Effects of video modeling and self-monitoring on the social language skills of preschoolers with speech and language impairments

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EFFECTS OF VIDEO MODELING AND SELF-MONITORING ON THE SOCIAL LANGUAGE SKILLS OF PRESCHOOLERS WITH SPEECH AND LANGUAGE IMPAIRMENTS

by

Karen Serrano

A thesis submitted in partial fulfillment of the requirements for the Master of Arts in Education

Special Education

School of Education

California State University, Monterey Bay

December 2011

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EFFECTS OF VIDEO MODELING AND SELF-MONITORING ON SOCIAL LANGUAGE SKILLS

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EFFECTS OF VIDEO MODELING AND SELF-MONITORING ON SOCIAL LANGUAGE SKILLS

Abstract

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by

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This study investigated whether an intervention using video modeling combined with self-monitoring can improve social communicative skills for preschool students with Speech and Language Impairments (SLI) utilizing a multiple baseline across participants design. Specifically, the level of initiations made toward a peer and the level of responses serving to sustain interactions were measured. During the intervention phase, subjects viewed a video model and learned to discriminate “good talking” from “not good talking.” They then viewed video of themselves and evaluated whether they did “good talking” after structured play sessions with a peer. Both participants increased in their level of initiations and level of responses made during the intervention phase. Limited generalization data was taken with other peers and found that the increased level of responding was maintained. The study provides preliminary evidence that a combined intervention using video modeling and self-monitoring can improve social communicative skills for preschool students with SLI.
Acknowledgements

I could not have completed this research without the support of my professors and fellow students at CSUMB, my colleagues, and my family.

I am particularly grateful to Dr. Josh Harrower, my Thesis Advisor, whose knowledge of ABA and ability to explain things in an accessible way has contributed greatly to my practice as a teacher, especially the development of behavioral interventions for my students. Dr. Cathi Draper-Rodriguez gave valuable advice when I began my research. I also appreciate the encouragement of Dr. Terry Arambula-Greenfield, who invested so much time and energy to help us to improve our writing. Finally, Dr. Lou Denti and my fellow students in my Culminating MAE Project class have been a very supportive team to work through the final steps with.

This research could not have taken place without the cooperation of my colleagues in two school settings. First, I am grateful to Anne Striffler for making the video with me, and being willing to implement the intervention with our students. When circumstances arose that made it impossible to carry out the intervention with our students, I was unsure whether I would be able to complete my research. I am therefore also very grateful to Sue Rule, Carleen Wallace, and all my new preschool team for their flexibility in accommodating my research.

Last but certainly not least, my family has provided extensive support throughout my return to student status over the past three years as I pursued my Education Specialist credential and Master’s degree.
Table of Contents

Abstract .............................................................................................................................. iii
Acknowledgements ........................................................................................................ iv
CHAPTER 1 Introduction ................................................................................................. 1
    Problem Statement .................................................................................................... 1
    Purpose ...................................................................................................................... 2
    Researcher Background ........................................................................................... 3
    Theoretical Model ..................................................................................................... 4
    Research Questions .................................................................................................. 5
    Definitions of Terms ................................................................................................. 5
CHAPTER 2 Literature Review ....................................................................................... 7
    Introduction .............................................................................................................. 7
    Behavior Interventions Implemented with Self-Monitoring .................................. 7
    Self-monitoring and Social Language Skills .......................................................... 11
    Summary .................................................................................................................. 12
CHAPTER 3 Research Methods ..................................................................................... 14
    Introduction .............................................................................................................. 14
    Participants and Setting ........................................................................................... 14
    Experimental Design ............................................................................................... 16
CHAPTER 4 Results ....................................................................................................... 21
    Initiations (Dependent Variable 1) ......................................................................... 21
    Fig. 1 Number of initiations per five minute session across conditions per subject .... 23
    Responses (Dependent Variable 2) .......................................................................... 23
    Fig. 2 Percent of verbal responses per five minute session across conditions per subject ...... 25
    Summary .................................................................................................................. 26
CHAPTER 5 Discussion ................................................................................................. 27
    Introduction .............................................................................................................. 27
    Effects of the intervention on levels of initiations (Dependent Variable 1) and verbal responses (Dependent Variable 2) ........................................................................... 28
CHAPTER 1

Introduction

The goal of this research is to improve communicative exchanges in preschool students with Speech and Language Impairments (SLI). The purpose is to determine whether a combined intervention using video modeling and self-monitoring can improve social communicative skills for students with SLI.

Problem Statement

There is an increasing prevalence of students with SLI in schools, including students with Autism Spectrum Disorder (ASD). The Centers for Disease Control and Prevention (CDC) now estimates that an average of 1 in 110 children in the U.S. have an ASD (June 2010). These students experience difficulties in initiating and maintaining social interactions with peers and adults. SLI directly impacts academic achievement as students struggle with both comprehension and expression of their ideas. Lack of social skills can also lead to reduced acceptance by peers, teachers, and parents (Grimm, 2002), which may reduce opportunities to develop and practice these missing communicative skills. Therefore, it is important to teach students with SLI social communication skills to increase learning opportunities.

It has been demonstrated that many students with disabilities need to be explicitly taught behaviors important to school success such as maintaining attention, working with a partner, organizational skills, and play skills (Coyle & Cole, 2004; Creel, Fore, Boon & Bender, 2006; Gureasko-Moore, DuPaul & White, 2006; Koegel, Koegel, Hurley & Frea, 1992). In addition, students with disabilities often display disruptive behaviors which impede the learning of others and recruit negative teacher disposition toward the student (Amato-Zech, Hoff & Doepke, 2006; Gulchak, 2008; Koegel, Koegel, Hurley & Frea, 1992). This includes students with learning
EFFECTS OF VIDEO MODELING AND SELF-MONITORING ON SOCIAL LANGUAGE SKILLS

disabilities, Attention Deficit Hyperactivity Disorder (ADHD), autism, and cognitive impairments. The Individuals with Disabilities Education Act (IDEA), 2004, established that students with disabilities are entitled to a Free and Appropriate Public Education (FAPE) in the Least Restrictive Environment (LRE) with same-age peers. These requisite social skills are particularly important for students with disabilities in an inclusion setting, positively impacting interactions with and acceptance by peers and general education teachers (Jull, 2009).

Existing research indicates that skills taught through behavior interventions are sometimes not generalized by the student to be applied in settings outside the training environment, and self-monitoring has been shown to increase generalization to other settings (Hoff & DuPaul, 1998; Peterson, Young, West & Hill, 2006). Video modeling has been proven to be an effective method to teach communication skills (Bandura, 1969). There is little existing research specifically evaluating the use of video modeling and self-monitoring strategies in interventions to teach communication skills to preschool students with SLI. Therefore, there is a need for more in-depth study using video modeling to ascertain how these students initiate and sustain interactions.

Purpose

The results of the study on video modeling may be of use to inform both my own future practice, and the practice of special and general education teachers and speech and language therapists who encounter students with difficulties with communicative exchanges resulting from similar skill deficits. The video model produced for this research can be used directly, or used as a basis to develop models for other language skills. The video model may also be shown to parents to help them better understand how to model language in order to improve their children's social communication skills.
EFFECTS OF VIDEO MODELING AND SELF-MONITORING ON SOCIAL LANGUAGE SKILLS

**Researcher Background**

I have taught for fifteen years, including two years as leader of a refugee support team and, most recently, two years as an Education Specialist. I have experienced first-hand the difficulties students encounter when lacking communication skills. This deficit has immediate and long-term impact on all areas of their lives, in school and the wider community. It is important to me to improve interventions for students with SLI so that they can avoid these negative effects. Through this research, I aim to use the skills I have gained in my experiences as a teacher to develop improved provision for as many more students as possible.

**Research context and rationale.** As an Education Specialist, I taught an Inclusion preschool class in which students with disabilities are taught in a general education classroom alongside nondisabled peers. All of the students on my caseload received speech therapy services. There was a wide range of communication skills among my students. This included a variation in both expressive language levels and the skills needed for initiating and maintaining social interactions. Although some students with SLI expressed an interest in playing with other children, their efforts to engage in play exchanges were often misinterpreted or rebuffed. Also, it is easy for other children to impose their ideas for play when students with SLI are unable to effectively express their wants and suggestions. It is an important early step in self-advocacy for students to identify and communicate preferences and needs (Clark, 2007).

Many of the students in our class, including those with disabilities, were bilingual. For students who speak English as a second or additional language, it is even more important that instruction is provided to teach these social communication skills. This is particularly true where cultural differences may also exist, as communication styles within the family and community may be different than those that the student must negotiate in the classroom in order to be
The theoretical model which forms the basis of this research is Applied Behavioral Analysis (ABA). ABA is “a scientific approach for discovering environmental variables that reliably influence socially significant behavior and for developing a technology of behavior change that takes practical advantage of those discoveries” (Cooper, Heron, & Heward, 2007, p.3).

John B. Watson was one of the earliest proponents of the study of objectively observable behavior rather than internal states of mind, in the early 1900s. In the 1950s, B.F. Skinner pioneered the experimental analysis of behavior, investigating the relationship between behavior and consequences. In the 1960s, researchers emphasized the application of behavioral analysis to
EFFECTS OF VIDEO MODELING AND SELF-MONITORING ON SOCIAL LANGUAGE SKILLS

change socially important behaviors in the real world (Baer, Wolf & Risley, 1968). In the 1960s, Albert Bandura demonstrated the effectiveness of modeling, including video modeling, as a strategy to teach desired behaviors. He emphasized the importance of directing attention to the modeled behavior, and of motivation to replicate the behavior (Bandura, 1969).

Research Questions

Within this context, my research questions are as follows:

- What are the effects of a combined intervention package using video modeling and self-monitoring on the level of social initiations made towards peers for students with Speech and Language Impairments (SLI)?
- What are the effects of a combined intervention package using video modeling and self-monitoring on the level of verbal responses serving to sustain interactions with peers for students with Speech and Language Impairments (SLI)?

Definitions of Terms

- **ABA:** Applied behavior analysis, the science in which experimentation is used to identify the variables responsible for a change in behavior in order to improve socially significant behavior (Cooper, Heron, & Heward, 2007)
- **Behavior interventions:** Processes of systematic manipulation of variables including consequences of behavior in order to effect behavior change (Baer, Wolf & Risley, 1968).
- **Generalization:** Performance of the target behavior in a setting in which training has not been provided (Baer, Wolf & Risley, 1968).
EFFECTS OF VIDEO MODELING AND SELF-MONITORING ON SOCIAL LANGUAGE SKILLS

- **Initiations/Responses**: Initiations are responses that are *not contingent* on a peer’s immediately prior utterance and Responses are verbalizations that *are contingent* on a peer’s (Maione & Mirenda, 2006). For example: Do you want some pizza? (I); Yes, please. (R); Careful, it’s hot! (R); Okay, I’ll wait. (R); I’m thirsty. Can I have a drink, please? (I)

- **Multiple baseline across Participants Design**: A quantitative research methodology wherein the treatment variable is applied in a staggered fashion, and the effects of the treatment variable on the behavior of the participants is analyzed (Kennedy, 2005).

- **Self-monitoring**: A procedure in which a person systematically observes his behavior and records the occurrence or non-occurrence of the target behavior (Cooper, Heron, & Heward, 2007).

- **Single-subject design**: An experimental design in which participant dependent variables are measured while the independent variable is systematically applied and/or removed in order to demonstrate the effects of the independent variable (Kennedy, 2005).

- **Speech and Language Impairments**: Disorders in articulation, fluency, voice, or language skills (California Education Code, 2009)

- **Video modeling**: Using video to present the demonstration of the target behavior by another individual with the intent that the subject will imitate the behavior after observation (Bandura, 1969).
CHAPTER 2

Literature Review

Introduction

This literature review provides the research context for the research questions forming the basis of this study, which are as follows:

- What are the effects of a combined intervention package using video modeling and self-monitoring on the level of social initiations made towards peers for students with Speech and Language Impairments (SLI)?
- What are the effects of a combined intervention package using video modeling and self-monitoring on the level of verbal responses serving to sustain interactions with peers for students with Speech and Language Impairments (SLI)?

The purpose of this literature review is thus to research elements of behavior interventions which are appropriate to teach social and academic skills to students with speech and language impairments, in order to determine from existing research which self-monitoring and video modeling strategies may increase the effectiveness of behavior interventions. The review will be structured according to the following, derived from the research questions:

Behavior interventions implemented with self-monitoring, including combinations with video modeling; and Self-monitoring and social language skills.

Behavior Interventions Implemented with Self-Monitoring

Research has provided some guidelines to teachers, parents, and others for the implementation of self-monitoring as a positive behavioral intervention. For example, self-
EFFECTS OF VIDEO MODELING AND SELF-MONITORING ON SOCIAL LANGUAGE SKILLS

monitoring has been established as effective for students with and without disabilities, in general education classrooms and self-contained classrooms as well as community settings, for improving academic and social skills (Ganz, 2008). Skills taught through behavior interventions are sometimes not generalized by the student to be applied in settings outside the training environment, and self-monitoring has been shown to increase generalization to other settings (Hoff & DuPaul, 1998; Peterson, Young, Salzberg, West & Hill, 2006; Reid, Trout & Schartz, 2005). Further, there are a number of other reported benefits of self-monitoring including: ease of implementation for teachers and students; efficiency, allowing teachers to spend more instructional time teaching; student satisfaction due to immediate, clear feedback and the ability to see progress toward a desired goal; increased student motivation, particularly when students are involved in selecting the behaviors to be changed; and the fostering of more cooperative interactions when students compare within-student rather than between-student progress (Ganz, 2008; Moxley, 1998).

Studies also present different methods of teaching students the target behaviors, and different methods for students to record their data and monitor their progress including charts and counters. Each of these will be described in the following sections.

Video modeling to teach target behaviors.

Since Bandura demonstrated the effectiveness of modeling, including video modeling, in the 1960s, video modeling has been shown to be effective in teaching many skills, particularly when combined with self-monitoring (Apple, Billingsley and Schwartz, 2005; Coyle & Cole, 2004; Dowrick & Dove, 1980; Webber, Scheuermann, McCall, & Coleman, 1993; Woltersdorf, 1992). It has been suggested that students with language processing difficulties benefit from the visual presentation to support processing of the verbal instructions, and that the use of video
EFFECTS OF VIDEO MODELING AND SELF-MONITORING ON SOCIAL LANGUAGE SKILLS

Modeling is an especially effective manner in which to model the behavior as editing may be used to facilitate attending to the most salient features of the model (Charlop-Christy & Daneshvar, 2003; Maione & Mirenda, 2006; Schreibman, Whalen & Stahmer, 2000).

Providing additional information during video replay has been reported to produce greater increases in desirable behaviors than viewing without commentary that makes explicit reference to and/or praises the desired behaviors (Apple, Billingsley and Schwartz, 2005; Coyle & Cole 2004; Dowrick & Dove, 1980). Coyle & Cole (2004) conducted a study to determine the impact on student time on-task of interventions using Videotaped Self-Modeling (VSM) and self-monitoring in the students’ self-contained classroom. The participants in this study were three boys with autism: two with severe autism, aged 11 and 9; and one with moderate autism, aged 9. The students were shown videotapes of themselves working, which had been edited to show only desired on-task behaviors, and these behaviors were described verbally and praised by the researcher. The research demonstrated that the students’ on-task behavior significantly improved during intervention, held at a level higher than baseline during return-to-baseline conditions, improved again during the follow-up intervention, and was maintained consistently in the second return-to-baseline phase after the intervention. While this study supports earlier research suggesting that observing the self is more effective than observing a peer (Woltersdorf, 1992), another study (Apple, Billingsley & Schwartz, 2005) found video modeling by preferred peers with embedded explicit adult instruction to be effective to teach compliment-giving behaviors in a 4-year-old girl and three 5-year-old boys with high-functioning Autism Spectrum Disorder (ASD) in a preschool setting. Adult models have also been demonstrated to be effective in teaching social language skills to a 5-year-old boy with ASD (Maione & Mirenda, 2006).
EFFECTS OF VIDEO MODELING AND SELF-MONITORING ON SOCIAL LANGUAGE SKILLS

Methods of Student Data Recording.

Charts. Various types of chart, including ‘countoons’, have been used with students with varying levels of language ability and literacy (Coyle and Cole, 2004; Daly & Ranalli, 2003; Freeman & Dexter-Mazza, 2004). Freeman & Dexter-Mazza (2004) provided a 13 year old male student with ADHD and conduct disorder with a self-recording sheet. On this sheet, he recorded whether he was on-task or off-task and disruptive or non-disruptive when a pre-recorded tone sounded through headphones. Definitions of each category were provided on the sheet, along with examples and non-examples of each. For less literate students, one study (Coyle and Cole, 2004) used charts headed with icons of ‘working’ and ‘not working’ on which students (9 and 11 year old boys with autism) recorded marks in the corresponding boxes when prompted to self-monitor on-task behavior by an auditory tone from a timer set by the teacher. Another study (Daly & Ranalli, 2003) described the adapted use of ‘Countoons’ to support students in monitoring and recording their behavior in order to effect behavior change and emphasized the value of this system for students who are unable to read. Cartoons acted as a visual representation of the target behavior and undesirable behavior (e.g. hand-raising versus yelling for attention) and of the reinforcer, and the countoons also included counting frames containing numbers to record the number of instances of each behavior. The contingency for meeting criteria (number of instances of each behavior) was also marked on the counting frame.

The same study (Daly & Ranalli, 2003) made a range of suggestions for adapting the Countoons according to the needs of individual students. Instead of numbers, the corresponding counting frames could contain smiley faces and straight faces, or the student could stick on red and green stickers. The cartoons could be made using icons or hand-drawn by the teacher, or students could draw their own representations of the desirable and undesirable behaviors. If there
EFFECTS OF VIDEO MODELING AND SELF-MONITORING ON SOCIAL LANGUAGE SKILLS

was a need to make it clearer to the student which behavior was desirable and which undesirable, a representation of the teacher smiling or frowning in each behavior frame was advised. A further recommendation was the use of photographs of the student engaged in each behavior in instances where the student may not relate the cartoon representation to themselves.

**Counters.** Physical manipulatives and wrist counters have been used successfully with students with younger students and those with cognitive disabilities (Apple, Billingsley and Schwartz, 2005; Ganz, 2008; Koegel, Koegel, Hurley & Frea, 1992). A 5-year-old female student with developmental delays used three-dimensional stackable counters to determine when she had eaten the required number of bites of a non-preferred food to self-reinforce with a preferred food. A fourth-grade student with ADHD placed counters on a written checklist for each step completed in preparation for homework (Ganz, 2008). Wrist counters (golf counters available from sporting goods stores) have been used by students with autism to self-record target behaviors in two studies. Preschool students pressed the button to record each instance of compliment-giving within a certain time period (Apple, Billingsley and Schwartz, 2005). Students aged 6-11 years old with receptive and expressive language scores indicating at least a 3-year-old level recorded instances of ‘appropriate responses’ to both yes/no and open-ended questions in various contexts (Koegel, Koegel, Hurley & Frea, 1992).

**Self-monitoring and Social Language Skills**

Several studies have demonstrated that self-monitoring increases the effectiveness of interventions designed to teach social language skills, including appropriate responding to questions, initiation and maintenance of interactions, and compliment giving (Apple, Billingsley and Schwartz, 2005; Deitchman, Reeve, Reeve, & Progar, 2010; Koegel, Koegel, Hurley & Frea, 1992; Maione & Mirenda, 2006). In each case, students with language impairments were trained
EFFECTS OF VIDEO MODELING AND SELF-MONITORING ON SOCIAL LANGUAGE SKILLS

in the use of appropriate social language through the use of scripted examples. In all but the Koegel, Koegel, Hurley & Frea (1992) study, video modeling was used to present the examples. Two studies reported that the use of multiple exemplars of appropriate responses in the training phase of the intervention increased generalization and student use of unscripted responses (Deitchman, Reeve, Reeve, & Progar, 2010; Maione & Mirenda, 2006). The participants in these studies were boys with autism aged 5 to 7 years. Video Feedback (VFB) was implemented to assist the students in these two studies in assessing their own performance. In VFB, the students were asked by the interventionist to self-monitor whether they had engaged in ‘good talking’ or ‘not good talking’ when a video recording of their peer interaction was viewed. Both studies reported an increase in the number of verbalizations following VFB. All of the studies emphasized the importance of fading scripts and prompts to use the target language, as well as fading prompts to self-monitor.

Summary

Existing research has demonstrated that self-monitoring does improve the effectiveness of behavior interventions, increasing the incidence, maintenance, and generalization of the desired behavior (Freeman & Dexter-Mazza, 2004). Although some studies have supported self-modeling and peer modeling to increase the effects of the intervention, video modeling with adults as models has been shown to be an effective method to teach students with disabilities social communication skills (Maione & Mirenda, 2006), while embedded or additional explicit instruction can further increase effectiveness (Coyle & Cole, 2004). Research indicates that using concrete manipulatives may be a more effective way for younger students or those with severe cognitive disabilities to record their data (Ganz, 2008). Further research on the use of self-monitoring for increasing and maintaining social interactions is warranted. Therefore, the
EFFECTS OF VIDEO MODELING AND SELF-MONITORING ON SOCIAL LANGUAGE SKILLS

Purpose of this study is to determine the effects on students with SLI of a combined intervention package using video modeling with adults and concrete self-monitoring to improve social language skills, specifically: (a) the level of social initiations made towards peers, and (b) the level of verbal responses sustaining interactions with peers.
CHAPTER 3

Research Methods

Introduction

In order to determine the effects on the social language skills of students with Speech and Language Impairments (SLI) of a combined intervention package using video modeling and self-monitoring, this study uses a single subject, multiple baseline design across three subjects. The effects on students with SLI of a combined intervention package using video modeling and self-monitoring on (a) the level of social initiations made towards peers and (b) the level of verbal responses sustaining interactions with peers was measured and evaluated.

Participants and Setting

Participants were all students enrolled in preschool in a district in a suburban area of central California. The district has a K-8 student population. There are sixteen elementary schools, three middle schools, and a preschool program. The subjects of the intervention in this research study attended a self-contained classroom on two days per week. There were other preschool classrooms on site, and one of the participants also attended the general education preschool on three days per week. In the self-contained classroom, there were five students with one Education Specialist teacher and a classroom assistant. Students attended for 4 hours from 9 am to 1 pm. During each session, there were a variety of structured and less structured activities within the self-contained classroom as well as opportunities for inclusion with general education peers. The general education class attended for 3 hours from 9:30 am to 12:30 pm.

Typically developing peers aged 3 to 5 years old were selected from within the general education classroom to serve as interaction partners during the intervention. These students were selected on the basis of both their willingness to participate and their competence in the social
language skills targeted in the intervention. These peers were two boys and two girls: ‘Ron’, aged 3, ‘Zeke’, aged 4, ‘Maria’, aged 3, and ‘Rebecca’, aged 4. Ron did not talk in the structured play setting and so did not continue to participate after the first baseline session. He was replaced by Rebecca. Students with Speech and Language Impairment (SLI) who displayed reduced social language skills compared with their peers were selected as the target students for the intervention. Specifically, these students displayed low rates of verbal interactions with others while playing, including both initiation and response comments. Students were selected with similar levels of expressive language ability so that the models provided in the intervention would be appropriate to their language production levels.

‘Jane’ was a 4½-year-old girl with SLI. She was an only child who lived with both parents. She had a primary language of Spanish. Jane had language goals of using 3-4 word utterances and answering ‘wh’ questions. When assessed for her annual review at the age of 4, Jane received a standard score of 86 for Auditory Comprehension and 83 for Expressive Communication.

‘Isaac’ was a 3½-year-old boy with SLI. He lived with his parents and older sister, who was in 5th grade. His primary language was English. In his initial assessment (conducted at the age of 3), his receptive language was age equivalent to 16 months and his expressive language 19 months as assessed by The Receptive-Expressive Emergent Language Test- Third Edition (REEL-3). Isaac had language goals of using 3-4 word utterances and increased vocabulary.

‘Sam’ was a 4-year-old boy with SLI. He lived with his parents and 9th grade brother. His primary language was English. When assessed for his annual review in the month prior to the beginning of this research, he scored a standard score of 100 for both Auditory Comprehension and Expressive Communication as assessed by the Preschool Language Scale, Fourth Edition.
EFFECTS OF VIDEO MODELING AND SELF-MONITORING ON SOCIAL LANGUAGE SKILLS

(PLS-4), and a standard score of 98 on the Goldman-Fristoe Test of Articulation. Sam had met his goal of using 3-4 word utterances and had a goal of using subject nouns and pronouns when describing actions.

The peer interaction portion of the intervention was implemented in the playhouse area between classrooms, with no other students present in order to minimize distracting stimuli. The playhouse area contained a child-sized table with four chairs, a toy stove, a toy refrigerator, and a crib. Play equipment included baby dolls with clothes and bottles, bedding for the crib, plastic foods in baskets, and toy eating and cooking utensils.

Students participated in both the video modeling training and video feedback in the speech therapy room. This was a small room adjacent to the playhouse area, containing a desk and chairs. Video clips were created using a hand held digital camera. Video modeling clips for training were downloaded to a computer and edited using video editing software. Edited clips were then burned to a DVD for display on a laptop computer with a 15.4" screen. The video feedback clips of the student-peer interactions were displayed directly on the laptop without prior editing.

**Experimental Design**

The single subject design was determined to be most appropriate for this study, given the low number (three) of subjects and as it is ideally suited for demonstrating whether or not a functional relationship exists between the independent and dependent variables. The independent variable selected for this study consisted of the combined intervention including video modeling and self-monitoring. The dependent variable consisted of the social language skills of the participants. A single subject design provides validity of results by demonstrating that any observed changes in the students' social language skills are attributable to the intervention rather
than extraneous factors. A multiple baseline across participants design was used in this study. This methodology consists of an AB design replicated in a staggered fashion across participants (Kennedy, 2005). The multiple baseline is preferred over an ABAB design because withdrawal of an intervention which is beneficial may be considered undesirable or unethical (Kennedy, 2005). An ABAB design involves a return to baseline (withdrawal of the independent variable) phase to evaluate the effectiveness of the intervention by comparing behavior under intervention conditions to behavior in the absence of the intervention. As participants were expected to improve their social communication skills through this intervention, it would not have been appropriate to withdraw it.

**Baseline.** Baseline data of at least two data points were recorded for each student. The length of the baseline phase was staggered across the students. That is, observations began simultaneously for two of the three students. Baseline collection for Isaac began after the second baseline session for Jane and Sam as he was absent on those dates. As the intervention was implemented for the first student, Jane, baseline data continued to be recorded for the other two participants. To take baseline data, the researcher video recorded each student for five minutes of play in the house area between classrooms when the students were invited to play there with a peer. No directions or prompts were given to either the subject or the peer. The researcher then tallied with pencil and paper the number of times each subject made verbal initiations and responses in this 5-minute time sample. One peer was selected for each subject during baseline and then held constant throughout baseline and intervention phases.

**Independent variable and intervention.** The independent variable that was actively manipulated in this research was video modeling combined with self-monitoring. The first phase of intervention consisted of video modeling sessions and training in self-monitoring procedures
EFFECTS OF VIDEO MODELING AND SELF-MONITORING ON SOCIAL LANGUAGE SKILLS

in the speech room before students began self-monitored interaction with peers. The speech room consisted of a small room adjacent to the house area between classrooms. Each student was shown the video of appropriate social language use by adult models playing in the house area. Participants were coached to identify examples of “good talking” and “not good talking” (i.e. absences of response or initiation) and to record instances of “good talking” with smiley face stickers on a card. Social praise was paired with the smiley face stickers. Training consisted of viewing short video clips with examples of appropriate comments from the adult video models as well as short video clips of the same models in the same situation playing without talking. The adult models were the researcher and another teacher who was unknown to the participants. The sticker card was paired with a photograph of the researcher. The student was then asked “Did I (the researcher) do good talking?” If they were correct, enthusiastic verbal praise was given and the student placed a smiley face sticker on the card in cases of good talking. If they were incorrect, the error was corrected with a neutral tone of voice. The clip was viewed again and the same question was asked until the student answered correctly, when enthusiastic verbal praise was then given. In cases of good talking, the student was also asked, “what did I say?” Training continued until the participant could correctly identify examples of ‘good talking’ and award a smiley face sticker for each example with at least 80% accuracy. No data recording of peer interactions took place during this phase.

Each student was then given further opportunities to interact with their selected peer in the house area in structured 5-minute sessions, two to three times per week. During this phase, the participants continued to view the video model of positive examples each day prior to these interactions. No further explanation or cues were provided during these viewings. The structured interactions were video recorded. Immediately prior to the session, the participant was reminded
EFFECTS OF VIDEO MODELING AND SELF-MONITORING ON SOCIAL LANGUAGE SKILLS

to ‘do good talking’ because our friends like to talk when we play. Immediately after the session, the participant viewed the recording in the speech room on a 15.4 in. laptop. During video playback, the participant identified instances of him/herself engaged in “good talking”. For each instance, the participant awarded him/herself a smiley face sticker on the chart with their photo on it. Social praise was provided by the researcher for instances of “good talking”. In instances of “not good talking”, the researcher provided two to three examples of appropriate responses in a neutral tone, as per Maione & Mirenda (2006). For Jane, a retraining session was conducted after two intervention sessions. This was due to the fact that Jane’s number of initiations increased from zero to four and her responses remained at zero during the first two sessions of intervention. As Jane only attended school two days per week, it was considered that the length of time between the initial training and these sessions may have been a factor in her initial low level of responses. Therefore the training was repeated following the second session of intervention. Intervention lasted at least two weeks for each participant. During this phase, probes were also taken on the students’ interactions with another peer in the same setting. A five-minute sample was taken and scored in the same way after five minutes of free play before data collection was initiated.

Dependent variables and data recording. The researcher used a data recording form (Appendix B) to independently tally the dependent variables, i.e. the numbers of initiations and the percentage of verbal responses per 5 minute probe. Initiations are defined as comments and questions directed to a peer “that were not contingent on a peer’s immediately prior utterance” and responses are defined as “verbalizations that were contingent on a peer’s immediately prior utterance”, as adapted from Thiemann and Goldstein (2001) by Maione and Mirenda (2006, p109, emphasis in original). The number of initiations was tracked as a frequency count, while
verbal responses were calculated as a percentage of opportunities to respond to a peer’s immediately prior utterance. Each variable was measured repeatedly to ensure internal consistency.

Data analysis. Data collected by the researcher as described above was graphed along a timeline encompassing the baseline through full implementation periods, to compare pre-intervention and post-intervention student responses. Frequency of initiations and percent of verbal responses were considered separately. Levels and trends in rates of each of these before and after the intervention were determined by visual inspection of the graphs.

Inter-Observer Agreement. A second observer viewed the videotapes and collected data in at least 33% of sessions per student in each phase in order to measure reliability of data recording. This second scorer was trained and provided with operational definitions and examples of the dependent measures, as defined above (see Appendix A). Inter-Observer Agreement (IOA) was calculated by comparing the percentage agreement in ratings between the two raters according to the following formula: agreement divided by agreement-plus-disagreement, multiplied by 100. IOA was 88% for Jane with a range of 80% to 100%; 88% for Isaac with a range of 76% to 94%; and 100% for Sam.
CHAPTER 4

Results

The goal of this research is to improve communicative exchanges in preschool students with Speech and Language Impairments (SLI). The purpose is to determine whether a combined intervention package using video modeling and self-monitoring via video feedback can improve social communicative skills for students with SLI.

During baseline, Sam increased his number of initiations to 35 and his percent of verbal responses to 100% of opportunities in a five-minute session. Intervention was therefore not warranted, and his participation in the study ended at that point. Results are therefore reported for the effects of the intervention for Jane and Isaac.

Initiations (Dependent Variable 1)

Data on the number of initiations for both participants is displayed in Figure 1.

Jane. During baseline, Jane made no utterances to her peer at all. In training, Jane was able to successfully repeat back or paraphrase the language used by the adult model in the video models. During the intervention phase, Jane increased the number of initiations made to the peer to two and then to four. Since she did not initially increase the number of responses, Jane was retrained after the second intervention session. Examples of ‘good talking’ and ‘not good talking’ were reviewed, and suggestions given for what could be said in the case of ‘not good talking’. In the session following this, Jane’s number of initiations increased to a total of 11. In the next session, the number of initiations decreased but remained higher than prior to retraining at 7. The following intervention session showed a similar decrease back to four. In a generalization session with a different peer, Jane’s number of initiations remained at the level of the previous session,
EFFECTS OF VIDEO MODELING AND SELF-MONITORYING ON SOCIAL LANGUAGE SKILLS

i.e. four. Jane’s average number of initiations per session was zero during baseline and 5.3 during intervention.

**Isaac.** During baseline, Isaac’s average number of initiations per session was 11.5, with a range of 10 to 13. His initiations then increased to an average of 16.8 per sessions with a range of 9 to 19 during the intervention phase, with only one session below 13 (the highest level observed in the baseline phase). In a generalization session with a different peer, Zeke, Isaac’s number of initiations increased to 29. Isaac’s average number of initiations was 11.5 over the two baseline sessions and 16.8 during intervention.
Figure 1. Number of initiations per five minute session across conditions per subject

Responses (Dependent Variable 2)

Data on the percent of verbal responses for both participants is displayed in Figure 2.
EFFECTS OF VIDEO MODELING AND SELF-MONITORING ON SOCIAL LANGUAGE SKILLS

**Jane.** During baseline, Jane made no utterances to her peer at all. Even when the peer asked her a question or invited her to engage in an activity together, Jane responded non-verbally. Therefore her average percent of verbal responses in baseline was zero. Initially, Jane’s percent of verbal responses remained at zero during the introduction of the intervention phase. Since she did not initially increase the percent of verbal responses, further training was given after the second intervention session. Examples of ‘good talking’ and ‘not good talking’ were reviewed, and suggestions given for what could be said in the case of ‘not good talking’. In the session following this, Jane’s percent of verbal responses increased to 20% of opportunities. In the next session, all responses were again non-verbal (nodding in response to a question, or complying with a suggestion). In the following intervention session, Jane made verbal responses on 10% of opportunities. In a generalization session with a different peer, Jane made verbal responses on 10% of opportunities. Overall, Jane verbally responded on zero opportunities during baseline and an average of 13% of opportunities during intervention.

**Isaac.** During the first session of baseline, Isaac made zero verbal responses. However, this was determined to be due to being paired with a peer who made no verbalizations; therefore the number of opportunities to respond was zero. An alternative peer, Rebecca, was then selected. This peer remained constant through the remainder of baseline and the intervention phase. Isaac’s percent of verbal responses during the two sessions with Rebecca during baseline were 32% and 23%. Verbal responses increased to between 29% and 42% of opportunities per session during intervention. In a generalization probe with different peer, Isaac verbally responded on 48% of opportunities. In sum, Isaac responded verbally on an average of 28% of opportunities over the two baseline sessions with the same peer, Rebecca, and on an average of
EFFECTS OF VIDEO MODELING AND SELF-MONITORING ON SOCIAL LANGUAGE SKILLS

38% of opportunities during intervention. Due to the change of peer, Isaac's first baseline data point for each variable is not displayed on the graphs.

Figure 2. Percent of verbal responses per five minute session across conditions per subject
EFFECTS OF VIDEO MODELING AND SELF-MONITORING ON SOCIAL LANGUAGE SKILLS

Summary

While there was variability in the data for each independent variable for each participant, both Jane and Isaac made increases in the level of initiations made during the intervention phase. This pattern was also true for verbal responses.
CHAPTER 5

Discussion

Introduction

In order to provide further data on the use of self-monitoring for increasing and maintaining social interactions, this study investigated whether an intervention using video modeling combined with self-monitoring could improve social communicative skills for preschool students with SLI utilizing a multiple baseline across participants design. Specifically, the level of initiations made toward a peer and the percent of verbal responses serving to sustain interactions were measured. Participants were three preschool students with SLI. One student, Sam, greatly increased in his level of both initiations and responses during baseline to the extent that intervention was not warranted. During the intervention phase, the remaining two participants, Jane and Isaac, viewed a video model and were taught to discriminate “good talking” from “not good talking”. They then viewed video of themselves and evaluated whether they did “good talking” after structured play sessions with a peer. Both participants in the intervention increased in their level of initiations and percent of verbal responses made during the intervention phase. Limited generalization data was taken with other peers and found that the increased level of responding was maintained. While there was variability in the data for each independent variable for each participant, both Jane and Isaac made increases in the number of initiations made during the intervention phase. This pattern was also true for the percent of verbal responses.
EFFECTS OF VIDEO MODELING AND SELF-MONITORING ON SOCIAL LANGUAGE SKILLS

Effects of the intervention on levels of initiations (Dependent Variable 1) and verbal responses (Dependent Variable 2)

For Jane and Isaac, levels of both initiations and verbal responses increased following the intervention. Limited generalization data (only one session with a different peer for each student) indicated that the effects of the intervention were maintained at a similar level for both students. This supports earlier research in which self-monitoring has been shown to increase generalization to other settings (Hoff & DuPaul, 1998; Peterson, Young, Salzberg, West & Hill, 2006; Reid, Trout & Schartz, 2005).

For Isaac, an increasing trend was seen in levels of both initiations and verbal responses. This provides support that video modeling combined with explicitly drawing attention to and praising the desired behavior increases the desired behavior (Apple, Billingsley and Schwartz, 2005; Coyle & Cole 2004; Dowrick & Dove, 1980). Further, the use of Video Feedback (Deitchman, Reeve, Reeve, & Progar, 2010) to facilitate self-monitoring is supported.

Limitations and Implications for Research

Due to the small sample size, these results can not necessarily be generalized to other students, including those with different conditions. Few generalization or maintenance probes were taken so it is not known whether these initial positive gains lead to robust change in social communication skills. The single data point taken while interacting with a novel peer in the same setting indicated that the increase in both initiations and responses generalized to a new person, but further research is needed in this area. As there are only two baseline sessions for each participant, while taken concurrently and staggered, this limits claims regarding a functional relationship between the independent and dependent variable. The intervention was implemented
EFFECTS OF VIDEO MODELING AND SELF-MONITORING ON SOCIAL LANGUAGE SKILLS

with only two students, so the single replication further limits claims regarding functional relations.

For Jane, a much smaller increase in level of both initiations and responses was seen, with no clear upward trend. As Jane only attended school two days per week, it was considered that the length of time between sessions may have been a factor in her lower level of responses. Isaac played with his peer and received feedback three times per week. Both participants were exposed to the intervention for a limited amount of time. More frequent administration of the intervention for greater periods of time may have resulted in greater effects.

It is also noted that Isaac attended the general education preschool for three hours on the days in which intervention occurred. During these three hours, he had further opportunities to interact with Rebecca. Jane only interacted with Maria in the structured play sessions. While data were not collected during times outside of the intervention sessions for Isaac, the effects of familiarity with a peer may also be worthy of investigation.

As the intervention was successful to varying degrees across participants, future research could determine whether known persons and/or known settings for the video models increase effectiveness, and whether these factors have an effect on generalization. Due to unforeseen circumstances, the intervention was not carried out in the setting in which it was originally developed, nor with the students for which it was intended. Therefore, only one adult in the model (the researcher) was known to the participants and the setting in the video model was different from the house area in which intervention occurred. The setting in the video model was of a similar house area in another school featuring similar but not the same furniture, utensils, etc. While the Video Feedback featured the intervention setting with self-modeling of the desired
EFFECTS OF VIDEO MODELING AND SELF-MONITORING ON SOCIAL LANGUAGE SKILLS

behavior, it is possible that a video model featuring two known adults in the intervention setting would increase effectiveness for Jane.

It is also possible that further prompting would increase effectiveness. Therefore an intervention featuring a prompted phase followed by an unprompted phase after training could be evaluated.

Implications for Practice

The results of this study will be used to inform my future practice. I will develop interventions for students to teach other behaviors using video modeling and self-monitoring. As a Resource Specialist, I am now supporting a group of K-6 students in a general education setting. I plan to use this approach to teach older students other socially appropriate responses such as requesting assistance from adults and peers, working with a partner, and maintaining attention to task.

As there is some support that the video model does not need to be in the actual setting in which the participants undergo this intervention, I intend to share the video I made with other preschool teachers in my school and district who serve students with difficulties with communicative exchanges resulting from similar skill deficits. Other teachers or speech and language therapists can use the video directly with their students or use it as the basis to make a version tailored to their students’ needs.

Sam, one of the students in this study, increased his use of social language simply through exposure to a peer model. Therefore, increasing opportunities for structured interaction when setting up inclusion opportunities for our preschool students with disabilities would be advisable. The video modeling intervention could then be applied for students who do not respond to structured interaction opportunities alone. In this way, less time would be needed by
EFFECTS OF VIDEO MODELING AND SELF-MONITORING ON SOCIAL LANGUAGE SKILLS

the special education teachers or speech and language therapists to implement the intervention as it could be applied to less students. Creating the video model required an initial time investment, but intervention could be carried out in 10 minutes per subject per day.

The video model may also be shown to parents to help them better understand how to model language in order to improve their children’s social communication skills.

Conclusion

This study found an intervention using video modeling combined with self-monitoring combining to be an effective procedure to improve social communicative skills for preschool students with SLI. Levels of initiations made toward a peer and levels of verbal responses serving to sustain interactions increased for both participants. While clear improvements were noted from baseline to intervention, these improvements were not substantial over baseline levels. The gains were noteworthy for Isaac, but minimal for Jane. More frequent administration of the intervention for greater periods of time may have resulted in greater effects.

Limited generalization data taken with other peers found that the increased level of responding was maintained. The study provides preliminary evidence that a combined intervention using video modeling and self-monitoring can improve social communicative skills for preschool students with SLI.
EFFECTS OF VIDEO MODELING AND SELF-MONITORING ON SOCIAL LANGUAGE SKILLS

References


California Education Code, § 56333-56338 (2009)


EFFECTS OF VIDEO MODELING AND SELF-MONITORING ON SOCIAL LANGUAGE SKILLS


EFFECTS OF VIDEO MODELING AND SELF-MONITORING ON SOCIAL LANGUAGE SKILLS


EFFECTS OF VIDEO MODELING AND SELF-MONITORING ON SOCIAL LANGUAGE SKILLS


Appendix A


Initiations could be used to

(a) introduce a new idea or topic;
(b) request an action, object, or information from the peer (e.g., “Can I have the car?”);
(c) comment about observable objects or events within an ongoing activity, or make appropriate social comments unrelated to the activity;
(d) compliment the peer or oneself (e.g., “That’s cool”, “Good for you”);
(e) secure the peer’s attention (e.g., “Look at this”); or
(f) express enjoyment or displeasure to the peer regarding the ongoing interaction together (e.g., “This is fun” or “This is boring”).

Examples of responses included

(a) acknowledgements (e.g., “oh”) or direct or partial repetitions of the utterance;
(b) agreements (e.g., “yeah”);
(c) answer’s to the peer’s questions;
(d) comments about observable objects or events within the ongoing activity, as well as appropriate social comments unrelated to the activity;
(e) questions related to the peer’s comments; and
(f) clarifications of questions asked by the peer (e.g., “What did you say?”).
Appendix B

Script of video model

1 Let’s make some lunch.
2 Okay
1 Do you want pizza or eggs?
2 I’ll make the eggs.
1 Okay, I’ll make pizza.
2 The eggs are ready.
1 Pizza’s ready, too.
2 Let’s eat it!
1 Can I have a blue plate?
2 Yes, here you are. I’ll have a green plate.
1 Do you want some pizza?
2 Yes, please.
1 Careful, it’s hot!
2 Okay, I’ll wait.
1 I’m thirsty. Can I have a drink, please?
2 Do you want milk or water?
1 Water, please.
2 Here you are.
1 Thank you.
2 The pizza’s ready now. Mm, it’s delicious.
1 I hear my baby crying.
2 I think he’s hungry.
1 Let’s give him some milk. Can you get it?
2 Okay, here’s the bottle. Oh, my baby is cold.
1 Let’s get blankets.
EFFECTS OF VIDEO MODELING AND SELF-MONITORING ON SOCIAL LANGUAGE SKILLS

2 Good idea!

1 This is fun!

2 Yeah, I like playing house.
Appendix C

Data Recording Sheet

Student: ____________

<table>
<thead>
<tr>
<th>Phase: Baseline/Intervention</th>
<th>Date</th>
<th># Initiations</th>
<th># Responses</th>
<th># Opportunities to respond</th>
<th>% Verbal Responses</th>
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