization probes, different materials were utilized in a different setting and with a different person; none were present during the training phase. The procedures for the maintenance/generalization sessions were similar to those used during baseline probe sessions except that the participation praised only at the end of the session.

Social Validity A "Social Validity Question Form for Parents' Views" was developed to determine the appropriateness of the methods and the importance of the results obtained in the research from the perspective of the parents of the subjects. The prepared form included nine questions, seven of which were close-ended (i.e., "yes-no") and two of which allowed for open-ended responses. The forms were distributed to the parents in closed envelopes and collected without asking the participants to provide their identities. The data obtained from the question form were analyzed descriptively (Schwartz and Baer 1991).

Reliability Inter-observer agreement (IOA) and treatment integrity data were collected during at least 40% of all sessions in each phase. For the analysis of IOA, the following formula was used: Agreements/Agreements + Disagreements X 100 (Alberto and Troutman 2013); IOA was 99.7% (range: 83-100).

The treatment integrity percentages were obtained using the following formula: "Observed Trainer Behavior/Planned Trainer Behavior X 100" (Billingsley et al. 1980). To determine treatment integrity, the following behaviors were considered: a) preparing the video scenes to be shown via iPad, b) preparing the materials, c) provision of the prompt for the subject to view the video, d) providing the target stimulus, e) having the subject view the video scene via the iPad, f) praise for the subject's viewing of the scene, g) provision of the skill instruction, h) providing an appropriate wait time (i.e., 5 s)

responding according to the subject's response, j) praising the subject's participation. Treatment integrity was 97.5% (range: 91-100) across subjects.

Results

Figure 1 displays the results of the study for Bora (top panel), Kamil (middle panel), and Ümit (bottom panel). All three subjects displayed zero or near-zero correct responses during baseline. All three subjects obtained mastery criterion with all steps during the intervention phase within 10 (Ümit) or 12 sessions (Bora & Kamil). Bora, Kamil and Ümit all maintained the skill with 100% accuracy during maintenance probes. All three subjects displayed zero correct responses during baseline generalization probes and all three displayed 100% accuracy during the post-training generalization probes.

Training Data

Bora and Kamil learned the target skill of drawing a six-part person at the end of 20 training sessions and Ümit at the end of 16 training sessions. The numbers of training trials conducted until the criterion was met were 112 with Bora, 100 with Kamil, and 96 with Ümit. The number of incorrect responses displayed before mastery criterion was met was 24 (21.42%) for Bora, 33 (33%) for Kamil, and 19 (19.79%) for Ümit. The numbers/percentages of incorrect responses in the daily probe sessions were 26 (18.05%) for Bora, 36 (42.85%) for Kamil, and 18 (21.42%) for Ümit (Table 2).

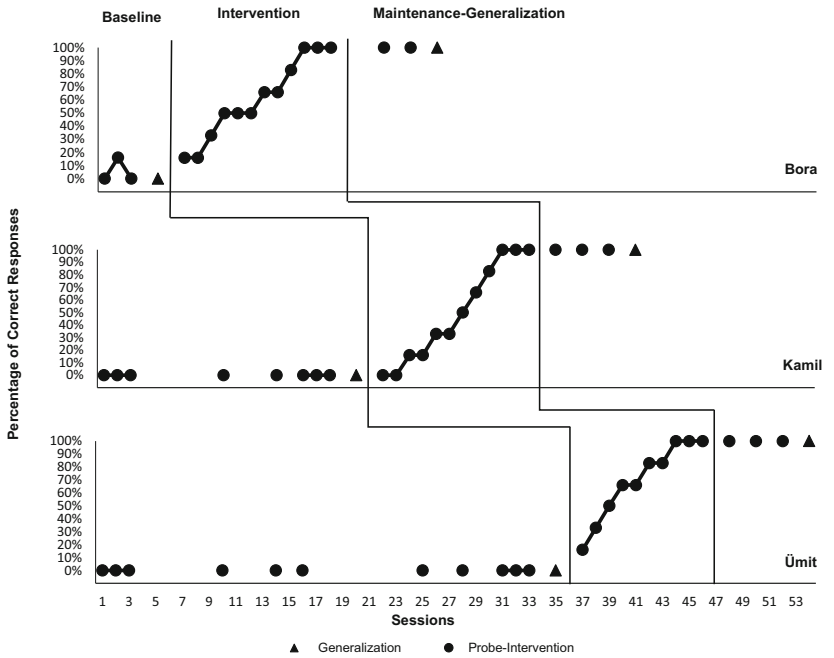

Fig. 1 Correct response percentages in baseline, training, maintenance and generalization sessions

Table 2 Training data regarding the skill of drawing a six-part person

Subjects	No. of training sessions / trials	No. and % of training errors	Training time h:m:s	No. and % of daily probe errors	Daily probe h:m:s
Bora	20/112	24-21,42%	02:00:25	26-18,05%	00:20:15
Kamil	20/100	33-33%	01:31:01	36-42,85%	00:13:35
Ümit	16/96	19-19,79%	01:18:19	18-21,42%	00:12:07

Social Validity Results

All parents stated that the training was necessary and that the skill was an important one for their children. The parents stated that providing short video scenes via iPad was effective for their children's learning processes, and that video prompting was an appropriate procedure for the training of the skill. The parents stated that the study was valuable for their children in every aspect, and that the training of the skill of drawing a six-part person would contribute both to their children's fine motor and cognitive skills and to their school lives. Finally, the participants responded that there were no aspects which were unacceptable to them or which they did not like.

Discussion

This research examined the effectiveness of a video prompting procedure via iPad to teach children with autism the skill of drawing a six-part person. The results of this research are consistent with previous research studies in the literature (Jowett et al. 2012; Kellems et al. 2016; Knight et al. 2018; Yanardag et al. 2013) that has examined the training of motor and academic skills using video prompting. In previous research, however, training focused on gross motor, mathematics, and primary school level academic skills. The present research extended previous studies by training fine motor skills in the form of drawing a six-part person. In other words, among the studies in the literature that have use video prompting, there are only a limited number that have taught motor and basic academic skills (Banda et al. 2011; Domire and Wolfe 2014; Gardner and Wolfe 2013). Studies to date have shown that the acquisition of skills based on motor development has positive effects on diagnoses and education-based treatments. However, for children with autism to learn fine motor skills, they need systematic training and prompting (Ülke-Kürkçüoğlu and Kırcaali-İftar 2010; Provost et al. 2007). Drawing skills frequently exist among early literacy skills of pre-school children. An examination of early literacy skills indicate that the child first makes drawings that represent a concrete being (e.g. a person or an object) in his or her immediate environment (National Institute for Literacy 2008; Sturm et al. 2012). Consequently, this research has extended the literature by focusing on an early literacy skill, the skill of drawing a person, beyond the existing skill trainings in the literature.

From a social validity perspective, the parents of the children stated positive opinions regarding the research study. The social validity results of the current

study were similar to the social validity results of studies concerning the teaching of gross motor and academic skills using video prompting (Kellems et al. 2016; Knight et al. 2018; Yanardag et al. 2013). However, social validity data were collected in only three previous studies with a focus on parents responding in only one study (Yanardag et al. 2013). It has been argued that social validity data should be collected from the individuals who are in close relationships with the subjects who take part in the study rather than the people who are the direct consumers of the study (Kurt 2012; Schwartz and Baer 1991). In addition, considering that social validity data were collected in only three of the previous studies concerning the teaching of gross motor and academic skills using video prompting, the present study contributes to the growth of social validity data in the literature.

There were several noteworthy aspects pertaining to the result of the current study. First, we observed that there was no need for any adaptations or additional procedures other than the video prompting procedure to produce positive results with regard to the target skill during the course of the study. Second, the intervention required a relatively short period of time do be effective (i.e., 9-10 days) and it was relatively inexpensive. This may indicate that the relative ease-of-use and trainer-friendliness of video prompting procedures to teach fine motor-based skills. Third, the maintenance and generalization data from the current study were encouraging in terms of these particular independent and dependent variables. For example, Bora and Kamil were each observed drawing different aspect of people (i.e., nose and ears of the person for Bora; nose and hair of a person for Kamil) on their own in addition to the specific skills of drawing a six-part person. Considering the difficulties children with autism experience in generalization (Neisworth and Wolfe 2005), the current results pertaining to maintenance and generalization are encourage and may be considered strengths of the study. Finally, the duration of Bora's training sessions was observed to be longer than that of the other subjects. A reason for this may be his completion of the given activities at a slower pace as expressed by Bora's parents and teacher.

The current study also had some notable limitations. First, all three children possessed the prerequisite skills in terms of acquisition of the target skill that served as the dependent variable. Consequently, the current results are limited by these characteristics. Nonetheless, it may be acknowledged that the chosen target skill is one of the important early literacy skills of children in the pre-school period. Second, due to Bora's parents' obligation to travel, the first planned maintenance data point was not collected. However, his second and third maintenance data points were collected and high accuracy was observed. Third, the target skill was not generalized to new drawing skills (i.e., response generalization was not observed). Finally, generalization data were not collected in natural settings in which subjects were together with their peers.

Future research should continue to evaluate the effects of video prompting on other drawing skills. Second, training with video prompts may be compared to other training methods in terms of their effectiveness. Last, as this study was conducted in a one-to-one instruction format, future studies might evaluate these procedures in a group-based training format in which observational learning and acquisition of non-targeted information can be assessed.

Compliance with Ethical Standards

Ethical Approval All procedures performed in studies involving human participants were in accordance with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed Consent Written informed parental consent and verbal approval were obtained from all the parents of the participants in compliance with the Declaration of Helsinki.

Conflict of Interest All authors declare that they have no conflicts of interest.

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