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Effectiveness of Video Modeling in Teaching Following Public Direction Signs for Students with Autism Spectrum Disorders*

Otizm Spektrum Bozukluğu Olan Öğrencilere Toplumsal Levhaları İzleme Becerisinin Kazandırılmasında Video Modelle Öğretimin Etkililiği

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ABSTRACT: Autism spectrum disorder (ASD) is a neurobiological disorder characterized by significant difficulties in social interaction and communication, restricted range of behavior and limited areas of interest and stereotypic behaviors. Literature involves a rich variety of studies utilizing an array of effective methods to teach different skills to individuals with ASD. One of these methods has been video modeling which involves watching the video recording of model performing a target behavior. This method has received considerably empirical support. The present study intended to examine the effectiveness of teaching skills to individuals with ASD how to follow signs in finding the restroom in a public setting by utilizing video modeling in which the model is a peer with an ASD. Participants of the study were three male students whose age ranged between 10 and 13. Results of the study showed that video modeling was effective in acquiring, maintaining and generalizing targeted skills. Findings, limitations of the study and its implications for future research as well as practitioners were discussed.
Keywords: autism spectrum disorder, video modeling, direction signs, evidence-based practices, peer model

ÖZ: Otizm spektrum bozukluğu (OSB), sosyal etkileşim ve iletişimde yetersizlikler, sınırlı, tekrarlayan davranışlar ve sınırlı ilgi alanları belirtileri ile ortaya çıkan ve seyreden nörolojik bir bozukluktur. Alanyazında OSB tanısı bulunan bireylere farklı becerilerin öğretiminde etkili olarak kullanılan farklı yöntemler bulunmaktadır. Bu yöntemlerden biri video modelle öğretimdir. Video modelle öğretim model tarafından sergilenen hedef davranışın video görüntülerinden izlenmesi ve model alınması olarak tanımlanan, kanıt temelli uygulamalardan biridir. Bu araştırmada toplumsal alanlarda levhalarda yer alan okları takip ederek tuvaleti bulma becerisinin öğretiminde otizm spektrum bozukluğu tanısı bulunan akranın model olarak yer aldığı video modelle öğretimin etkililiğinin incelenmesi amaçlanmıştır. Bu amaçla yaşları 10-13 arasında değişen otizm spektrum bozukluğu tanısı bulunan üç erkek öğrenci ile çalışılmıştır. Katılımcılar arası yoklama evreli çoklu yoklama modelinin kullanıldığı araştırmanın bulguları video modelle öğretimin katılımcıların toplumsal alanlarda levhalarda yer alan okları takip ederek tuvaleti bulma becerisini

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edinmelerinde, edindikleri beceriyi korumalarında ve genellemelerinde etkili olduğunu göstermiştir. Bulgular alanyazın doğrultusunda tartışılarak ileri araştırma ve uygulamalara yönelik önerilerde bulunulmuştur.
Anahtar sözcükler: otizm spektrum bozukluğu, video modelle öğretim, toplumsal levhalar, kanıt temelli uygulamalar, akran model.

1. INTRODUCTION

Autism spectrum disorder (ASD) is a neurobiological disorder characterized by significant difficulties in social interaction and communication, restricted range of behavior and limited areas of interest and stereotypic behaviors (American Psychology Association [APA], 2013). There are more and more people suffering from these symptoms (Christensen et al., 2016). Data by the United States Centers for Disease Control and Prevention (CDC, 2016 a, b) shows that, in 2012, one in every 68 children born in 2004 were diagnosed with ASD, which means 1.5% of all 8 year-old children had autism. These findings clearly indicate that the number of children with ASD is in the rise. Such an increase in the number of the people with ASD leads the way to a variety in teaching methods and strategies for these people and just because of such a variety parents, teachers and specialists are obliged to choose the very right option for the people with ASD (Odom and Strain, 2002). A number of institutions have devised programs teaching a variety of skills to children with ASD. Some of these programs and methods with sufficient empirical support have been delineated as evidence-based practices to meet the abovementioned needs of these children (National Autism Center [NAC], 2015; National Professional Development Center [NPDC], 2014).

One such evidence-based methods that has received popularity is teaching through video-modeling. While the NAC (2010, 2015) refers to it as modeling, the NPDC (2010, 2014) coins it as video model both refer to utilization of a model through video presentation instead of actual models in teaching new behaviors of making changes in the existing behavioral repertoire. In other words, the target behaviors are shown to the learners through demonstration of such behavior by individuals in video-recordings (Bellini, Akullian, and Hopf, 2007;Charlop-Christy, Le, and Freeman, 2000; Sansosti and Powell-Smith, 2008). In the first step of this method the learner is showed demonstration of all steps of a target behavior by a model through the video. Then the learner is asked to do the same behaviors he or she has just viewed in the video recording. Thus, the method can be seen as a teaching practice integrating video modeling, modeling, imitation and use of visual stimuli (Ganz, Earless-Vollrath, and Cook, 2011; Nikopoulos and Keenan, 2006). Video modeling based teaching involves demonstration of the target behavior by different models (Vuran and Olçay-Gül, 2010). The model in the video recording can be the learner him or herself, a peer or an adult. It sometimes might even involve the learner watching demonstration of a behavior from his or her own perspective (Schreibman, Whalen, and Stahmer, 2000).

Studies have shown that video modeling based teaching is quite effective in teaching various skills to people with ASD, who; (a) experience difficulty in understanding the language and differentiating the auditory and unrelated stimuli, (b) disfavor social interaction, (c) learn better through visual stimuli, (d) cannot figure out precisely how to perform an action in the proper way or the expected result of an action, in that video modeling provides visual hints for these people and leads them to focus on only the desired stimulus/behavior by requiring no face-to-face interaction and in a fun way (Akmanoglu and Tekin-Iftar, 2011; Cardon and Wilcox, 2011; Charlop- Christy et al., 2000). Some authors have examined this method among individuals with ASD between the ages from 2 to 25 and acquiring such social skills as initiating communication, reciprocal conversations, and recognition of feelings (Bernad-Ripoll, 2007; Charlop-Christy et al., 2000; Miltenberger and Charlop, 2015; Nikopoulos and Keenan, 2007; Sansosti and Powell-Smith, 2008); play skills such as playing with toys and pretend play (Boudreau and D'Entremont, 2010; Hine and Wolery, 2006; Ozen, Batu, and Birkan, 2012); imitation skills (Cardon and Wilcox, 2011; Kleeberger and Mirenda, 2010); work skills such as

wearing special costumes and entertaining guests, cleaning at airports of bowling allies (Allen, Wallace, Renes, Bowen, and Burke, 2010); self-care skills such as tooth brushing, hand washing and proper toilet use (Lee, Anderson, and Moore, 2014; McLay, Carnett, van der Meer and Lang, 2015; Rosenberg, Schwartz, and Davis, 2010); academic skills as word spelling and word recognition (Morlock, Reynolds, Fisher, and Comer, 2015); independent living skills as cleaning aquariums, making pasta, preparing sandwiches and making fruit juice (Bereznak, Ayres, Mechling, and Alexander, 2012; Murzynski and Bourett, 2007; Shipley-Benamou, Lutzker, and Taubman, 2002); safety skills such as self-protection from kidnapping attempts of strangers and first aid behaviors (Akmanoglu and Tekin-Iftar, 2011; Ergenekon, 2012; Yücesoy-Özkan, 2013). Furthermore, in some studies, researchers opt for video model practices utilizing the learner himself/herself (eg. Bernard-Ripoll, 2007; McLay et al., 2015), his/her peer (eg. Morlock et al., 2015; Sansosti and Powell-Smith, 2008), his/her adult (eg. Kleeberger and Mirenda, 2010; Murzynski and Bourett, 2007) as a model or simply observing the learner (eg. Allen et al., 2010) or only showing the model's hands (eg. Shipley-Benamou et al., 2002).

A considerable portion of studies examining teaching skills to individuals with ASD appears to focus on a number of domains known as areas of deficiencies in these persons such as social development; nonverbal communication; play and behavior management. Likewise, a noticeable number of studies have examined teaching skills needed at home, school or work while other studies have investigated teaching skills necessary for effective utilization of social resources and for independently handling social settings. Being able to find one's way to a targeted destination by following signs (arrows) encompasses skills particularly related to this later set of skills. In other words, learning how to follow arrow signs in a public setting to find a targeted place (destination) is relevant to functional academic skills and visual reading thus it involves the general domain of skills enabling persons benefitting from social resources. Likewise, being able to read signs directing toward a target destination has to do with independent living skills (Browder and Snell, 2000; Deniz and Öztürk, 2015; MEB, 2009). To date, studies involving teaching expressively identifying community signs have typically focused on individuals with intellectual disability (Singleton, Schuster, and Ault, 1995),developmental delays (Yıldırım and Tekin-İftar, 2002), and developmental deficiency (Tekin-İftar, 2003). No studies examining teaching use of signs in public settings to individuals with ASD was found in the current literature.

Likewise, use of peer models in video modeling teaching practices has typically focused on "typically developed persons" (individuals with no diagnosis) (Gena, Couloura, and Kymissis, 2005; Kroeger, Schultz, and Newsom, 2007; Nikopoulos and Keenan, 2007; Sansosti and Powell-Smith, 2008); thus the number of studies utilizing video models with similar diagnosis has been scarce (Bidwell and Rehfeldt, 2004; Olçay-Gül, 2016). Those studies using individuals with similar diagnosis have often been studies involving individuals with intellectual disability. No studies utilizing video models with ASD diagnostic categories were found in the existing literature. Therefore, the current study intended to examine the effectiveness of teaching skills to individuals with ASD how to follow signs in finding the restroom in a public setting by utilizing video modeling in which the model is a peer with an ASD. The study, more specifically, sought answers to the following research questions:

1. Is teaching through video modeling in which a person with an ASD is utilized as the model, effective in teaching participants use of signs to find restrooms in public settings?
2. If the persons with ASD indeed acquire the skills necessary for using signs to find restrooms in public settings, will they be able to demonstrate these behaviors at one-week and four-week follow ups and generalize these behaviors to other settings and stimuli?
3. What are the opinions of participants' teachers on the use of video modeling in teaching how to follow signs to restrooms in public settings, with respect to the targeted skills, the utilized teaching method and the outcomes (social validity)?

2. METHOD

In this section, the research design, dependent and independent variables of the study, participants, settings, materials used, the experimental procedure, data collection and data analysis will be articulated.

2.1. Research Design

In order to examine the effectiveness of teaching skills to individuals with ASD how to use signs in finding the restroom in a public setting by utilizing video modeling in which the model is a peer with an ASD, a multiple probe design across participants which is one of the single subject designs, was used. Experimental control was built in when the participant was responding at or near to baseline levels during full probe conditions before the intervention package had been introduced and the criterion was reached only after the intervention package was introduced**.**

2.2. Dependent and Independent Variables

The dependent variable of this study was the degree to which participants demonstrated skills in using signs to find the restroom in a public setting. In this study "the skills in finding the restroom" by using the signs directed toward the toilet refers to participants' finding the toilet upon prompted as "go to the restroom." Prior to the study, participants' Individualized Education Programs (IEP) were examined in identifying this target behavior. Consents for the study were gathered from participants' mothers. Indeed, one of the objectives stated in their Individualized Education Programs (IEP) was "demonstrates the ability to behave independently in public settings." Among the skills having this feature, finding the toilet, which was a public area common to all the participants, by following the arrows in the sign was picked up in line with the views of their mothers. Accordingly, one of the mothers pointed out the importance of teaching this skill as such: "Toilet signs are available in almost all public areas. Thus, if my kid learns this skill, I can teach him that he can go to the toilet when he gets lost and wait for me to come, as well. And this makes the toilet our meeting point." In order to identify the skills involving this target behavior, the researchers conducted a skill-analysis. In doing so, first, each researcher conducted the analysis individually. Then the researchers brought together their analyses, evaluated each analysis and generated a final analysis. Then, some final changes were made by comparing behaviors and steps specified in this analysis to performance of individuals' with typically developed. Table 1 illustrates steps of the skill analysis. A response was considered as correct if the participants reacted to the prompt of "go to the restroom" within 5 seconds and completed each of the proceeding steps in 20 seconds. On the other hand, if the participants did not react to the prompt within 5 seconds, or did not complete each of the remaining steps in 20 seconds or if they performed any of the step incorrectly their responses were coined as incorrect. The independent variable of the study was teaching the participant the targeted skills through the video modeling.

Table 1: The Skills in Using Signs to Find The Restroom in a Public Setting Steps for Skill Analysis

Steps for Skill Analysis
She/he goes ahead until he sees the first toilet sign.
When she/he reaches the first sign, she/he looks/points the toilet sign.
She/he walks toward the direction sign.
She/he goes ahead until she/he sees the second toilet sign.
When she/he reaches the second toilet sign, she/he looks/points the direction sign.
She/he walks toward the direction sign.
She/he goes ahead until she/he sees the third toilet sign.
When she/he reaches the third toilet sign, she/he looks/points the direction sign.
She/he walks toward the direction sign.
She/he chooses toilet door which is appropriate her/his gender.

2.3. Participants

Participants of the study were: persons being taught the targeted skills (the learners); the peer model; a person participating in the study during the pilot study; the practicing teacher and the observers. More detailed information on the person being taught the targeted skills; the peer model; a person participating in the study during the pilot study is provided in Table 2.

Table 2: Participants' Demographic Characteristics

Learners				Peer Model				Participant of the pilot study			
Name	Age	Gen.	Diag.	Name	Age	Gen.	Diag.	Name	Age	Gen.	Diag.
Ismail	13	M	ASD	Kaan	13	M	ASD	Ali	13	M	ASD
Ege	10	M	ASD								
Kayra	12	M	ASD								

Abrrevarions: Gen.: Gender, Diag.: Diagnosis.

2.3.1. Learners

Three male children between ages of 10 and 13 who had ASD diagnosis and were attending to a private educational and rehabilitation center in the Province of İzmir, Turkey were individuals participating in the skill teaching phase of the study. The students were attending a middle school with their "typically developed peers" in classrooms that were run from an inclusive education. They additionally attended to a private special education and rehabilitation center after school hours. Based on the detailed information obtained from their individual "educators," an initial group of pupils was selected. Then, these persons were observed in their natural educational settings.

Of the observed students those who met the following six behavioral criteria were selected for the teaching phase of the study: (a) imitation of nonverbal skills (clapping, waving hands, hopping etc.); (b) imitation of verbal language; (c) ability to sustain attention on a video presentation for at least 90 seconds; (d) ability to follow instructions directed toward an object or action; (e) ability to differentiate male and female pictures; and (f) ability to differentiate the restroom sign. More specifically, students were evaluated based on: whether or not they were able to (a) imitate simple behaviors shown to them (for example, clapping, hopping, etc.); (b) repeat simple verbal expressions such as "say hello" or say "how are you;" (c) sustain their attention on the TV after instructed as "let's watch the TV;" (d) appropriately respond to instructions such as "put the pencil on the desk" and "give your notebook to me;" (e) point to the gender of the persons in different pictures they are shown and (f) pick the sign for the restroom among many other signs used in public settings. During this process, one-to-one evaluation sessions were carried out with each participant. In these sessions, the participants were expected to perform a set of skills for five different cases and they were accepted as bearing prerequisite skills in case of correct reactions at 100%. Students who demonstrated these prerequisite skills were included in the teaching phase of the study.

Prior to the study families of the students were contacted and informed about the purpose and nature of the study and their written consent for children's participation into the study was obtained. In the reminder of this manuscript participating students will be addressed with nicknames given to them by the researchers so as to ensure the confidentiality of the students. Information in relation to the diagnoses of the participants was gathered from the reports by the Health Board for the People with Disabilities, as well as the Counseling and Research Center. On the other hand, portfolios kept by the schools and institutions to which the participants were attending for their education provided the researchers with information about their performances. Ege is a ten-year-old boy with an ASD. He is able to express his needs with simple sentences; respond to simple questions; match objects, pictures, symbols, digits and letters; read and write; perform four fundamental operations (addition, subtraction, multiplication and division); eat by himself; brush teeth; and dress up. On the other, he

demonstrated deficiencies in: reciprocal conversations; reading comprehension, problem solving, utilizing public environments; following direction signs. Ege shows symptoms of echolalia. Ismail is a ten-year-old boy with ASD. He is able to express his needs with simple sentences; answer simple questions about himself and his family; initiate talk with others and topics of conversations; hold the pencil properly and write a text shown to him; read; skip count by 2s, 5s and 10s; pointing a mentioned two-digit number among several; and independently eating, toileting and tooth brushing. He, on the other hand, shows deficiencies in starting and ending a conversation; reading comprehension; perform additions and subtractions; utilizing public settings and following direction signs. Kayra is a twelve-year-old boy with ASD. He is able to express his needs with simple sentences; respond to simple questions; match objects, pictures, symbols, digits and letters; differentiate basic colors; use simple concept in daily life; skip count by 1s, 2s, 5s, and 10s; eat; use the restroom. However, Kayra shows deficiencies in such skills as writing and reading, pronouncing words, using public environments and following direction signs. He also shows stereotypic behaviors of hopping and making high pitch squealing noises.

2.3.2. Peer model

Of the observed students, those who demonstrated skills in following direction signs to find the restroom were planned to be selected for the study. In selecting the peer model, students' educators' input was also obtained. Based on the abovementioned criterion and the educators' opinions Kaan, who was a thirteen-year-old boy, was selected as the peer model. Kaan's family was contacted and informed about the purpose and nature of the study and their written consent for his participation into the study was obtained. Likewise, Kaan was informed about the study and asked if he would like to participate. He was selected as the peer model upon receiving his voluntary consent. Kaan was also attending the same private special education and rehabilitation center as his peers who were selected for the teaching phase of the study. He had an ASD diagnosis. Kaan shows skills in repeating sentences made of 4-5 words; performing instructions consisting of three or more words and involving 2 or 3 steps; reading and writing; adding and subtracting; tooth brushing; using the bathroom; initiating and maintaining communication and properly behaving in public settings. The other participants did not personally know the peer model.

In order to attain and video record Kaan's best performance, he was given a three-session training during which he was taught about (a) the purpose of the study and the role of the model; (b) the nature of the targeted skills; (c) the proper responses through modeling these responses; (d) role playing and trial. This steps are articulated in details in the following section:

(a) Explaining the purpose of the study and the role of the peer model: Kaan was told the following sentence. "Kaan, I wish to teach some of your peers as to how follow the signs to find the restroom. I am planning to make a short video demonstrating using the signs to find the restroom. I need your help in role playing in the video to set an example for your peers." In order to check whether the peer model understood the purpose of the study and his role, he was asked "could you tell me why am I preparing the video and how you are going to help me with that?" If Kaan provided an answer he was praised "great, good job Kaan" but if his answer was incorrect the information was provided to him once more.

(b)Familiarizing with nature of the targeted skills: The targeted behavior was introduced to the peer model by the following verbal statement: "I am expecting your friends to become able to follow the signs to find the restroom."

(c) Modeling the proper responses for the peer model: The practitioner modeled each step of the targeted set of behaviors to the peer model. For example, after telling the peer model "I want you to observe me very carefully" the practitioner approached to the first sign. Then she showed the sign saying "Look there is a restroom sign here. Look at the arrow next to the sign.

It shows which direction we are supposed to go" and moved in the direction of the arrow. This process is repeated for each of the proceeding sign.

(d) Role playing and trial: The practitioner and the peer model acted out behaviors which would appear in the video presentation. At this step, the practitioner and the peer model changed roles. The peer model was asked to perform the skills that he had watched the practitioner performing. The peer model then acted the steps of the target behavior. Each time he repeated the steps three consequent times. This trial continued until he performed each step 100% correctly. Upon each trial his correct responses were reinforced by verbal praising. If the peer model incorrectly performed any of the steps he was provided with corrective feedback. Upon completion of the training phase, video recording phase started.

2.3.3. Practitioner

The practitioner is a professional who has been working with children with special educational needs for approximately 10 years. He has also been working at a private special education and rehabilitation center. The practitioner had received in-service training for teaching with video modeling and thus had been using video modeling in his teaching practices.

2.3.4. Observers

In this study, reliability data on both the dependent and independent variables was gathered. Data regarding inter-observer reliability and treatment reliability was collected by the 3rd and 4th authors who were doctoral students and who had been teaching children with intellectual disability and ASD. All four researchers met to reach at a consensus regarding: (a) objectives of the study, (b) target skills, (c) teaching through video modeling, (d) probe sessions, (e) teaching sessions, (f) maintenance sessions, (g) generalization sessions, (h) correct/incorrect responses of the participants, (i) responses of the practitioner upon correct/incorrect responses of the participants.

2.4. Setting

The setting for this study was a private special education and rehabilitation center. Video recordings prepared for the teaching phase of the study were viewed by the students in individualized education classrooms where students were seated at chair that were either side-by-side or across from one another. The furniture in such classes involves chairs, desks and lockers. Both probe and follow-up sessions took place at hall ways of the Center. Signs directing toward the restrooms were placed at hall ways of the Center in the same way as those in public settings. Directions of these signs were changed each time during the probe and teaching sessions so as to direct the participants to different place each time. Generalization sessions of the study took place at a shopping mall which the participants had not been to previously. Signs directing toward the restrooms were different at the mall than those used in the special education and rehabilitation center.

2.5. Materials

In this study, restroom signs, videos and laptop computers were used for teaching the targeted skills. In all phases of the study a camera was used for video recording. At first, preparations for the restroom signs and video recording took place. Restroom signs were made of print outs obtained on 15x29cm white paper and then glued on same-size wooden plates. The writings were made by using Times of New Roman, 350 font size and had black color. The prepared signs were placed to the ceilings of the Center. The video recording used in the teaching phase of this study consisted of recording of the peer model demonstrating the steps of targeted skills. In preparing the video recording, particular care was given to assure to visual quality of the recording as well as to arranging the acting of the peer model in such ways as to resemble those occurring in natural settings (for example, making sure that the pace of the model's behaviors were not too fast/slow). Upon completion of the recording, the video was

shown to three special education experts who evaluated the recordings in terms of the accuracy with which the targeted behaviors were performed, the flow of the visual stimuli, time-span and visual quality. Based on the feedback provided by the experts, final adjustments were made on the recordings.

In the video, the practitioner prompts as "Kaan, go to the restroom". Then the peer model (Kaan) walks toward the direction of the restroom. When he reaches the first sign he raises his head, sees the sign and walks toward the direction showed by the sign until he reaches the second sign where he again raises his head and sees the sign and proceeds in the direction shown by the sign. In moments where Kaan raises his head and looks at the signs, he is recorder from to angles (front and back view) and this particular parts are shown in slow motion. Video recording ends when the model reaches at the restrooms, chooses the male restrooms and holds the door to open.

2.6. Experimental Procedure

Upon completion of video recordings, the experimental phase of the study was started. This involved probe, teaching, maintenance and generalization sessions. The experimental sessions took place until the participants reached at 100% accuracy in the targeted skills as specified in the skill analysis. Initially, upon accurate completion of each step by a participant, he was given social and verbal reinforcements such as "wonderful, give me five! etc." Then, upon their first accurate completion of the steps, the participants were only provided with similar reinforcements after they accurately performed all the steps instead of each step. During all the sessions, no responses were given upon inaccurate responses of the participants. They were ignored. Each teaching session was proceeded by an evaluation session during which one-trial took place.

2.6.1. Pilot study

In order to evaluate applicability of the prepared video recording, a pilot study was conducted prior to beginning the teaching phase of the study. The pilot study was done with a 13-year-old boy with ASD named Ali, who was attending middle school run from an inclusive education. He was also receiving services from the private special education and rehabilitation center one a day week. Ali showed skills in initiating and maintaining conversations about his interest areas; reading/writing; dressing up and using the restroom. On the other hand, he had deficiencies in reciprocal conversation, use of public environment and following signs in way finding. In addition, Ali had severe vocal stereotypic behaviors. Pilot study with Ali showed that when the model arrived at a sign and raised his/her head there was a need for zooming in toward the sign to make it visually more significant to the viewer. The application was also used for evaluating the response-definitions for each step of the targeted behavior. For example, for completion each step participants were to be given 20 seconds. This time span was re-evaluated after the pilot study with Ali, and it was decided that no changes were needed. Moreover, it was determined to conduct one teaching session a day; one evaluation session after each teaching session and five trials to take place during each evaluation session. Trials were to take place during their school hours, as needed and in a distributed trial instruction. Finally, upon observing no significant changes in the performance of the participants during the pilot study led to some adjustments. In other words, it was decided to show the video recording prior to each trial.

2.6.2. Probe sessions

In the study, probe data collection was drawn from two sources: (a) full probe sessions and (b) daily probe sessions held after the teaching practice was completed. The first probe session was held to gather data at the baseline level while the other full probe sessions were carried out just before the teaching phase with a participant and just after the pre-set criteria were met during the teaching phase with all the participants present. The full probe sessions

were carried out until at least three constant and resolute data sets were obtained and each day at least one full probe session was conducted. Whereas daily probe sessions after the teaching phase were carried out just after the teaching phase with video presentation, and continued until the participants reacted with 100% accuracy in a successive three sessions and the teaching data were collected in this way. In these sessions, data were gathered by using the method of single opportunity; namely, at whichever step the participant reacted incorrectly, the data collection was paused; and the participant was taken to the restroom by the practitioner. The practitioner followed three steps at the probe sessions: (a) Presenting the skill instruction, (b) noting the reactions to the skill, and (c) pausing the data collection the moment the participant reacted incorrectly. All the probe sessions were designed according to the controlled baseline phase principle (Tekin-İftar, 2012) and the practitioner created the opportunities (washing hands, wetting the dusting cloth, going to the restroom after drinking water, etc.) for the participants to develop the need to go to the restroom. The probe sessions carried out to evaluate the performances at finding the restrooms at public places by following the arrows at the direction signs were carried out at different floors and corridors at the Center and it was recorded whether the participants could follow the steps to analyze the skill steps and find the restroom after receiving the instruction for going to the restroom. With this purpose, just after the teaching phase session, evaluation of the teaching in the final phase session was carried out; and within each session a trial was conducted.

2.6.3. Teaching sessions

Teaching sessions were held prior to proceeding to the actual experimental setting to ensure that appropriate: (a) timing for showing the videos to the participants (just before the participants were about to perform steps of the targeted skills); (b) conditions for showing the videos to the participants (videos were to be shown when the setting was quite enough and had no interfering or distracting stimuli); (c) providing attentional cue ("I've prepared a great film for you. Would you like to watch it together? I am going to start it if you are ready" etc.), (d) providing reinforcement after the participant directs his/her attention toward watching the video (after the participant either verbally or nonverbally states that he/she is ready, the practitioner reinforces this behavior by saying "Great, let us begin watching it); (e) showing the video clips to the participant (starting the video upon prompting the participant as "Please watch it very carefully"); (f) reinforcing the participant's watching behavior (i.e., Well done! You watched the film very carefully and quietly! Great" etc.); and (g) terminating the session and directing the participant toward the experimental setting by saying "Okay, now go to the restroom." Each day five of these sessions each of which was made of these seven steps were conducted. The time of the sessions was distributed trials. Upon determining appropriate time and setting, the session began with showing the videos to the participants. Showing the videos took place in the following manner: The laptop computer was placed at the eye-level of the participant. The practitioner tells the participant "I've prepared a great film for you. Would you like to watch it together? I am going to start it if you are ready." When the participant verbally all nonverbally reports that he/she is ready, the practitioner reinforces this behavior by saying "Great, let us begin watching it." Then, after telling the participant "Please watch it very carefully" the practitioner starts the video. If the participant was distracted for more than 3 seconds while watching the video, his attention was re-directed toward the video by verbal cueing. After completion of watching the video, this behavior of the participant was verbally reinforced. After the participant was done watching the approximately 1.5 minute-long video, the practitioner terminated the teaching session and directed the participant toward the experimental setting by saying "Okay, now go to the restroom."

2.6.4. Maintenance

In this study, maintenance data was collected one and four weeks after the last full probe session. Maintenance sessions were conducted in the same way as the probe sessions. Five

sessions were conducted during the maintenance phase of the study. Each session involved one trial. It should be noted that during the teaching process both prior to the performance and after the performance "natural" stimuli was used as much as possible. Furthermore, sessions were continued until a particular participant performed at 100% accuracy in the targeted skills in three consecutive sessions in order to obtain more lasting effects.

2.6.5. Generalization

Data on generalization of the target skills was also collected. During the generalization sessions pre-test and post-test data was collected to examine the degree to which the participants generalized their newly acquired behaviors to different settings and stimuli. In order to examine generalization of the acquired skills to different setting, the participants' performance at a shopping mall was evaluated. In addition, to test the degree to which they were able to generalize the targeted skills to new stimuli, signs with different colors and shapes were used. Pre-test sessions were held prior to the teaching sessions while post-test sessions were conducted after the teaching sessions. The pre-test and post-test sessions were held in the same manner as the probe sessions.

2.7. Social Validity

Data on subjective evaluations by the teachers of the participants on the following aspect of the study was collected: the targeted skills, the utilized teaching method (video modeling) and outcomes (performance of the participants). In doing so, a Social Validity Questions Form was developed which was made of eight close-ended and two open-ended questions (a total of 10 questions). Please contact with the corresponding author for the questions.

2.8. Reliability

In this study two sets of reliability data were collected; namely, data on inter-observers and treatment reliability. The following formula was used in calculating the inter-observers reliability percentage: [Agreement/Agreement+ Disagreement x 100]. Likewise, the following formula was used in calculating the treatment reliability percentage: [Observed behavior by the practitioner/expected behavior by the practitioner x 100] (Kırcaali-İftar and Tekin, 1997). Data on the inter-observers reliability was gathered by watching video recordings of at least 30% of all sessions. Based on the observations on probe, maintenance and generalization sessions with all the three participants, calculation of the inter-observers reliability percentage resulted in 100%. More specifically, the inter-observers reliability for the teaching sessions with Ege had a percentage of 97% (within the 80-100% range), 100% for İsmail and 96% for Kayra (within the 80-100% range).

Likewise, in order to examine as to with what degree of reliability major phases (steps) in the study were conducted, the treatment reliability was determined. In doing so, data was collected by viewing video recordings of 35% of the sessions following probe and teaching practices, 50% of the maintenance and generalization sessions and all the teaching sessions. More specifically, while data was evaluated for "probe sessions" the degree to which these sessions were conducted in comparison to three previously specified steps for these sessions while data on "teaching sessions" was evaluated in terms of their congruence with the seven specified steps. In addition, treatment reliability regarding the maintenance and generalization phases were determined in comparison to specified steps for these sessions. Reliability data showed that the reliability percentage was 100% for full probe, daily probe, teaching, maintenance and generalization sessions.

3. FINDINGS

In this section findings regarding effectiveness of the video modeling and on social validity will be articulated.

3.1. Effectiveness Findings

Performance of the participants during the full probe, teaching, maintenance and generalization sessions was analyzed in determining the effectiveness of the video modeling model. Finding regarding probe, teaching and maintenance sessions are illustrated in Figure 1.

Five sessions, each involving one trial, were conducted in order to determine the baseline for Ege's skills in finding the restroom by using signs (arrows) in a public setting. Ege's performance showed that he was on average able to perform the targeted skills at a rate of 11.44%. A total of 23 sessions were conducted with Ege in five days. Although he was able to perform the targeted skills after the 21st session at 100% level, until he repeated this performance in three consecutive sessions' trials were continued. Ege also performed at 100% accuracy in the first, second and third full probe sessions. He showed the same level of accuracy at one-week and four week follow ups. Finally, his performance was at 14.3% level in the presence of other stimuli (pre-test) and was improved to 100% as determined by the post-test. Ismail's performance showed that he was on average able to perform the targeted skills at a rate of 17.16%. It took him nine sessions to reach at 100% accuracy of the targeted skills. Two additional sessions were conducted until he repeated this performance in three consecutive sessions' trials. Thus a total of 11 sessions, which took a total of three days, were conducted with İsmail. İsmail also performed with 14.3% accuracy in the first full probe session. He, on the other hand, performed with 100% accuracy in the second and third full probe sessions and all the maintenance sessions. Examining the generalization data on İsmail's performance showed that his performance during the pre-test sessions was 20.01% and 100% in the post-test sessions. Kayra's performance indicated that he was on average able to perform the targeted skills at a rate of 17.16%. A total of 22 sessions were conducted with Kayra. Although he performed at 100% accuracy level during the 20th session, which took a total of five days, two more sessions were conducted until he repeated this performance in three consecutive sessions' trials. Kayra also performed on average with 14.3% accuracy in the first two full probe sessions. He reached at 100% accuracy in the third full probe session and all the maintenance sessions. Examining the generalization data on Kayra's performance showed that his performance during the pre-test sessions was 14.3% and 100% in the post-test sessions. In the study, the percentage of non-overlapping data (PND) technique was used to calculate the effect size of the intervention. The percentage of non-overlapping data of the baseline and teaching phases was found 86.96% for Ege, 100% for Ismail and Kayra. High effect size was found in all participants.

3.2. Social Validity Findings

Social validity data was collected by obtaining subjective evaluations by the teachers of the participants. In doing so, a Social Validity Questions Form made of eight close-ended and two open-ended questions (a total of 10 questions) were used. The teachers reported that the skills taught for this study were useful and that the students could use them in different settings. Teachers' opinions on the video modeling method of teaching were as follows: All the teachers noted that preparation of such videos will not cause any significant financial burdens for them. While two of the teachers indicated that preparation of the videos will not be significantly time consuming, one teacher noted that he was unsure on this issue. In addition, all teachers reported that the video modeling was easy to apply and not restricting for the students in any ways. They also stated that the outcome of the use of video-modeling was positive; that students could be able to demonstrate these skills under different circumstances and in the presence of other people. They further noted that the students were able to demonstrate these skills similar to their peers who do not have an ASD diagnosis. While the teachers did not state "not liking" any aspect of the method, they mentioned that the most favorable aspects of it as: involving teaching through video modeling; being easy to use and not being time-consuming.

4. DISCUSSION and RESULTS

The purpose of this study was to investigate the effectiveness of teaching skills to individuals with ASD how to follow signs in finding the restroom in a public setting by utilizing video modeling in which the model is a peer with an ASD. In addition, in order to enrich the findings of the study with additional descriptive data, teachers' subjective evaluations were inquired through semi-structured interviews. Results of the study showed that the participants acquired the targeted skills, they demonstrated these skills at both one-week and four-week follow ups and they generalized these skills to different settings and stimuli. The qualitative findings of the study showed that the teacher had considerably favorable opinions regarding the outcomes, the video modeling teaching method and the students' performance at maintenance.

Results of the study showed that video modeling was effective in learning the targeted skills. This finding is consistent with studies showing effectiveness of video modeling in teaching various skills (Boudreau and D'Entremont, 2010; Bereznak et al., 2012; Bernad-Ripoll, 2007; Lee et al., 2014; McLay et al., 2015). In their meta-analytical study, Hong et al. (2016) concluded that video modeling had a strong effect (Tau-*U* = .94) on teaching persons with ASD social skills such as shopping and banking skills. On the other hand, the others reported that video modeling had a weak effect (Tau-*U* = .48) on teaching skills to individuals between the ages of 10 and 15. This conclusion could be due to the fact that the meta-analysis involved only two studies working with persons in this age range. Since video modeling is a model that provides visual hints for people with ASD and leads them to focus on only the desired stimulus/behavior by requiring no face-to-face interaction, it is not surprising quite that such a method is quite useful in teaching target skills to ASD students learning better through visuals, having difficulty in figuring out which stimulus to focus on and having social interaction problems. Curiously, results of both systematic review studies and meta-analytical studies showed that effects of video modeling were similar whether the model in the video was a peer, adult or the person him or herself (Bellini and Akullian, 2007; Hong et al., 2016). However, Owen-Deschryver, Carr, Cale, and Blakeley-Smith (2008) state that the peer model could be opted for since its nature decreases the chances for the generalization problem. It should be noted that Hong et al reported that they could not use findings of one study that utilized a peer model with ASD. As mentioned earlier, it was envisioned that the current study would make unique contribution to the literature given that it utilized a peer model in video modeling and that the participants of the study were persons within the 10 to 15 age range. Over and above, the present study depicts a possibility for overcoming the problems arising from the lack of a peer model for learners with ASD, who cannot attend formal education with other learners, in their educational environment by utilizing the peer model in video modeling.

Maintenance data was collected at one week and four weeks upon completion of the teaching sessions. This data showed that all of the participants maintained the targeted behaviors at both follow ups. This finding was parallel to those of studies using video modeling that involved collection of maintenance data report that the majority of participants maintained acquired behaviors after completion of their teaching practices (Akmanoglu and Tekin-Iftar 2011; Bugey, 2005; Ergenekon, 2012; McLay et al., 2015; Ozen et al., 2012; Sansosti and Powell-Smith, 2008; Shipley-Benamou et al., 2002). In short, findings at maintenance supported findings of the previous studies. Similarly, due to the nature of video model, to continue teaching after meeting the very first criteria until gaining a stable result would increase the chances for maintenance.

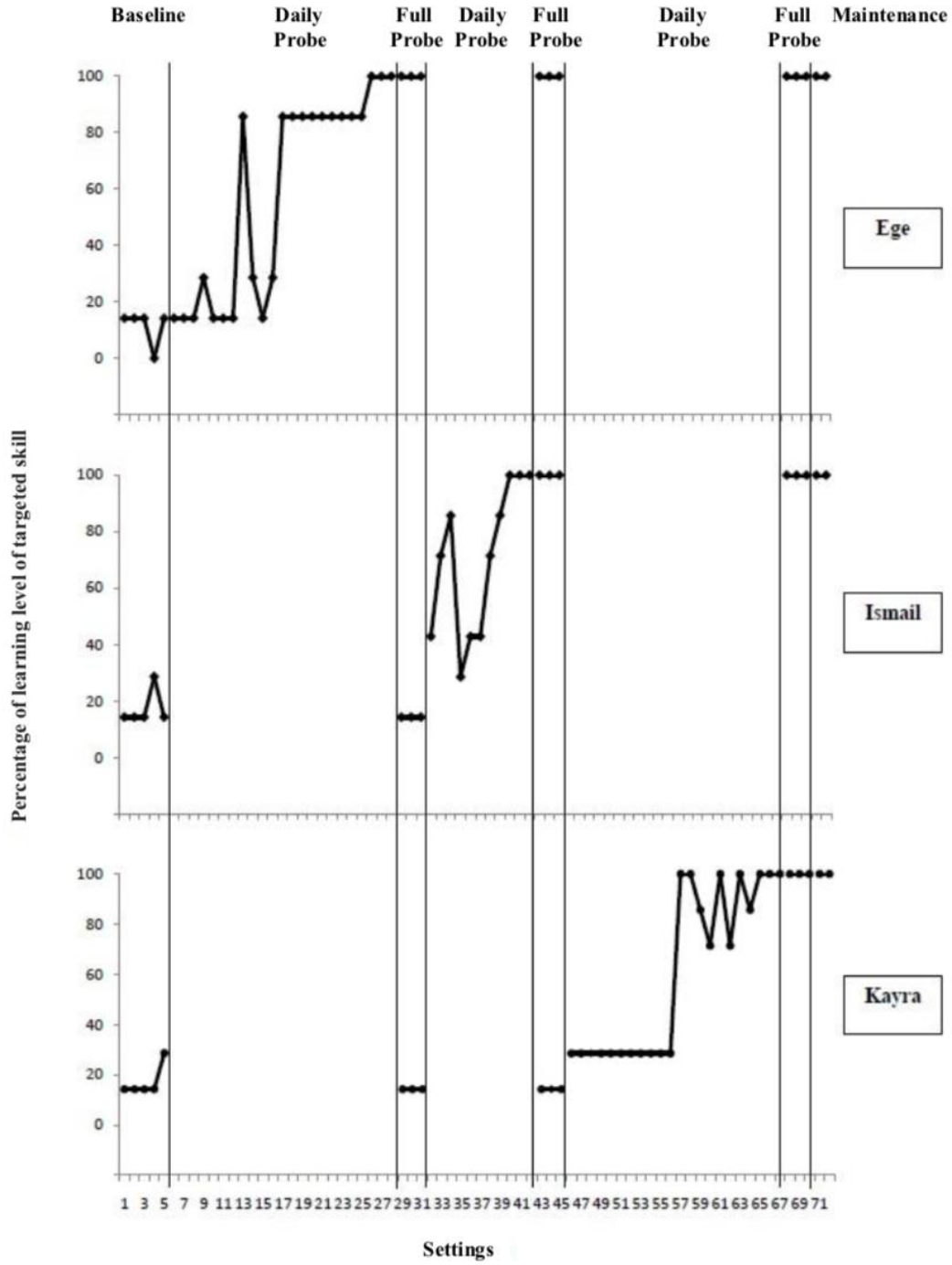

Figure 1. Participants' learning level of targeted skill

In this study, data on generalization of the target skills was also collected. During the generalization sessions pre-test and post-test data was collected to examine the degree to which the participants generalized their newly acquired behaviors to different settings and stimuli. Findings on this data showed that the participants generalized the acquired behavior at 100% rate. This result is consistent with findings of prior studies investigating the effectiveness of video modeling (Akmanoglu and Tekin-Iftar 2011; Bernad-Ripoll, 2007; Ergenekon, 2012; Gena et al., 2005; Graetz, 2003; McLay et al., 2015; Nikopoulos and Keenan, 2007; Sansosti and Powell-Smith, 2008; Yücesoy-Özkan, 2013). A unique strength of this study was that the generalization data was collected in public settings and a considerable "natural" trials were

made both within subject and between subjects. Besides, it can be claimed that using a peer model who has similar characteristics with the learner in question (Owen-Deschryver et al., 2008) would contribute to the generalization of the target behavior. Charlop-Christy et al. (2010) attribute this to the fact that watching videos is a very common action in kids' real life and they tend to imitate the people they see in the videos, and, last but not least, all this process is great fun.

While findings of this study showed that video modeling was effective in acquiring, maintaining and generalizing the targeted skills, a significant observation regarding the performance of the participants should be kept in mind in evaluating these findings. For two third of the participants (Ege and Kayra), it took over 20 trials to be able to find the restroom by following signs in public settings while it took significantly fewer trials for İsmail. This difference was tentatively attributed to the fact that both Ege and Kayra had severe stereotypic behaviors and attention deficit than İsmail did.

Social validity data was collected from teachers of the participants on: the targeted skills, video modeling method, and outcomes of video modeling. Findings from content analysis of teachers' responses showed that the teachers found the skills taught in this study were useful and that the students could use them in different settings. They also found video modeling as easy to prepare and administer and not costly or time consuming. The teachers also stated that the outcome of the use of video modeling was positive in that students could be able to demonstrate these skills under different circumstances and in the presence of other people. These findings were parallel to those of studies utilizing subjective evaluations (Akmanoglu and Tekin-Iftar, 2011; Boudreau and D'Entremont, 2015; Sansosti and Powell-Smith, 2008).

Given the findings of this study and those by previous research, the following conclusion can be drawn: (1) upon receiving effective and appropriate training individuals with ASD can function as models for their peers. (2) Video modeling utilizing peer models with ASD can be effectively used in teaching persons with ASD social skills. (3) Video modeling is easy to administer and is neither costly nor time consuming. Considering that individuals with ASD diagnosis spend limited amounts of time in private special education and rehabilitation centers, they are in vital need for learning a variety of skills and they spend most of their times at such centers with peers with similar diagnosis, the findings of this study might have essential implications for professionals working at these settings.

Some limitations were observed during the process of this study. The most significant issues observed had to do with the technical knowledge in video recording and preparation. For example, since the recording needed to be done from two different angles, this posed difficulties to the researchers since it necessitated expertise. On other hand, given that actual modeling can be demonstrated in the presence of the model and the observer, video modeling makes the modeled behaviors available for observers for as many times as needed. This advantage of it makes difficulties of preparing video recordings of target behaviors worth the effort.

The following recommendations could be made for future research and for practice based on the findings of the study and the observations made through conducting this study: Family members, teachers and other professionals working with individuals with ASD diagnosis can highly benefit from using video recordings of peer models in teaching a variety of skills. Likewise, effects of video modeling could be further explored by future studies in a variety of settings (i.e., home); with different persons (i.e., teachers, peers); teaching of various skills (i.e., self-care, daily living, independent living). Likewise, showing such videos could also be tested by cell phones, tablets and other technological means.

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Uzun Özet

Otizm spektrum bozukluğu (OSB), sosyal etkileşim ve iletişimde yetersizlikler, sınırlı, tekrarlayan davranışlar ve sınırlı ilgi alanları belirtileri ile ortaya çıkan ve seyreden nörolojik bir bozukluktur. Bu özelliklere sahip birey sayısı her geçen gün artmaktadır (Amerika Birleşik Devletleri Hastalıkları Kontrol ve Önleme Merkezi, 2016 a, b). OSB tanısı bulunan birey sayısındaki bu artış bireylere yönelik uygulama/öğretim yöntem ve stratejilerinde çeşitliliğe neden olmakta; bu çeşitlilik anne-babalar, öğretmenler ve uzmanlar için etkili olan uygulama/öğretim yöntem ve stratejilerini seçme gereksinimini ortaya çıkarmaktadır (Odom ve Strain, 2002). Bu gereksinimden yola çıkılarak farklı organizasyonlar tarafından OSB tanısı bulunan bireylere farklı becerileri öğretmede etkili olan uygulamalar araştırmalarla belirlenmiş ve belli ölçütleri karşılayan uygulamalar kanıt temelli uygulamalar adı altında toplanmıştır (National Autism Center [NAC], 2015; National Professional Development Center [NPDC], 2014). OSB tanısı bulunan bireylere farklı becerilerin öğretiminde etkili olduğu araştırmalarla ortaya konulmuş kanıt temelli uygulamalardan biri video modelle öğretimdir (NAC, 2010, 2015; NPDC, 2010, 2014). Araştırmalar video modelle öğretimin farklı yaş grubundaki OSB tanısı bulunan bireylere sosyal becerilerin, oyun becerilerinin, taklit becerilerinin, iş becerilerinin, özbakım becerilerinin, akademik becerilerin, bağımsız yaşam becerilerinin, güvenlik becerilerinin öğretiminde etkili olduğunu göstermiştir.

Bu araştırmada OSB tanısı bulunan bireylere toplumsal alanlarda levhalarda yer alan okları takip ederek tuvaleti bulma becerisinin öğretiminde OSB tanısı bulunan akranın model olarak yer aldığı video modelle öğretimin etkililiğinin incelenmesi amaçlanmıştır. Araştırmada katılımcılardan ortamlar ve uyaranlar arası genelleme ile bir ve dört hafta sonra izleme verisinin toplanması; katılımcıların öğretmenlerinden ise öznel değerlendirme yaklaşımıyla sosyal geçerlik verisinin toplanması amaçlanmıştır. Video modelle öğretimin OSB tanısı bulunan katılımcıların toplumsal alanlarda levhada yer alan okları takip ederek tuvaleti bulma becerisini öğrenmeleri üzerindeki etkisini değerlendirmek amacıyla tek-denekli araştırma modellerinden "yoklama evreli katılımcılar arası çoklu yoklama modeli" kullanılmıştır. Toplumsal alanlarda levhada yer alan okları takip ederek tuvaleti bulma becerisini oluşturan alt basamakların belirlenmesi amacıyla araştırmacılar tarafından beceri analizi yapılmıştır.

Araştırma yaşları 10-13 arasında değişen; sözel olmayan becerileri (alkışlama, el sallama, zıplama vb.) taklit etme, sözel dili taklit etme, en az 90 saniye süresince dikkatini videoya yöneltme, bir nesne ve bir eylem bulunan yönergeleri takip etme, kadın ve erkek resimlerini ayırt etme, tuvalet levhasını ayırt etme önkoşul özelliklerine sahip OSB tanısı bulunan üç erkek öğrenci ile gerçekleştirilmiştir. Araştırmada video görüntülerinde yer alan akran model 13 yaşında OSB tanısı olan bir erkek öğrencidir. Çalışmaya başlamadan önce katılımcıların ve modelin aileleri bilgilendirilmiş ve yazılı izinleri alınmıştır. Modelin en doğru performansı sergilemesini sağlamak amacıyla model akrana hedef beceri için bir gün, günde üç oturum olmak üzere eğitim sunulmuştur.

Araştırmanın öğretim oturumları bir özel eğitim ve rehabilitasyon merkezinin bireysel sınıflarında, yoklama ve izleme oturumları merkezdeki koridorlarda, genelleme oturumları ise katılımcıların çalışma öncesinde hiç gitmediği bir alışveriş merkezinde gerçekleştirilmiştir. Merkezdeki tuvalet levhaları 15x29 cm olan beyaz kağıtlara çıktı alınması ve kağıtların ahşap zemine yapıştırılması ile elde edilmiş ve merkezin tuvalete giden koridorlarındaki tavanlara asılmıştır. Araştırmaya başlamadan önce video görüntülerinin ve video modelle öğretimin uygulanabilirliğini değerlendirmek; eksik ve aksayan yönlerini belirleyerek iyileştirmek amacıyla bir pilot çalışma gerçekleştirilmiştir. Pilot çalışma OSB tanısı olan 13 yaşında bir erkek öğrenci ile gerçekleştirilmiştir. Pilot çalışma sonucunda görüntüler ve uygulama planında düzenlemelere gidilerek uygulama sürecine geçilmiştir.

Araştırmada toplu yoklama ve öğretim sonu değerlendirme oturumları olmak üzere iki ayrı yoklama verisi toplanmıştır. Toplu yoklama oturumları en az üç sürekli, kararlı veri elde edilinceye değin sürdürülmüş ve her gün bir toplu yoklama oturumu düzenlenmiştir. Öğretim sonrası değerlendirme

oturumları ise, video modelle öğretimden hemen sonra gerçekleştirilmiş, katılımcılar ard arda üç oturum %100 düzeyinde doğru tepki sergileyinceye değin devam ettirilmiş ve öğretim verileri toplanmıştır. Bu oturumlarda tek fırsat yöntemi kullanılarak veri toplanmıştır. Tüm oturumlarda katılımcının "Tuvalete git." yönergesi verildikten sonra ilgili basamaklara 5 saniye içinde tepkide bulunarak her bir basamağı 20 saniye içinde doğru olarak gerçekleştirmesi doğru tepki olarak kaydedilmiştir. Katılımcının 5 saniye içinde tepkide bulunmaması, ilgili basamağı 20 saniye içinde tamamlayamaması ya da basamakları yanlış sergilemesi yanlış tepki olarak kaydedilmiştir. Tüm yoklama oturumları kontrollü başlama düzeyi evresi düzenleme ilkesine göre tasarlanmış ve uygulamacı gün içerisinde katılımcının tuvalete gitmesini gerektiren fırsatlar (el yıkama, toz bezini ıslatma, su içtikten sonra tuvalete gitme vb.) yaratmış, her oturumda bir deneme gerçekleştirilmiştir. Öğretim oturumları katılımcılar, öğretimi amaçlanan beceriyi gerçekleştirebileceği ortama girmeden ya da onlara beceriyi gerçekleştirme fırsatı verilmeden hemen önce yürütülmüştür. Öğretim oturumlarında videoyu uygun zamanda izlettirme, videoyu uygun ortamda izlettirme, (c) dikkat çekici ipucunu sunma, bireyin dikkatini yöneltme davranışını pekiştirme, (d) videoyu izlettirme, bireyin videoyu izleme davranışını sözel olarak pekiştirme ve süreci sonlandırarak davranışın sergileneceği ortama bireyi yönlendirme olmak üzere yedi basamak izlenmiştir. Gün içerisinde beş öğretim oturumu gerçekleştirilmiştir. Öğretim oturumları dağınık deneme sunuş biçimiyle gerçekleştirilmiştir. Araştırmada izleme oturumları yoklama oturumları gibi gerçekleştirilmiştir. İzleme evresinde beş oturum, her oturumda bir deneme gerçekleştirilmiştir. Genelleme öntest oturumları katılımcılarda uygulamaya başlamadan önce, sontest oturumları ise öğretim oturumları sona erdikten sonra yoklama oturumlarına benzer bir şekilde gerçekleştirilmiştir. Araştırmada öğretimi yapılan beceriye, kullanılan öğretim yöntemine ve katılımcıların performanslarına ilişkin sekizi kapalı uçlu, ikisi açık uçlu olmak üzere 10 sorunun yer aldığı “Sosyal Geçerlik Soru Formu” kullanılarak öğretmenlerden sosyal geçerlik verisi toplanmıştır.

Araştırmada tüm oturumların en az %30'undan gözlemcilerarası güvenirlik ve uygulama güvenirliği verisi toplanmıştır. Her üç deneğin toplu yoklama, izleme ve genelleme oturumlarına ilişkin gözlemcilerarası güvenirlik yüzdesi %100, öğretim oturumlarına ilişkin gözlemcilerarası güvenirlik ortalama %97,6 bulunmuştur. Uygulama güvenirliği ise %100 bulunmuştur. Araştırma bulguları katılımcıların hedef beceriyi edindiklerini, koruduklarını, farklı ortam ve uyaranlara genellediklerini göstermiştir. Araştırmada örtüşmeyen veri yüzdesi analizi (PND) ile etki büyüklüğü hesaplanmış; etki büyüklüğünün birinci katılımcı için %86.96, ikinci ve üçüncü katılımcı için %100 olduğu, başka bir ifadeyle tüm katılımcılar için etki büyüklüğünün yüksek olduğu görülmüştür. Öznel değerlendirme yaklaşımıyla toplanan sosyal geçerlik bulguları katılımcıların öğretmenlerinin hedef beceriye, video modelle öğretime ve öğrencilerinin öğretim sonrasındaki performanslarına ilişkin görüşlerinin olumlu olduğunu ortaya koymuştur.

Araştırmanın edinim, izleme, genelleme ve sosyal geçerlik bulguları video modelle öğretimin farklı becerilerin öğretimi üzerindeki etkililiklerini inceleyen araştırma bulgularıyla benzerlik göstermektedir. Araştırma sonucunda aile üyelerine, alanda çalışan uzmanlara ve öğretmenlere farklı toplumsal becerilerin öğretimi için video modelle öğretime yer vermeleri ve OSB tanısı bulunan akranları model olarak kullanmaları; araştırmacılara toplum temelli öğretim ile birlikte sunulan video modelle öğretimin etkiliğinin incelendiği araştırmalara yer vermeleri, videoların bilgisayardan değil telefon, ipad, tablet gibi teknolojik araçlar aracılığıyla sunulduğu uygulamaların etkililiklerini incelenmeleri önerilebilir. Araştırmanın yürütülmesi sürecinde bazı sınırlılıklarla karşılaşılmıştır. Araştırmanın en önemli sınırlılığı öğretim öncesinde hazırlık yapılmasını ve videolarda iki açıdan çekim yapılması gerektiği için teknik bilgi gerektirmesidir. Ancak, hazırlanan videoların tekrar tekrar farklı bireyler için kullanılabilme özelliğine sahip olmasının bu sınırlılığı en aza indirgeyerek yöntemin verimliliğini arttırabileceği düşünülebilir.