A Meta-Analysis of Video Modeling and Video Self-Modeling Interventions for Children and Adolescents with Autism Spectrum Disorders

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**Title** | A Meta-Analysis of Video Modeling and Video Self-Modeling Interventions for Children and Adolescents with Autism Spectrum Disorders

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**Abstract**

This meta-analysis examined the effectiveness of video modeling and video self-modeling (VSM) interventions for children and adolescents with autism spectrum disorders (ASD). Video modeling is an intervention technique often used for social skills training which involves participants watching a video of someone modeling a desired behavior and then imitating the behavior of the person in the video. In video self-modeling (VSM), are videotaped successfully performing behaviors and then watch those videos as models.

Twenty-three single-subject design studies were included in the meta-analysis. Intervention, maintenance, and generalization effects were measured by computing the percentage of nonoverlapping data points (PND). Results suggest that video modeling and VSM are effective intervention strategies for addressing social-communication skills, functional skills, and behavioral functioning in children and adolescents with ASD. Results also indicate that these procedures promote skill acquisition and that skills acquired via video modeling and VSM are maintained over time and transferred across persons and settings. The results suggest that video modeling and VSM intervention strategies meet criteria for designation as an evidence-based practice.

**Background**

The use of modeling or observational learning was pioneered by Albert Bandura in the 1970's. Bandura’s research demonstrated that children develop a variety of skills by imitating actions they have watched others perform. Children who are attentive to the person who is modeling the behavior are more likely to imitate the behavior and may even generalize the behavior to new settings. Children are most likely to attend to a model and be motivated to copy them if they perceive the model as both competent and similar to themselves.

Video modeling and video self-modeling have both been used as ways to teach desired behaviors to students with autism spectrum disorders (ASD). This meta-analysis examined a number of single-subject design studies which used video modeling or VSM to improve the social communication skills, functional skills, and behavioral functioning of students with ASD.

**Research Questions**
1. What were the intervention, generalization and maintenance effects of video modeling and VSM across the variables of social communication skills, functional skills, and behavioral functioning?

2. Do video modeling interventions meet the criteria for evidence-based practices outlined by Horner, Carr, Halle, McGee, Odom, and Wolery in 2005?

Research Design

Meta-Analysis*

- Number of Studies Included | 23
- Number of Subjects | 73
- Years Spanned | 1987-2005

Research Subjects
Children with autism spectrum disorders participating in video-modeling interventions.

Age/Grade of Subjects
Participants ranged in age from 3-20 years old. However, the majority of studies focused on elementary school-aged children.

Specified Disability
Autism Spectrum Disorders, including Asperger’s syndrome, pervasive developmental disorder (PDD), and autism.

Intervention
Video modeling and Video Self-Modeling (VSM)

Duration of Intervention
The number of intervention sessions in each study ranged from 4 to 33 (median = 9.5). The duration of the video clips used during the intervention sessions ranged from 30 seconds to 13 minutes and 30 seconds.

Findings

- Interventions focused on functional skills resulted in the highest intervention effects (PND* = 89%) followed by social-communication functioning (PND = 77%), and behavioral functioning (PND = 76%)
- Interventions focused on functional skills resulted in the highest maintenance effects (PND = 100%) followed by behavioral functioning (PND = 82%) and social-communication functioning (PND = 78%)
- Generalization effects were high for functional skills interventions (PND = 97%) and were moderate for social-communication skills. Generalization of behavioral functioning skills was not measure in any studies.

Combined Effects Size
The percentage of non-over-lapping data points (PND), an effect size measure used in meta-analyses of single-subject design studies, was calculated for intervention, maintenance and generalization effects. A mean PND between 50 and 70 is considered questionable, between 70 and 90 is considered effective, and above 90 is considered highly effective.

- Intervention effects for video modeling and video self-modeling (VSM) were both moderate (81% and 77% respectively).
- Maintenance effects for video modeling and VSM were also both moderate (88% and 71%).
- Generalization effects were moderate for video modeling (82%) and questionable for VSM (65%).

Conclusion/Recommendations
Video modeling and VSM are effective intervention strategies for addressing skills important to self-determination for
students with ASD, including behavioral functioning, social-communication skills, and functional skills. As would be expected according to Bandura’s theory of modeling, students performed best when they were highly motivated and attentive either because they enjoyed watching videos or in the case of VSM because watching themselves successfully perform a task on video increased their interest, attention, and possibly their self-efficacy.

The authors suggest future research which focuses solely on the effectiveness of video modeling or VSM without combining it with other therapeutic strategies would be helpful in demonstrating the unique effects of these techniques. More studies which measure social validity, intervention fidelity, and generalization effects would also be helpful in developing the research base on video modeling and VSM techniques for students with ASD.

*Terms Defined*

**Effect size (ES or d)** | A statistical calculation, often represented as ES or d, that measures the impact of an intervention. An effect size below d = 0.20 suggests that a treatment did not have a significant effect. An effect size of d = 0.20 is considered small or low; an effect size of d = 0.50 is considered moderate; an effect size of d = 0.80 or above is large.

**Meta-Analysis** | A widely-used research method in which (1) a systematic and reproducible search strategy is used to find as many studies as possible that address a given topic; (2) clear criterion are presented for inclusion/exclusion of individual studies into a larger analysis; and (3) results of included studies are statistically combined to determine an overall effect (effect size) of one variable on another.

**PND, Percentage of Non-Overlapping Data** | A measure of effectiveness. A PND between 50% and 70% is considered to show that a treatment’s effectiveness is questionable. A PND of 70% is considered the lower limit for a reliable treatment.