Video-Based Modeling in OT for Children with Developmental Disabilities: Daily Living Skills

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Background
- It is imperative to identify cost-effective, evidence-based treatment modalities to improve the outcomes for children with developmental disabilities.
- Occupational therapists help children with developmental disabilities to improve their functional performance throughout the lifespan.
- Video-based modeling (VBM) has been used in the education literature indicating positive outcomes and may be beneficial. If utilized as an occupational therapy intervention.

Project Aim: To examine the evidence utilizing video modeling as an intervention tool to improve participation in occupation.

Clinical Question: In children with developmental disabilities, does the use of video-based modeling improve participation in daily living skills?

Methods
Search Strategy:
- Inclusion criteria: Diagnosis of developmental disability, ages 3 to 20 years, outcomes including ADLs or IADLs for all children in sample, use of video-based modeling
- Databases: PubMed, Google Scholar, CINAHL, Cochrane Library, PsycInfo
- Search Terms: Video modeling, video + autism, modeling + disability, video + disability

Appraisal:
- 14 articles met inclusion criteria and were appraised according to the Cincinnati Children’s Hospital Medical Center Evidence-Based Decision Making (EBDM) LEGEND http://www.cincinnatichildrens.org/evidence

The LEGEND system:
- Assigns a number 1-5 to indicate the type of study (e.g. meta analysis = 1; case study =5)
- Assigns a letter to indicate quality of study (a= good quality, b = lesser quality)
- 13 articles met the criteria for a level 4b; 1 article met the criteria for a level 5a

Overall level of Evidence based on LEGEND System: Moderate, The LEGEND system’s Moderate grade: Evidence is considered moderate when multiple studies with weaker designs report consistent findings. The moderate level suggests that additional research is needed to confidently answer the clinical question.

Evidence
- Participants’ ages ranged 3 to 19 years. Most children were diagnosed with autism.
- Despite the aforementioned limitations, these studies generated positive findings in support of video-based intervention. For 12 of the 14 studies, all participants demonstrated gains with video-based intervention. Two of five subjects in Keen and colleagues (2007) study on toileting did not make gains. One of three subjects in Rayner’s 2011 study did not make progress with use of video modeling.
- Study limitations included small sample sizes (n=1-7), a lack of inferential statistics, and an absence of valid and reliable methods of measurement.

Clinical Significance/Advantages of video modeling:
- Certain ADL tasks such as donning pants or brushing teeth may more easily modeled using a video modality.
- In children with DD, attention to pertinent information may be better obtained through a video, eliminating the environmental distractions present with a live modality.
- Cardon and Azuma (2012) indicated that children with autism demonstrated increased visual attention with video modeling, as compared to a live demonstration.

Variations
Several variations of video-based interventions exist in the literature; however there is currently insufficient evidence to support any one style of model.

Characteristics of Model
- Video self-modeling involves the child watching a video of him or herself performing a task (Bray & Koehle, 2012). This type of modeling requires the child to be videotaped over a number of trials. The footage is then edited into a final product that includes only the target behavior. No evidence for the use of video self-modeling to teach activities of daily living was identified.
- Video-based intervention with “other as model” involves the use of an individual other than the self. This variant was used in all reviewed studies. Animation was used as a model in Keen and colleagues’s (2007) study of toilet training.
- Familiar or Unfamiliar “other”, Rosenberg et al. (2010) compared the effects of videos using non-familiar and familiar peers. Two of three children in this study made better improvements with videos that included familiar peers. However, these videos differed from the videos with non-familiar peers in a number of ways, thus confounding the results (Rosenberg et al., 2010).

Perspective
- Point-of-view perspective or first-person typically consists of the hands performing a task from the point of view of the viewer. Four studies applied this perspective (Bereznak et al., 2012; Cannella-Malone et al., 2011; Rayner, 2010; Rosenberg et al., 2010). Proponents for point-of-view perspectives suggest that this mode further decreases external stimuli and assists the child in focusing on relevant information.
- Scene perspective or third-person typically includes the full body of the model performing the task. Four studies used this approach (Cannella-Malone et al., 2012; Keen et al., 2007; Rayner, 2010; Rosenberg et al., 2010).
- Several studies used a combination of perspectives (Johnson et al., 2013; Meching et al., 2013; Van Laarhoven et al., 2010; Van Laarhoven & Van Laarhoven-Myers, 2006).

Theory
- Decreased social engagement
- Increased attention to pertinent stimuli
- Reinforcement/enjoyment (Charlop-Christy, 2000)
- Children with autism have been shown to have increased visual attention to video versus live modality (Canton & Azuma, 2012)

Implementation
- Recommendation adherence requires equipment to both record and play videos.
- Time and fiscal resources required for initial video production may pose a barrier.
- Creating and maintaining a user-friendly and readily-accessible video database will support the implementation of this recommendation.

Recommendation
It is recommended that occupational therapists working with children and adolescents with developmental disabilities consider using video-based modeling as a modality for teaching daily living skills.

References