

# Video Modeling

## *A Visually Based Intervention for Children With Autism Spectrum Disorder*

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*Visually based interventions such as video modeling have been demonstrated to be effective with students with autism spectrum disorder. This approach has wide utility, is appropriate for use with students of a range of ages and abilities, promotes independent functioning, and can be used to address numerous learner objectives, including behavioral, self-help, communication, and social objectives. What are the components of video modeling? What's the best way to implement video modeling with students? Do the techniques differ for students of different ages and abilities?*

Recently, the number of people diagnosed with autism spectrum disorder (ASD) has increased drastically, most recently as common as 1 in 91 (Kogan et al., 2009), although impacts range from severe to mild impairment (Rice et al., 2007). ASD is common across races, ethnicities, and social groups and is four times more common in boys than in girls (Rice et al., 2007). Further, ASD, particularly in those with

moderate or severe autism, often co-occurs with developmental delays, emotional and behavioral disorders, and attention deficits (Kogan et al., 2009).

According to current legislation (i.e., No Child Left Behind Act of 2001, Individuals With Disabilities Education Act), instructional strategies used in classrooms must be scientifically research-based (Simpson, Myles, & Ganz, 2008). Visually based instruction such as video modeling, a research-supported intervention, may be more appropriate and effective than other approaches for students with ASD for a number of reasons (Bellini & Akullian, 2007; Delano, 2007b).

### **Students With ASD as Visual Learners**

Students with ASD learn best through visual means (Hodgdon, 1995; Mesibov & Shea, 2008; Mesibov, Shea, & Schopler, 2004; Quill, 1997; Simpson et al., 2008). In addition, adults with ASD have attested to their reliance on visually based information. Temple

Grandin described her thought processes as “completely visual” (Grandin & Scariano, 1986, p. 131), noting that she remembered information by visualizing a page in a book with the information and that she had difficulty remembering auditory information unless she was able to pair it with a visual image. Likewise, Liane Holliday Willey (1999) recalled relying on visual landmarks to find her way to college classes and finding herself drawn to visually based subjects, such as architecture.

*Visually based approaches* may help address pervasive difficulties in students with ASD. These strategies respond to stimulus overselectivity by assisting students in focusing and maintaining attention to relevant stimuli (Shipley-Benamou, Lutzker, & Taubman, 2002), and can enhance children’s abilities to independently complete unfamiliar or complex directions by condensing the content to only essential information (Williams, Goldstein, & Minshew, 2006). The permanent nature of visually based strate-



gies allows students to review cues, decreasing reliance on teacher prompts and increasing independence (Hodgdon, 1995). Additionally, visually based interventions support students' ability to shift attention (Quill 1995, 1997, 1998), make abstract concepts more concrete (Peeters, 1997), and may be less socially stigmatizing than verbal reminders by adults or companions when in the presence of peers.

There is support in the literature for using visually based strategies with

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students with ASD of all ages (Simpson et al., 2008). When taught using visually based strategies, many students with ASD maintain and generalize newly learned skills (Krantz & McClannahan, 1993, 1998). In particular, *visually based schedules*, containing photographs or line drawings of upcoming activities or selected play schemes, have been used to (a) increase work completion for students ages 5 to 14

(Dettmer, Simpson, Myles, & Ganz, 2000; MacDuff, Krantz, & McClannahan, 1993; Massey & Wheeler, 2000), (b) reduce problem behavior in a 3-year-old (Dooley, Wilczenski, & Torem, 2001), and (c) facilitate play in 4- to 6-year-olds (Morrison, Sainato, Ben Chaaban, & Endo, 2002).

*Visually based scripts* are another strategy used with students with ASD (Ganz & Flores, 2010; Ganz, Kaylor, Bourgeois, & Hadden, 2008). Scripts provide the exact words for participat-

ing in social interactions and other well-defined situations (Ganz, Cook & Earles-Vollrath, 2006). Visually based scripts have been effective (Simpson et al., 2008) in (a) increasing social skills in children ages 5 to 10 (Gonzalez-Lopez & Kamps, 1997; Pierce & Schreibman, 1995, 1997), (b) improving communication skills in students ages 9 to 12 years old (Krantz & McClannahan, 1993), and (c) decreas-

ing problem behaviors in children ages 7 to 14 (Sasso, Melloy, & Kavale, 1990).

### What Is Video Modeling?

*Video modeling* is a strategy involving the use of videos to provide modeling of targeted skills (Bellini & Akullian, 2007). Both videos that include the participants (*video self-modeling*, VSM) and videos of others have been found effective in teaching new skills (Sherer et al., 2001). Video modeling including "other" models may be easier to produce because these videos generally require less editing than VSM; typically developing students may more readily cooperate, understand directions, already demonstrate mastery of target skills, and require fewer prompts. *Point-of-view modeling*, or placing the video camera at an angle that illustrates the target skill from the point of view of the target student (e.g., camera is placed at the shoulder of the model to show the skill from eye level) also has been demonstrated to be effective (Bellini & Akullian, 2007).

Video modeling as a strategy has preliminary support to improve a variety of skills in students with ASD (Ganz et al., 2006; Ganz, Cook, & Earles-Vollrath, 2007). Video modeling using videos of “others” has been demonstrated to

- Increase appropriate social interactions (Apple, Billingsley, & Schwartz, 2005; Gena, Couloura, & Kymissis, 2005; Maione & Mirenda, 2006; Nikopoulos & Keenan, 2003).
- Improve conversation skills (Charlop & Milstein, 1989; Charlop-Christy, Le, & Freeman, 2000; Sherer et al., 2001).
- Improve daily living skills (Haring, Kennedy, Adam, & Pitts-Conway, 1987; Keen, Brannigan, & Cuskelly, 2007).
- Improve play skills (Charlop-Christy et al., 2000; Dauphin, Kinney, & Stromer, 2004; MacDonald, Clark, Garrigan, & Vangala, 2005; Maione & Mirenda, 2006; Nikopoulos & Keenan, 2003, 2007).
- Reduce problem behaviors (Luscre & Center, 1996).

VSM, although studied less frequently, has been demonstrated to be effective when used to improve communication skills (Buggey, Toombs, Gardener, & Cervetti, 1999; Sherer et al., 2001), increase social initiations, decrease problem behaviors (Buggey, 2005), and improve academic and task-oriented behaviors (Delano, 2007a; Hagiwara & Myles, 1999). Point-of-view modeling has some support as well, having been shown to improve daily living skills (Shiple-Benamou et al., 2002) and play skills (Hine & Wolery, 2006).

In most cases, newly learned skills taught via video modeling are maintained over time (MacDonald et al., 2005; Maione & Mirenda, 2006) and generalize to new settings or with new adults (Gena et al., 2005), particularly when using multiple videos showing the same skill across activities, settings, and people. Video modeling has been used effectively with young children with ASD, including preschoolers (e.g., Maione & Mirenda, 2006) and

elementary-age students (e.g., Nikopoulos & Keenan, 2003; Sherer et al., 2001).

The flexibility of video modeling is an advantage: In addition to addressing a variety of skills for a continuum of age ranges, it can be implemented alone or in conjunction with other instructional strategies. In fact, much of the research involving video modeling has been in combination with other strategies. For example, Baharav & Darling (2008) used video modeling with an auditory trainer, Scattone (2008) combined it with social stories, and Keen and colleagues (2007) paired video modeling with positive reinforcement strategies. Although video modeling may be implemented alone or without additional strategies, research supports its use when combined with strategies such as social skills instruction (Bellini & Akullian, 2007).

Because video modeling can be used with students with ASD to strengthen a variety of skills (see Figure 1), it is a strategy that educators should have in their toolboxes. It helps to understand the components and

baseline data regarding the student’s social strengths and deficits (Heflin & Alaimo, 2007). This might include *ecological assessments* comparing a student’s abilities to those of his peers within a target environment or activity; behavior sampling; observations in the natural environment; questionnaires and interviews completed by school staff, parents, and peers; and student self-reports (Heflin & Alaimo, 2007). Using the assessment results, develop a list of skills and prioritize them in order of importance. Target skills should be objectively defined and based on observational data.

## **Step 2: Produce the Videos**

Prior to developing the videos, determine the type of media to use (i.e., videotape vs. digital) and then gather the necessary equipment (e.g., video camera, video player, monitor, video editing software; Sigafoos, O’Reilly, & de la Cruz, 2007). Plan on creating three to five videos for each skill, providing a variety of settings, models (i.e., the student, peers, or adults; Buggey et al., 1999; Sherer et al.,

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steps of video modeling, and how to implement the intervention before using this approach with students. There are three basic steps for implementing video modeling with students with ASD: identifying the skills to be targeted, producing the videos, and implementing the intervention.

### **Components of Video Modeling**

#### **Step 1: Identify the Target Skill(s)**

The first step contains several sub-steps: assessment, listing and prioritizing skills, defining the skill, and collecting baseline data. Prior to implementing video modeling, document

2001), and scripts or task analyses to ensure skill generalization (D’Ateno, Mangiapanello, & Taylor, 2003).

For the strategy to be most effective, there should be three to five scripts or task analyses for each skill being taught (Ganz et al., 2006). Scripts can be used for skills that require verbalizations (e.g., greeting others, initiating conversations, asking to enter a game), whereas task analyses can be used for multistep tasks (e.g., loading the dishwasher, using the microwave to cook popcorn, performing household chores; Sigafoos et al., 2007). When writing scripts, consider seeking input from the student’s typically developing peers, who may be better judges of typical activities, nonverbal communication, and speech patterns than adults. Task

**Figure 1. Possible Skills to Improve Via Video Modeling**

- Social initiation
  - “Can I sit with you?”
  - “Look at this/that.”
  - Asking a peer to have lunch
- Greetings
  - Giving greetings
  - Responding to/greetings
- Appropriate nonverbal communication
  - Showing interest in what someone is saying (eye contact, nodding)
  - Smiling
  - Identifying others’ nonverbal cues
- Conversational skills
  - Maintaining conversation on-topic
  - Comments regarding previous activities
  - Responding to others’ comments
  - Making jokes
  - Sharing attention or enjoyment with another child or adult
  - Telling stories
  - Using manners, appropriate language (please, thank you)
  - Saying something only once or twice
- Play
  - Initiating game play
  - Statements appropriate for games
  - Comments appropriate within the context of specific games
  - Sports behaviors
- Appropriate behavior in the school building
  - Cafeteria
  - Waiting in the hall before school starts
- Comments
- What to do/say in case of emergency
- Appropriately demonstrating disagreement/dislike
- Complimenting others and reciprocating compliments
- Daily living skills (e.g., cooking, cleaning, getting dressed)
- Answering/asking informational questions
  - “What’s your name?”
  - “What school do you go to?”
  - “How old are you?”
  - “What sports do you like to play?”



- “How do you get to school?”
- “What did you eat for breakfast?”
- “What do you like to do after school?”
- “What’s your favorite TV show?”
- “What’s your favorite video game?”
- “What’s your phone number?”
- “Where do you live?”
- “What do you like to do on the weekends?”
- Making requests
  - Asking permission
  - “I want [food, preferred item, activity].”
  - Asking for a turn or to borrow something
  - Expressing sensory needs
  - Asking/offering to do a new activity
  - Asking for help
  - Requesting personal space



- Community outings
  - Appropriate restaurant behavior
  - Ordering at a fast-food restaurant
  - Purchasing items
  - Using public transportation
  - Medical/dental visits
  - Appropriate social behavior at special events (e.g., weddings, birthday parties, holidays, family events, funerals)
  - Haircuts
  - Travel (plane, car)
  - Waiting in line
  - Table manners
- Responding appropriately to an adult’s requests/demands
- Responding to teasing
- Excusing self politely for hygiene purposes

analyses can be developed by watching a typically developing peer or adult perform the skill.

Be sure to obtain parental permission for any video participants and models who are minors. The models should be taught each script or step in the task analysis, practice it, and then perform while being videotaped (Ganz et al., 2006). Buggey (2005) recommends that the models be similar (e.g., age, gender) to the target student. Plan on editing each video to be approximately 3 to 5 minutes long (Buggey, 2005), although research has demonstrated the effectiveness of videos as short as 30 seconds and as long as 13 minutes (Bellini & Akullian, 2007).

### **Step 3: Implement the Video Modeling Intervention**

*Prepare for Teaching.* Sigafos and colleagues (2007) recommend designating a time of day for viewing the videos. Videos focusing on a particular skill should be viewed daily and at the same time each day. In addition, the videos should be viewed immediately prior to the time of day the student is expected to demonstrate the skill. For example, if the video and script describe how to enter a game, show the video just before the class has recess.

For best results, the video should be viewed in a consistent setting. To increase the relevance of the instruction, this setting should be the place in which the child is expected to demonstrate the skill. Materials used in the video should be the same materials the students will be expected to use when demonstrating the target behavior.

*View the Videos.* Videos may be watched as a whole group or independently depending on the needs of the students and the instructional setting (Buggey, 2005). Plan on having students view each of the three to five videos developed for the targeted skill prior to engaging in the selected skill or activity (Sigafos et al., 2007).

*Engage in the Target Skill.* Immediately after viewing the video, provide the student with the opportunity to practice the skill, in the natural setting if possible. If this is not possible or if

there are not enough natural opportunities for the student to practice the skill, plan on role-playing or practicing the skill in the classroom—or arrange situations within the school or therapy setting where the student is required to use the target skill.

*Collect Intervention Data.* Collect data on the student’s performance. To determine the effectiveness of video modeling, the same type of data should be collected for both baseline and intervention phases (Sigafos et al., 2007).

*Program for Generalization.* Students with ASD often have difficulties generalizing newly acquired skills. Programming for generalization, therefore, is an important component of any social skills instruction (Bellini, Peters, Benner, & Hopf, 2007; Gresham, 2001). Teaching skills via video modeling should include teaching multiple stimulus and response exemplars. For example, when teaching a student how to enter a group game, include varying settings (e.g., playground, gym, neighborhood), peers, and scripts (e.g., “Can I play?” “Looks like fun, can I have a turn?” “What position can I play?”) in the different videos. Other generalization strategies include teaching the student to self-monitor or self-record the use of the target skill, and teaching the social skill in the natural environment whenever possible (Gresham, 2001). Videos may need to be viewed numerous times. It’s helpful to make arrangements so that the student can access the video for independent viewing as needed.

### **Troubleshooting**

Don’t be inclined to abandon video modeling too quickly if initial data indicate limited progress toward the target behavior(s). Although it may appear that this strategy is an easy, no-fail intervention, as with other teaching techniques issues may arise during implementation. Sigafos et al. (2007) described several problems that may occur, as well as solutions for each of these problems. Lack of progress can be due to a lack of reinforcement, poor video content, or a lack of prerequisites.

To address a **lack of reinforcement**, it may be necessary to identify reinforcing stimuli that can be delivered immediately and consistently following the demonstration of the target behavior. **Poor video content** can also affect the impact of the intervention. If video content seems to be an issue, reshoot and/or rewrite and reshoot the video. When filming the video, it is important to restrict extraneous stimuli (i.e., excess noise and visual distractions) and ensure that the target behavior(s) are modeled slowly and clearly. If it appears that the student does not have the **prerequisite skills** of imitation and observational learning, consider adding adult-directed instruction to the process.

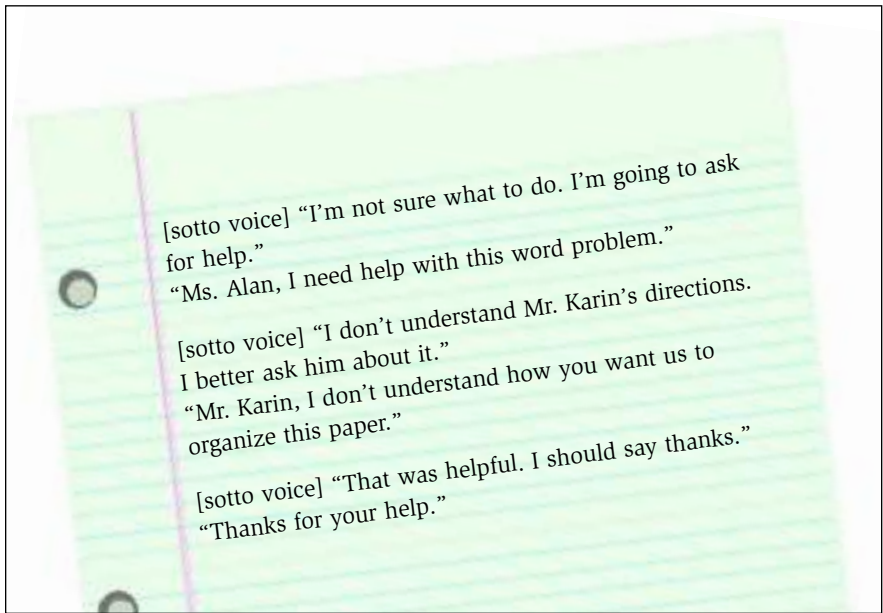
### **CASE EXAMPLE: Chad**

Chad was a fifth-grader who qualified for special education and related services under the category of autism. He had average cognitive functioning, could speak, and participated in general education for most of the school day, although his day was fairly structured. In sixth grade, Chad would be required to transition from his current elementary school to a middle school setting. Chad demonstrated difficulties with major transitions. When he was not prepared for change, he screamed, pulled his hair, and cried. These behaviors were related to new situations in which he did not understand the expectations, did not know whom to ask for help, or was not familiar with the location.

### **Step 1: Identify the Target Skill(s)**

Chad’s team, which included his elementary and middle school special education teachers and general education homeroom teachers, selected a list of skills from those identified by his individualized education program (IEP) and from consultation with the school counselor. The team focused on skills that would assist Chad in successfully making the transition to middle school and in dealing with new situations. They prioritized the skills and decided that “requesting help” when he was feeling anxious would be the first target skill. Additional target behaviors

**Figure 2. Chad's Video Modeling Script: Requesting Help**



included understanding environmental expectations and the orientation of the middle school building.

### Step 2: Produce the Videos

The team recorded digital videos in some of the middle school classrooms (i.e., Chad's future homeroom, special education resource room, and math classroom) and settings (i.e., cafeteria, hallway, library). Each of the classroom videos included shots of Chad's desk, where he would store his materials, the pencil sharpener (an activity that calmed him), and the teacher's desk. Middle school teachers and staff were videotaped sharing rules and expectations for the classroom or other setting. Chad's team chose to implement video modeling by peer "others" to provide Chad with examples of how to respond to signs of anxiety (e.g., stiff, hunched shoulders, wide eyes); after acting as if they were upset or anxious, these peer models modeled self-talk following written scripts (Figure 2). The completed video included a menu listing each setting and educator/staff member, to enable selective viewing of a specific environment and interaction. The video could also be viewed from beginning to the end to familiarize Chad with the transitions between the settings, and was recorded in the same order as Chad's schedule. (At the same time, the team

created videos to teach Chad other social skills, such as greetings and initiating and maintaining conversations, for later use.)

### Step 3: Implement the Video Modeling Intervention

Chad's IEP team identified several times per day, for the remainder of his fifth-grade year, that he would view the videos. "Video watching" was added to his visual schedule at the same time every day. With input from his parents, the team also established a schedule for video watching and practicing the skills over the summer.

Chad first watched the video in its entirety, and then specific video clips (e.g., home room or math class), during individual one-on-one lessons. Prior to video watching, Chad's teacher introduced the segment and the embedded lesson. After each session, Chad was asked to summarize what he saw in the videos (what the models said and did), and then practiced the relaxation and self-monitoring strategies demonstrated in the videos. The intervention continued over several weeks as Chad gained familiarity with teacher expectations, whom to ask for help in each of the middle school settings, and the orientation of the school building.

During his fifth-grade year, Chad's team collected ongoing data whenever

he demonstrated any of the relaxation and self-monitoring strategies modeled in the videos. Although not directly addressing generalization, this substep permitted assessing his generalization of the skill once he was in middle school: Chad's middle school special education teacher observed him and collected frequency data on his requesting of help, seeing an improvement over the first few weeks of school. His mother also sent periodic written updates to his special education teacher, reporting how anxious he seemed each school day, and the special education teacher would check with him at the end of the school day to ask him how it went. Although he reported some anxiety and avoided crowded hallways, he appeared to handle the transition periods well.

### CASE EXAMPLE: Sarah

Sarah was a 16-year-old sophomore diagnosed with Asperger's syndrome. She had average cognitive functioning and participated in general education classes all day, with as-needed special education support. She appeared to want to have friends but did not know how to establish friendships. Sarah would follow her peers between class periods, even if they were going in the opposite direction of her next class; she would stand by a group of students who were talking but would not participate in the conversation; and she often brought her peers small gifts such as candy and CDs. Sarah had recently found that using bodily functions (e.g., burps and passing gas) were an effective means for gaining her peers' attention: When she passed gas during class and especially during lunch, her peers smiled, laughed, and usually interacted with her for a short period of time. Students also remembered the incident and made comments when they saw her later in the day. Sarah expressed frustration to her study hall teacher that she tried her hardest to make friends, but no one ever invited her to eat lunch with them, to hang out after school or on the weekends, and they ignored her "friend" requests on online social networking sites.



### Step 1: Identify the Target Skill(s)

Sarah's team, which included her general education study hall teacher and the school district's autism consultant, selected a list of several social skills from her IEP. They then conducted an ecological assessment: After observing Sarah in the cafeteria and in study hall and conducting teacher and family interviews, they compared her social initiations with those of her peers. The team felt that if Sarah could learn to interact with her peers in a more socially acceptable way, she would be able to make friends and this would increase her quality of life. They decided that "initiating social interactions" would be the first target behavior, and they collected baseline observation data during lunch and study hall.

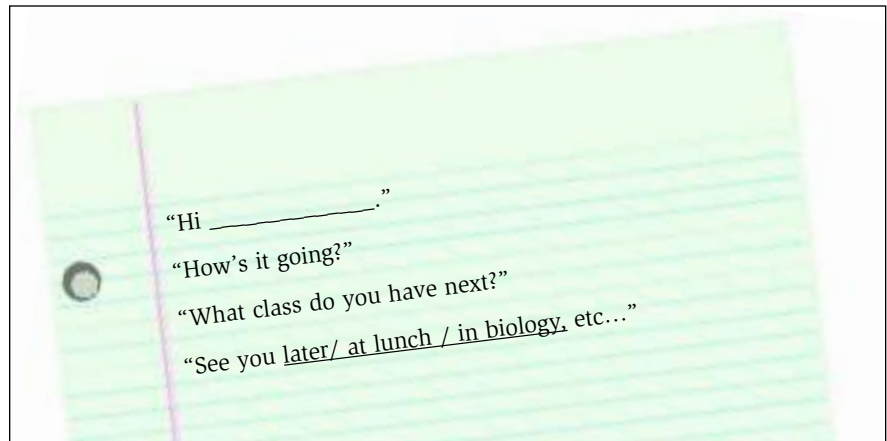
### Step 2: Produce the Videos

Like Chad's team, Sarah's team chose to implement the strategy using "other" models so she could observe students who were proficient with social interaction. Although the team provided the peers with topics to talk about, the scripts were open-ended to allow for natural conversation instead of contrived examples (see Figure 3). The team asked several of Sarah's preferred peers to participate in the social skills group. They informed parents of the purpose of the group and obtained permission for the students to participate. The team produced several digital videos of Sarah's peers initiating social interactions in the hallway and different classrooms.

### Step 3: Implement the Video Modeling Intervention

The team identified several times a day and the locations (e.g., study hall, selected classes) where Sarah would view the videos. These times occurred just prior to when Sarah was expected to demonstrate the selected skill. Although Sarah initially viewed each video by herself, some of her peers who participated in the videos occasionally joined her to discuss the scenarios and to model the questions they asked themselves to determine what to say and when. After Sarah viewed each

Figure 3. Sarah's Video Modeling Script: Social Interactions



video, she discussed the appropriate means for initiating conversations with her peers. One of her assignments was to develop a list of the initiation phrases that were used in the videos and role-play them with the teacher or her peers. Sarah was then asked to suggest other comments or phrases she could use to initiate conversations.

The IEP team collected data by observing Sarah during study hall and lunch, as well as in the hallway and selected classrooms. Although Sarah's study hall teacher found it difficult to take real-time data because it was too conspicuous to observe Sarah interacting with her peers in the hallways and at lunch, she noticed that Sarah began sitting with a group of girls at lunch approximately three weeks after intervention began. Sarah also reported that two of the girls had sent her "friend" requests on online social networking web sites.

To assess Sarah's ability to generalize the skill, the team also observed Sarah in other school settings not targeted for initial instruction. They developed additional videos for settings in which Sarah did not demonstrate generalization of the skill. They supplemented these videos with others showing Sarah's peers initiating social interactions during school-related activities such as a school dance, a football game, and a pep rally. They later created additional videos to facilitate more advanced conversational exchanges (e.g., maintaining conversations, staying on topic, ending conversations).

### CASE EXAMPLE: Sam

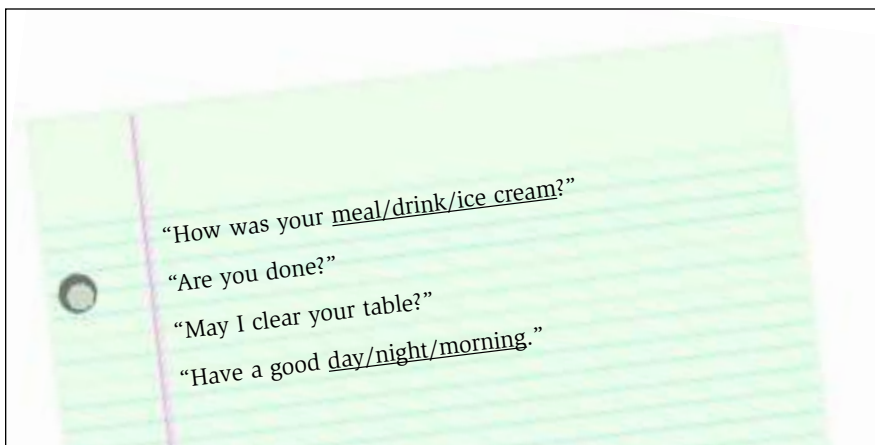
Sam was a 21-year-old student with autism and moderate to severe cognitive impairments who was transitioning from a public school program to a part-time job at a local fast-food restaurant. Although he had received job training through his special education program, this was the first job for which Sam would receive a salary. A job coach spent several hours a day on the job site with Sam to assist him in learning the job requirements.

### Step 1: Identify the Target Skill(s)

Sam's job coach and employer brainstormed a list of job-related skills that would assist Sam in being successful. Sam had difficulties in interacting with customers and completing required tasks. In particular, some customers had complained that Sam was abrupt, cleared items from the table before they were finished, and appeared rude. His coach and employer decided that "making light conversation with customers" and completing three job requirements (i.e., mopping the floor, wiping tables, cleaning the condiment area) were priorities for him to be successful on the job. Conducting an ecological assessment, Sam's job coach and employer observed his co-workers to determine the steps for completing each of the three selected jobs. From these observations they developed a task analysis for each targeted job. They then observed and recorded Sam's performance of each of the three jobs and each of the steps in the task analysis.



**Figure 4. Sam’s Video Modeling Script: Making Light Conversation**



### Step 2: Produce the Videos

The “light conversation” digital videos featured several of Sam’s co-workers interacting with customers. Although Sam could have completed the tasks with prompting (VSM), the job coach’s time was limited and it was faster to record videos with “other” models to save time in editing out prompts. While completing other tasks, the co-workers modeled appropriate greetings, comments, and questions (see Figure 4).

A second set of videos designed to teach Sam the job requirements, developed over a 3-week period, showed Sam appropriately completing the target activities (VSM). Because Sam had many of the subskills necessary for each task, little editing was required to create a short (5- to 7-minute) video for each of the three target jobs. The video clips contained the verbal prompts provided by the job coach during the completion of the task; in later viewings of the video, once Sam began to experience success, the volume was lowered to remove the verbal prompts.

### Step 3: Implement the Video Modeling Intervention

The best time for Sam to view the job-related videos and those demonstrating light conversation skills would be just prior to the restaurant opening each day. Sam, his job coach, and his employer viewed the videos together, one at a time, across several weeks. After viewing the videos, they would

discuss the light conversation skill or job steps depicted in the video and clues for determining when a job had been completed (e.g., how to determine if the tables were clean, how to determine if the floors were completely mopped). Sam then role-played each job in the area in which it would naturally occur (e.g., role-playing the steps for cleaning the condiment at one of the two condiment areas in the restaurant). During the role-playing, Sam’s co-workers pretended to be customers and responded to his “light conversations.”

A month following the beginning of the intervention, Sam’s employer sent his job coach an e-mail commenting that he had not had any further complaints about Sam’s rude behavior, and that Sam was completing most of the video-modeled tasks independently and correctly. After Sam had mastered the video-modeled skills, his employer and job coach discussed with him variations in completing each of his assigned jobs. Additional videos were produced for other new job responsibilities such as filling the condiment bar and asking for help when needed (e.g., emptying a heavy trash can, restocking items), and for new social skills (e.g., asking a customer if he/she is finished before taking the plate).

### CASE STUDY: Scott

Scott was a seventh-grade student who qualified for special education under the autism designation, although he

did not meet the full psychological criteria. He received approximately 66% of his specialized instruction in a special education classroom with the assistance of a one-on-one paraprofessional. Scott’s educational program consisted of structured, data-based programming that emphasized functional academics as well as social and communication skills. In addition to this specialized instruction, Scott also received 120 minutes of speech therapy and occupational therapy per week.

### Step 1: Identify the Target Skill(s)

Scott’s IEP team had tried a variety of strategies to increase his ability to generalize academic skills and knowledge he demonstrated at school to the home setting. They had used numerous fonts, materials, and verbal antecedents, and incorporated opportunities for Scott to practice what he learned across a variety of settings within the school and in the community. However, even with the use of these strategies, Scott continued to demonstrate difficulty completing homework activities that required him to generalize skills he had performed that day at school. To establish a baseline, sight words mastered at school were sent home as “homework.” Scott’s mother, Alice, then presented the sight words and collected data on his performance.

### Step 2: Produce the Videos

Because Scott could complete the tasks at school, the team decided to use VSM, which would require little editing. The second author videotaped Scott accurately reading flash cards at school, edited the video to delete incorrect responses and prompts, then sent the video home for him to watch prior to starting his homework each day.

### Step 3: Implement the Video Modeling Intervention

Alice collected data on Scott’s level of performance with the flash cards without the video for a week. Because Scott liked watching himself on video, Alice let him watch the video every day for a week, “just for fun.” Scott continued reviewing the sight words at school

during his maintenance programming but did not review the words at home during this time. The following week, Alice showed him the video every day and talked with him about what they saw, and how well he did; if he had previously missed a word, she tried to point out that word and how well he read it in the video.

Following the video viewing and discussion, Alice presented the flash cards and tracked Scott's performance. If Scott hesitated or read the word incorrectly, Alice marked it "incorrect," then used a time delay and error-correction procedure, directly instructing him to sound out each phoneme in the word, then blend the sounds together to read the word. (These were the same teaching method and verbal prompts as used at school.) Alice gave Scott social reinforcement for each correct answer on the video and for each correct answer he gave using the flash cards. When he answered correctly, Alice praised him (e.g., "you can read," "you're so smart," "good job") and gave him high fives. When he made mistakes, she praised him for his efforts (e.g., "good try; let's look at the letters"). When they completed the video and reading all of his words, Alice praised him for doing his homework.

Alice reported high social validity for the VSM procedure. In particular, she reported that it was a positive and reinforcing experience: Scott seemed to enjoy seeing himself succeed, and both he and Alice were motivated to contin-

Although Scott made progress in reading the words on the flash cards, it was unclear whether he would be able to do so spontaneously and in different contexts. Scott occasionally became frustrated with himself when he was not able to read the sight words after having seen himself do so accurately on the video. Alice thought that having different videos she could rotate in viewing, focusing on several tasks and examples, might result in maintaining the novelty of and Scott's motivation to watch the videos.

### Final Thoughts

Because children with ASD have a greater propensity to learn through visual means than auditory-based teaching techniques, visually based strategies such as video modeling hold promise in positively impacting the learning of children with ASD. Video modeling is based on social learning theory, which asserts that students can learn by observing and then imitating the actions of others (Bandura, 1977). Video modeling is also particularly appealing as a technique to address social skills deficiencies of children with ASD in a low-cost and unobtrusive fashion.

Video modeling offers educators flexibility in implementing, whether using "other" models, the target student, or adults, and a variety of settings. Schreibman and Ingersoll (2005) noted that for video modeling to have a high level of success, it must always occur with direct instruction and natu-

skills that too frequently undermine their success across many contexts.

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### Video modeling is also particularly appealing as a technique to address social skills deficiencies of children with ASD in a low-cost and unobtrusive fashion.

ue and did not lose interest in the flash cards as quickly as she thought they would. Scott also seemed to gain some confidence by watching himself perform well on the video. Further, Scott made gains in reading accuracy through this process, although he continued to miss different words each day.

rally occurring opportunities. The combination of video modeling, direct instruction, and facilitated support within naturally occurring environments is more apt to lead to success. Video modeling gives practitioners a heuristic tool to help children with ASD learn or improve the social, communication, behavior, and work-related

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