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Evidence-based Practices Brief

Adaptations to Video Modeling for Deaf Students with Autism Spectrum Disorder

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Autism spectrum disorder (ASD) is a complex neurodevelopmental condition characterized by persistent deficits in social communication and interaction, alongside restricted interests, and repetitive behaviors (American Psychiatric Association, 2013). Data from the Centers for Disease Control indicates a prevalence of about 1 in 36 children diagnosed with ASD (Maenner et al., 2023). A subset of the autistic population, up to 3.5%, is also identified as deaf or hard of hearing (D/HH), denoting varying degrees of hearing loss from profound to mild, necessitating aids like hearing devices (Beers et al., 2014). Comparable prevalence rates for ASD have been observed among DHH children, as reported in the Gallaudet Research Institute's annual survey (Szymanski et al., 2012). Despite ongoing challenges in detecting ASD in D/HH children due to the absence of suitable sign-adapted tools (Mood & Shield, 2014), it is evident that ASD is prevalent in both the general and D/HH populations (Shield et al., 2023).

Literature syntheses highlight a notable gap in evidence-based practices designed for supporting ASD/DHH children, leading to adaptations of existing practices rather than novel interventions specifically tailored for this population (Borders et al., 2016; Hansen & Scott, 2018). An example of such adaptation is the use of video modeling, an evidence-based technique primarily designed for prompting children with ASD, which has found application in studies involving ASD/DHH children (e.g., Evmenova & Behrmann, 2014; Plinick & James, 2013). Herein we present an overview of video modeling with recommendations for modification of this evidence-based practice (Wong et al., 2015) to meet the needs of ASD/DHH children.

Brief Overview of Video Modeling

Video modeling (VM) and video self-modeling (VSM) are evidence-based interventions beneficial for children with ASD, enhancing socio-emotional and academic outcomes (Wong et al., 2015). These methods involve presenting visual models of targeted behaviors or skills through recorded videos, aiding in learning, and engaging in desired behaviors or skills, particularly in areas like behavior, communication, play, or social domains. Video modeling involves a student repeatedly watching a video of another individual, or themselves in the case of video self-modeling, correctly performing a targeted skill (Bellini & Akullian, 2007). Brief videos demonstrating tasks or social skills are shown to students before task completion or as visual prompts (Charlop-Christy et al., 2000), reinforcing and generalizing the learned behavior. VM and VSM are effective due to their ability to focus attention, reduce social distractions, and are often preferred by children with ASD (Hart & Whalon, 2008). To maximize effectiveness, instruction occurs in natural settings where students can practice and apply newly acquired skills (Schreibman & Ingersoll, 2005). For guidance on creating video models, see Colcord et al. (2017) and the National Professional Development Center on ASD (2017).

Considerations for Adapting Video Modeling for ASD/D/HH Students

While video modeling is an evidence-based strategy widely used for students with ASD, the approach can be modified effectively for successful implementation with ASD/D/HH students by considering several key factors.

Visual cues. First, incorporating visual cues is paramount in making video modeling accessible as these play a crucial role in conveying instructions and demonstrating actions. For example, in a video modeling session focusing on social skills, using clear and expressive sign language can facilitate understanding and engage-

ment. Incorporating visual symbols or picture cards alongside the videos, such as using visual schedules or cue cards, reinforces key concepts and vocabulary. This makes the content more accessible to ASD/D/HH children, as they can associate visual symbols with specific actions or concepts, enhancing understanding. Ensuring the video content is visually engaging and appealing, using colorful graphics or animations, is also essential to maintain the attention of students throughout the modeling sessions.

Subtitles. Subtitles or captions are another vital aspect of video modeling for deaf students. Providing accurate and synchronized subtitles supports reading comprehension. For instance, in a video modeling session focusing on language development, using subtitles that highlight key words or phrases can reinforce vocabulary and language concepts. It's important to use simple and concise language in the subtitles, avoiding complex structures or jargon that may be difficult to understand for students with ASD. Customization of subtitle settings, such as font size and color, should be available to accommodate individual student preferences and needs.

Visual feedback. Visual feedback mechanisms within the video modeling can further enhance learning. Including visual prompts or cues to indicate correct responses or actions helps reinforce learning and provides immediate feedback. For instance, using checkmarks or smiley faces as visual indicators of successful completion of tasks can motivate students. Positive symbols or icons, such as stars or thumbs up, can be used as visual reinforcement strategies, rewarding students for their active participation and efforts. Offering opportunities for students to visually track their progress during and after the modeling activities, such as progress bars or achievement badges, promotes a sense of achievement and progress.

Multisensory approach. A multi-sensory approach is beneficial when using video modeling with ASD/D/HH students. Combining visual modeling with tactile or kinesthetic elements enriches the learning experience. For example, incorporating interactive materials like manipulatives or tactile objects related to the video content can engage students' senses and facilitate understanding. Creating sensory-friendly environments that accommodate students' sensory needs during the modeling activities, such as providing noise-canceling headphones or fidget tools, enhances their overall engagement and participation. With respect to students who are hard of hearing, background noise can interfere with their ability to hear and understand speech. Noise-canceling headphones can reduce this interference, making it easier for them to focus on and process spoken language, whether it comes from teachers, peers, or audio learning materials. Moreover, both autistic students and those who are hard of hearing can experience heightened stress levels in noisy environments. Noise-canceling headphones can provide a sense of calm and security, reducing anxiety and helping them feel more at ease in various settings.

Customization and Collaboration. Customization and collaboration are crucial for effective video modeling for autistic students who are also deaf. Tailoring video content to individual interests and learning goals, and incorporating sign language interpretation or visual aids, enhances comprehension. Collaborating with sign language interpreters or deaf education specialists can provide valuable insights for accessibility. These experts can suggest specific techniques or visual strategies that resonate with ASD/D/HH students. Such modifications ensure video modeling is a highly effective tool for their learning and development.

Sensory considerations. Sensory considerations are important for creating a conducive learning environment during video modeling sessions. Minimizing auditory distractions, such as using noise-canceling headphones or soundproofing the environment, supports students' focus and attention. Offering sensory-friendly materials, such as textured surfaces or calming sensory tools, can create a comfortable and engaging atmosphere. Implementing sensory breaks or transitions between video modeling activities, such as movement breaks or relaxation techniques, supports students' regulation and comfort throughout the activities. See Table 1 for key considerations and examples for adapting video modeling for ASD/D/HH students along with relevant online resources for further reading and implementation.

Conclusion

Educators supporting ASD/D/HH students often encounter limited resources (Borders et al., 2016). To address this challenge, they are encouraged to look to related fields, particularly ASD, for effective practices. Video modeling has shown effectiveness not only in addressing various skills in children and young adults with ASD but also in those with dual diagnoses of D/HH and ASD. Implementing these enhancement strategies can empower teachers to use video modeling effectively with ASD/D/HH students, improving their learning experiences and nurturing their communication and social skills development.

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Table 1

Examples and Resources for Adapting Video Modeling for ASD/DHH Students

Strategy	Example	Resources
Visual Cues	· Use clear and expressive sign language in video modeling sessions focused on social skills.	- National Association of the Deaf (https://www.nad.org/)
	· Incorporate visual symbols or picture cards, such as visual schedules or cue cards, alongside videos.	- Picture Exchange Communication System (PECS) (https://pecsusa.com/)
	· Ensure video content is visually engaging and appealing with colorful graphics or animations.	- Boardmaker (https://goboardmaker.com/)
Subtitles	· Provide accurate and synchronized subtitles that highlight key words or phrases in language development videos.	- Amara - Caption and Subtitle Creation (https://amara.org/)
	· Use simple and concise language in subtitles, avoiding complex structures or jargon.	- Subtitling Guidelines (https://www.bbc.co.uk/accessibility/forproducts/guides/mobile/)
	· Customize subtitle settings, such as font size and color, to accommodate individual student preferences and needs.	- Web Accessibility Initiative (WAI) (https://www.w3.org/WAI/test-evaluate/preliminary/#video)
Visual Feedback	· Include visual prompts or cues, like checkmarks or smiley faces, to indicate correct responses or actions.	- Positive Behavioral Interventions & Supports (PBIS) (https://www.pbis.org/)
	· Use positive symbols or icons, such as stars or thumbs up, as visual reinforcement strategies.	- ClassDojo (https://www.classdojo.com/)
	· Offer visual progress tracking mechanisms, such as progress bars or achievement badges, during and after modeling activities.	- Classcraft (https://www.classcraft.com/)
Multisensory Approach	· Combine visual modeling with tactile or kinesthetic elements, such as interactive materials or manipulatives.	- Learning Through Play (https://www.learningthroughplay.com/)
	· Create sensory-friendly environments with noise-canceling headphones or fidget tools to accommodate sensory needs.	- Autism Speaks - Sensory Issues (https://www.autismspeaks.org/sensory-issues)
	· Provide sensory breaks or transitions between video modeling activities, like movement breaks or relaxation techniques.	- GoNoodle (https://www.gonoodle.com/)
Customization & Collaboration	· Tailor video content to individual interests and learning goals, incorporating sign language interpretation or visual aids.	- ASL Clear (http://www.aslclear.org/)
	· Collaborate with sign language interpreters or deaf education specialists for accessibility insights and strategies.	- Hands & Voices (https://www.handsandvoices.org/)
	· Customize video modeling materials based on individual students' preferences and communication modalities.	- National Center on Deaf-Blindness (https://www.nationaldb.org/)

Strategy	Example	Resources
Sensory Considerations	· Minimize auditory distractions using noise-canceling headphones or soundproofing the environment.	- Bose Noise Cancelling Headphones (https://www.bose.com/en_us/products/headphones/noise_cancelling_headphones.html)
	· Offer sensory-friendly materials, like textured surfaces or calming sensory tools, during video modeling sessions.	- Sensory Processing Disorder Resource Center (https://www.sensory-processing-disorder.com/)
	· Implement sensory breaks or transitions to support regulation and comfort during activities.	- Zones of Regulation (http://www.zonesofregulation.com/)

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