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# VIDEO SELF-MODELING AND IMPROVING ORAL READING FLUENCY

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VIDEO SELF-MODELING AND IMPROVING ORAL READING FLUENCY

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DISSERTATION

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A dissertation submitted in partial fulfillment of the  
for the degree of Doctor of Education in the  
College of Education  
at the University of Kentucky

By

Wanda Gail Chandler

Lexington, Kentucky

Co-Directors: Dr. Belva Collins, Professor of Special Education and  
Dr. Margaret Bausch, Professor of Special Education

Lexington, Kentucky

2012

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## ABSTRACT OF DISSERTATION

### VIDEO SELF-MODELING AND IMPROVING ORAL READING FLUENCY

Self-modeling can take different forms but is described as a process where one observes one's own successful behavior and learns from it without dependence on any particular medium. In this study, two separate experiments were conducted to evaluate a video self-modeling (VSM) feedforward intervention. VSM feedforward (independent variable, IV), was applied as an intervention to improve oral-reading fluency (dependent variable, DV). An adapted multiple-probe baseline, single-subject research design with a pre-test and post-test standardized reading assessment was employed for both experiments.

Participants included eight students with disabilities and a history of emotional and behavior problems in middle-school, special education, self-contained classroom-based settings. Participants in Experiment I received an average of 117 min of instruction. Those in Experiment II received an average of 50 min of instruction. A positive effect was established for 3 out of 8 participants when the data demonstrated criterion was met, that PNDs were either in the effective or very effective range, and that oral-reading fluency gains had both generalized and maintained.

Criterion was obtained by 7 out of 8 participants. Maintenance data for 6 participants were above baseline levels and above the intervention level for 1 out of 8. Generalization of oral-reading fluency skills to an unfamiliar, grade-level text was indicated for 5 out of 8 participants. The generalization pre-test to post-test data ranged from 1 to 41 words. All of the participants had improvements in oral-reading fluency with post-test scores ranging from .3 to 1.7 grade equivalents above the pre-test scores.

Reading self-efficacy was assessed with a standardized measure administered as a pre-test and post-test. Mixed results were obtained with students in Experiment II having greater improvements than those in Experiment I. Of 8 participants, the responses of 4 indicated improved reader self-efficacy, 2 had mixed results, and 2 had responses that indicated a decline in their perceived, reader self-efficacy. Finally, both qualitative and quantitative measures demonstrated that VSM feedforward was a socially valid treatment for improving oral-reading fluency.

KEYWORDS: Video Self-Modeling Feedforward, Oral Reading Fluency, Self-Efficacy,  
Emotional and Behavioral Disorders, Disabilities

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Student's Signature

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Date



VIDEO SELF-MODELING AND IMPROVING ORAL READING FLUENCY

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## Chapter One

### Introduction

The U.S. Department of Education has identified literacy instruction as a priority on which educators must focus for all school-age students. The *Elementary and Secondary Education Act Blueprint for Reform* (2010) asserts that states must:

*Develop comprehensive, evidence-based, pre K-12 literacy plans and to align federal, state, and local funds to provide high-quality literacy instruction. States may carry out strategies to improve literacy instruction statewide, such as supporting districts in identifying effective instructional materials and improving teachers' knowledge and skills in effective literacy instruction for all students, including English Learners and students with disabilities. (p. 7)*

This study explored video self-modeling (VSM) *feedforward* as an intervention to improve reading fluency. Poor and non-readers in the middle and high school grades are an “at-risk” population whose members face adult life challenges without a basic tool, reading, that is imperative to successfully navigate those challenges. Middle school learners with emotional, behavioral, and learning or cognitive disabilities were the school-age participants on which this VSM investigation focused. In addition to exploring whether or not VSM improved oral reading fluency, its feasibility for implementation in resource or self-contained classrooms was discussed.

#### **Video Self-Modeling (VSM)**

VSM is an intervention that has evolved from Albert Bandura’s work in social learning theory and self-efficacy (Bellini & Akullian, 2007; Delano, 2007; Dowrick, 1999; Hitchcock, Dowrick, & Prater, 2003). Self-efficacy is a concept of Bandura’s social learning theory that helps explain the effectiveness of VSM. Bandura (1993) described self-efficacy as referring to “people’s beliefs about their capabilities to exercise

control over their own level of functioning and over events that affect their lives” (p. 118). Those individuals who possess self-efficacy achieve higher attainments and increased cognitive effort. People who perform poorly can possess the skills needed for a task but lack the self-efficacy necessary to use them well.

Self-modeling affords the essential elements of self-efficacy. With self-modeling, one can view the best way to perform a skill. As one views one’s self performing the skill, one’s belief in one’s own capability is strengthened (Bandura, 1997). Dowrick (1999) referred to self-modeling as having, “the potential for people to learn from images of their own adaptive behavior” (p. 23).

Self-modeling can take different forms. Dowrick (1991, 1999, 2000) described self-modeling as a process where one observes one’s own successful behavior and learns from it without dependence on any particular medium. The medium can be in the form of pictures, audiotape, videotape, or one’s own imagination. *VSM feedforward* refers to using video to show a person’s potential future. The term, feedforward, in contrast with feedback, is VSM, “which occurs when one attends to images of success that have not yet been achieved” (Dowrick, 2000, p.5). A video is created by editing together components of skills that individuals already possess to obtain a 2–3 min video of a novel skill. Viewing the video improves the likelihood that an individual will successfully perform a selected skill.

Self-modeling can also exist in the form of *positive self-review* (PSR). PSR was created by having one perform and videotape a skill that he or she was capable of performing but does so infrequently. The video is viewed by the individual to increase the incidents where the skill was performed properly (Dowrick, 2000).

## **Modeling**

Modeling is an important concept in VSM. The term was adopted in social learning theory to name what was typically referred to as imitation or identification; however, it reflects broader psychological effects. Those psychological effects are of three types, depending on the modeling influences and processes involved. The first type described by Bandura (1971) was observational learning effect. It occurs when new behavior patterns are acquired by watching the performances of others.

The second effect was inhibitory effect. This occurs when an observer's behaviors or general responsiveness is reduced after witnessing a model's behavior result in punishing consequences. If an observer increases formerly inhibited behaviors after watching a model's threatening or prohibited behavior go unpunished, it is referred to as disinhibitory effect. An example of disinhibitory effect might occur in treating a phobia with modeling.

The third effect, response facilitation effect refers to when the behaviors of individuals cue those around them to engage in the same behaviors. When people applaud, they cue others around them to applaud. This is response facilitation effect. These modeling effects can be realized with VSM.

Models can support the behavior of others and draw the observers' attention to favorable environmental conditions (Bandura, 1986). Hartley, Bray, and Kehle (1998) found increased classroom participation after VSM intervention where students viewed themselves raising their hands in response to a teacher's question. As the students increased their classroom participation in response to treatment, their interactions with peers and teacher also improved. The authors discussed the effect of behavioral

contingences in the environment. A teacher described how the students' affect was changed in a positive manner and approximated that of the other students after increasing hand-raising in response to teacher questions. Teacher interviews suggested that environmental contingences were influential in the generalization and maintenance of the student behaviors.

### **Rationales for VSM Effectiveness**

When the natural environment more closely matched the environment that was viewed on the VSM tape, greater efficacy of the self-modeling was likely to result. As students experienced success when using new behaviors such as hand-raising, those behaviors were more likely to generalize and maintain. The potential effectiveness of the intervention was seemingly influenced by the frequency and quality of controlling variables that occur in natural environments.

Environmental contingencies, self-efficacy, and modeling are concepts that are central to explaining the effectiveness of VSM. Hitchcock et al. (2003) noted further support for these concepts in the theories of Skinner (1953) and Vygotsky (1978). Skinner's operant behavior theory allows a means for an individual to discriminate between behaviors resulting in negative or positive consequences. He stated that, "behavior which acts upon the immediate physical environment is consistently reinforced" (Skinner, 1953, p. 99). Additionally, environmental contingencies are often intermittently reinforcing and result in behaviors that are stable and show resistance to extinction.

Vygotsky's (1978) socio-cultural view of learning and language development supports the potential of self-modeling when considering environmental contingencies as

discussed above. The self in VSM serves as the skilled person who provides guidance and facilitates learning within the zone of proximal development. These factors assist in understanding how individuals respond to behaviors observed in VSM.

Coyle and Cole (2004) discussed VSM's effectiveness in the context of autonomic arousal. VSM increases the autonomic arousal levels of participants, facilitating observational learning, attention, and engagement in more focused learning experiences. Autonomic arousal was increased when observing one's own behavior beyond that which occurs when observing a peer (Woltersdorf, 1992). Bandura (1986) explained that, when observers see models express emotional reactions, they tend to express those emotions as well, perhaps altering the observers' behavior dependent on emotions associated with certain events.

Kehle, Bray, Gargiano, Theodore, and Zhou (2002) offered another argument to support the effectiveness of VSM when used as an intervention for students with serious emotional disturbance. They suggested that an individual's memories of performance or non-performance of target behaviors are altered upon viewing self-modeling, thus resulting in behavior change. This alteration or distortion of memory functions to increase the probability that the behavior will occur again because the individual believes he or she was historically capable of performing the behavior. The individual's self-efficacy may be modified to reflect the behavioral performance they view on the VSM tape.

Vygotsky's (1978) socio-cultural view of learning and language development, autonomic arousal (Woltersdorf, 1992), alteration or distortion of memory functions (Kehle et al., 2002), Skinner's (1953) operant behavior theory, and Bandura's (1971)

social learning theory or social cognitive theory (Bandura, 1986) are rationales are that are posited to elucidate how VSM works. That it works as an intervention to teach a wide variety of adaptive behavior (Bellini, Akullian, & Hopf, 2007; Coyle & Cole, 2004; & Hartley et al., 1998), functional (Lasater & Brady, 1995), communication (Bray & Kehle, 2001; Schwan, & Holzworth, 2003; Wert & Neisworth, 2003), and performance skills for students with physical disabilities (Dowrick & Dove, 1980; Dowrick & Raeburn, 1995; Scraba, 1989) or to improve volleyball skills to novice players (Zetou, Kourtesis, Getsiou, & Michalopoulou, 2008) was evident in the literature.

### **VSM and Academic Skills Literature**

A search of the literature was conducted to locate studies employing VSM feedforward or VSM interventions to improve academic skills and, more specifically, oral reading fluency for school-age children with learning, behavioral, and/or cognitive disabilities.

**Criteria for literature search.** The criteria for the initial literature search were adapted from Bellini and Akullian (2007). The studies must have (a) included participants who were school age and had learning, communication, and/or cognitive disabilities; (b) targeted academic skills; (c) assessed the efficacy of VSM; (d) utilized single-subject research design, or group design that demonstrated experimental control; (e) illustrated intervention effectiveness in a graphical display of the data in which individual data points were depicted; (f) been included in peer reviewed journals; and (g) been published in English.

The researcher conducted a search of the following databases: Ebscohost, ERIC, Wilson Web, and Google Scholar. Keyword phrases for the search included self-

modeling, VSM, feedforward, reading fluency, video modeling, middle-school, high-school, behavior disorders, emotional disabilities, learning disabilities, self-efficacy, Peter Dowrick, Albert Bandura, and VSM. Titles and abstracts of refereed journal articles were skimmed for those that employed VSM as an intervention in a school-based setting. Selected articles were read to determine if they met the criteria that were outlined above. These criteria yielded two studies (Delano, 2007; Hitchcock, Prator, & Dowrick, 2004). Of these, only one addressed reading fluency (Hitchcock et al., 2004).

A secondary search was performed due to the limited number of studies located in the initial search. The revised criteria were based upon criteria adapted from Hitchcock et al. (2003) and allowed for inclusion of (a) studies with school-age participants who were at risk for academic failure, (b) articles that “described authentic studies with dependent variable that included quantitative, databased measures of academic performance or outcomes” (Hitchcock, 2003, p. 38; i.e., articles other than those in peer reviewed journals would be accepted); and (c) case study reports. The final criterion was added to determine if those studies held descriptions that could inform the current study. The requirement of a graphical depiction of the data was dropped

An ancestral search of the reference lists of all the articles located in the VSM and academic skills literature search was conducted for other articles that would inform the current study. Additionally, for more comprehensive reference lists and other articles not yet located, seven meta-analyses of the VSM literature were scrutinized (Ayers & Langone, 2005; Baker, Lang, & O’Reilly, 2009; Bellini & Akullian, 2007; Delano, 2007; Dowrick, 1999; Hitchcock et al., 2003; Mechling, 2005). Finally, some journals in the field of special education were hand searched for relevant studies (i.e., *Journal of Special*

*Education Technology, Exceptional Children, Behavior Disorders; Learning Disabilities Research and Practice, Journal of Applied Behavioral Analysis, Journal of Autism and Developmental Disorders*). The results of the literature search verified that over 200 studies (Dowrick, 1999) have been conducted using VSM to improve adaptive behavior, functional, and communication skills.

The results also reveal that drastically fewer studies have been conducted using VSM to teach academic skills. Six studies were located that targeted oral reading fluency as at least one of the dependent variables: Buggie (2007); Dowrick, Kim-Rupnow, and Power(2006); Greenberg, Buggie, and Bond (2002); Hitchcock et al. (2004); Kim-Rupnow, Anderson, Galvavy, and Dowrick (2008); and Power, Dowrick, Ginsburg-Block, and Manz (1999). Two targeted mathematics skills (Schunk & Hanson, 1989; Woltersdorf, 1992). Another study (Delano, 2007) was located that employed VSM as one component of an intervention to improve written language performance.

**VSM as an intervention to improve math skills.** Schunk and Hanson (1989) authored a comparison study with three experiments. In each, self-modeling was evaluated to determine the effects on the achievement beliefs and behaviors when learning to solve fraction programs during skill acquisition or mastery. Forty-eight elementary students who had difficulties in math achievement were the participants. The authors used a pre-test/post-test control group design. In the first experiment, the effects on self-efficacy and skill level after observing self-models were compared with the effects after observing peer-models. Treatment conditions included peer-model, self-model, peer-+self-model (combined), or videotape control. In the control groups, students were videotaped in the same manner as their peers but did not view their videotapes. All

students in all experiments received the same instruction as their peers. Benefits obtained for skill and self-efficacy after observing self-model tapes were similar to those who had observed peer-models. The outcomes for all conditions, except for self-efficacy during self-model alone, were significantly higher than the control group. In this experiment, observing self-model and peer-model videotapes had comparable benefits.

In the second experiment, students were videotaped at different times throughout instructional sessions (i.e., after second session, after fourth session) and then viewed the tapes. The purpose was to determine if the timing of students' exposure would make a difference in greater behavior change or motivation. Results showed that the timing of observing a self-model tape is not as important as the observation itself. The students in both groups showed significant increases in solving fraction problems. Both groups showed improvement in self-efficacy and increased performance over those assigned to control and typical instruction groups.

The third experiment compared results of self-model content that showed mastery of skill or progress in skill development. Portrayals of progress in skill acquisition and portrayals of mastery were equally effective, therefore, resulting in improved self-efficacy. Students were better able to apply the skills they had learned after they viewed the self-modeling tapes. The authors believed that the obtained effects were not due to instructional factors of the self-modeling observations, but were due to the improved self-efficacy factors.

Woltersdorf (1992) used a multiple baseline across participants design to measure the effects of VSM intervention to increase math skills and decrease fidgeting, distractibility, and vocalization. His participants were 4 boys with Attention

Deficit/Hyperactivity Disorder. This was the only study located in which VSM was used to improve academic skill performance for students who had behavioral deficits in a school-based setting (Baker et al., 2009; Hitchcock et al., 2003; Woltersdorf, 1992). Woltersdorf (1992) stated that VSM was effective for reducing targeted behaviors and increased math productivity. These behavioral and academic skill improvements maintained over 5 months with a slight decay in the gains that were made.

**VSM as an intervention to improve written language performance.** Another study targeted written language performance. Delano (2007) demonstrated improved written language performance of 3 adolescents with Asperger syndrome with a multicomponent intervention using VSM. This is the only study that utilized VSM to target an academic skill with adolescent subjects. A multiple baseline design across responses was used to determine the effects of a self-regulated strategy development (SRSD) on written language after the subjects viewed themselves engaging in the strategy via VSM.

During baseline, each student was provided with persuasive and expository writing prompts and data were collected on their written responses. After baseline, they made a self-modeling videotape of the self-monitoring strategies. There were two strategies modeled, one to increase number of words written and one to plan and write a persuasive essay. The SRSD strategy for improving words written was a self-monitoring strategy in which student counted the number of words that had been written in a sample essay and recording the number on a bar chart. He then made a goal to improve his writing output by 10% on the next essay. These procedures were scripted and the students were recorded as they read the script and performed the SRSD strategy.

The SRSD for writing a persuasive essay involved the students using TREE. TREE is the mnemonic for self-regulated strategy development (SRSD) instruction (Graham & Harris, 2005). Graham, Harris and Mason (2005) designed the SRSD for students to employ when planning a persuasive essay by (a) T=noting the topic sentence, (b) R=noting reasons, (c) E=explaining reasons, and (d) E=noting the ending. The students were given a TREE outline and modeled the strategy as they read the script to record a second video. The author provided prompts as necessary for the students to complete their videos. These prompts were edited out of the final videos.

The students viewed the words-written video at the beginning of each intervention session then engaged in the behaviors in which they had been trained. After demonstrating 10% improvement in words written over three consecutive sessions, the students began instruction on the next skill (i.e., mnemonic TREE). During subsequent intervention sessions, students viewed the video and proceeded to write a persuasive essay. Generalization probes were conducted with expository essay writing. Follow-up or maintenance sessions occurred at 1 week and 3 months.

Words written and number of functional essay elements written per essay increased for all 3 students after beginning instruction directed at writing essay elements. In the maintenance condition, 2 students maintained their gains in number of words written during intervention, while one decreased though remained above baseline levels. The number of functional essay elements was not maintained for two students. There was an increase in duration of time that two students spent writing their essays along with their increase in words written. One student showed slight improvement. The increased

duration was maintained for 2 subjects, and the third continued to perform above baseline.

Each of the subjects improved in each intervention condition after viewing his or her self-modeling video one time. During the writing of expository essays, each student demonstrated similar results indicating generalization. Neither of the components of the intervention was assessed in isolation so the results are not solely attributable to either. This, however, was an exploratory study, as noted by the author, with promising results for VSM when applied as in the above manner. The author also noted that the creation of the videos was complex and time consuming. She considered that time may have been saved had the intervention had a longer run, given the immediate improvements that the students made after viewing the videos.

**Effective strategies for building reading fluency.** A decline occurs in reading school-related texts from elementary to middle school with the greatest decline occurring in struggling readers. Kamil et al. (2008) stated that there is “strong” (p. 50) evidence behind the recommendation that intensive and individualized interventions should be made available for struggling readers that can be provided by trained specialists. Opportunities to develop all areas of reading fluency are important for all readers, but especially for those who struggle (Hudson, Lane & Pullen, 2005). Research supports the relationship between reading fluency, the accurate reading of text at a conversational rate and prosody, and reading comprehension (Diamond & Thorsnes, 2008). Problems with fluency can put students at risk for failure in school and poor self-efficacy. This poor self-efficacy can be a product of negative social factors related to poor reading, and reluctance

toward oral reading or negative attitude toward reading in general (Greenberg et al., 2002).

Greenberg et al. (2002) and Pruitt and Cooper (2008) described strategies that were effective for building fluency skills in students with disabilities and reading deficits. One was constant time delay (CTD; Gast, Kleinert, Isaac, Eizenstat, & Bausch, 1983, as cited in Stevens & Schuster, 1988; Stevens & Schuster, 1988). CTD is an instructional strategy that has been effective with minimal errors in teaching sight word reading, letters, and sounds. Initial training sessions have a 0-s delay between a task request and a prompt. Later sessions may have a consistent 1-s to 5-s delay between the task request and prompt to allow the student to respond. If the student does not respond, a model is provided and the student imitates the model. (Stevens & Shuster, 1988).

Timed repeated reading is another effective intervention to improve oral reading fluency (Hudson et al, 2005; Kamil et al., 2008). The method requires students to reread a short passage until they can read it at an appropriate fluency level (Begeny, Daly & Valleley, 2006). A variation of the method has the student listen to an audiotape of the passage read by a fluent model, sometimes referred to as listening-while-reading (Hudson et al., 2005; Greenburg et al., 2002).

Paired reading or dyad reading (Morgan, Wilcox & Eldredge, 2000) involves a lead reader (a student in the classroom) and an assisted reader (a student with poor decoding skills). The students read the passage together. The stronger reader serves as a model in the dyad (Morgan et al., 2000).

Modeling was a component of each of those fluency building strategies. The typical models associated with these strategies were teachers or peers. VSM feedforward

allows students to be their own models. Providing an opportunity for students to observe self-models may allow teachers to better achieve Kamil et al.'s (2008) recommendation to “provide multiple learning opportunities” (p, 50) that allow students to experience success and build confidence in their reading ability.

**VSM feedforward as an intervention to improve oral reading fluency.** Few studies are available in which VSM was used as an intervention to improve reading (Buggey, 2007; Dowrick et al., 2006; Greenberg et al., 2002; Hitchcock, Prater, & Dowrick, 2007; Kim-Rupnow et al., 2008; Power et al., 1999). Yet as a result, all participants achieved positive gains in reading fluency.

Buggey (2007) reported in a case study that he worked with 3 fourth graders who were performing 2 years below grade level in reading. They were taught to read one passage in a fluent manner. The author noted that multiple techniques were employed to teach the students to read the paragraph. The students were then taped reading the passage. The students showed immediate gains in fluency in reading after viewing their tapes one time. Their scores improved an average of 10 words per min (wpm) after the intervention, and the students were reported to have avoided being referred for special education as a result. Their reading fluency gains maintained at a 1-month follow-up.

Dowrick et al. (2006) demonstrated self-efficacy in another study with children with disabilities who were learning to read and observed that those children who possessed higher levels of self-efficacy practiced more, persevered, and became better readers quicker than others with the same cognitive ability. The participants in the study were 10 first graders in three different classes who were chosen by their teachers as having the most difficulty learning to read. The students were each expected to be

identified as having a specific learning disability and were considered at risk for academic failure at the time of the study. Their IQ scores ranged from 54 to 99; 6 were girls and 4 were boys.

Curriculum-based measurement (CBM) was utilized to assess oral reading fluency during probes in a multiple-baseline-across-subjects design. Probes occurred two times per week during all phases of the study. Additionally, an A-B-BC-B (A=no treatment, B=tutoring, and C=video) design was utilized within each case.

Initial procedures included pretests and baseline. Participants were assigned to tutors who followed a 25-step protocol during tutoring sessions. All tutoring sessions were observed or audio-recorded. After 3 or 4, sessions were video-taped. The tapes were edited to show students reading fluently and naming sight words accurately. Each tape was less than 2-min long and included the child's name at the beginning in a still-frame and the words "The End" at the end of the tape. During the 5th and 8th weeks of the tutoring, the students began viewing their VSM tapes. Students were encouraged to attend to the screen, but no other comments were made during student viewings that occurred at the beginning of each tutoring session. The condition of tutoring and VSM lasted for 2 weeks, with a return to the tutoring only sessions that continued until the end of the semester (2-3 weeks).

The posttests included the *Woodcock Reading Mastery Test-Revised* (Woodcock, 1998, as cited in Dowrick et al., 2006) phonological awareness, motivation inventory, teacher reports and comments, and oral fluency probes. The results show that all students improved reading fluency from an average of 7.2 wpm to 21.2 wpm. The rate of those gains improved the most for nine of ten students during tutoring plus VSM feedforward

phase. Typical first graders improve at a rate of 1 wpm with regular instruction; however, the average wpm for students during tutoring plus VSM feedforward phase was 3.5 wpm. After a return to tutoring only phase, the rate of improvement slowed. The overall rate of improvement per week was 1.5 wpm. Standard scores for word identification improved for 8 students, and the reading subscale for academic motivation predicted moderate to good academic achievement. In 9 of 10 students, there were statistical differences in rates of improvement during the tutoring plus VSM feedforward phase of the study. None of the participants in the study were later identified with learning disabilities. The VSM phase seemed to accelerate the rate of improvement in fluency. All students met criterion during follow-up with additional tutoring during the following school year. Four of the students were able to move out of the program at follow-up. The self-efficacy measures were unpredictable with the authors' determination that first graders/6-year-olds seemed unable to make, "reliable expectation estimates on a Likert Scale" (p.205).

Greenberg et al. (2002) also conducted an investigation utilizing a multiple baseline across subjects design to evaluate whether VSM would improve oral reading fluency. The participants, 3 third graders (2 girls and 1 boy), were recommended by their teacher based upon weak reading performance in the classroom. All 3 were at least one grade level below average in oral reading fluency but were not receiving special education services.

The phases of the study included baseline, intervention, and follow-up. As one student began intervention, baseline was continued for the others. There was a 1-week time lag between the beginnings of intervention for each subsequent student. Reading passages to assess students' words correct per minute (WCPM) were taken from the

students reading text. The average of scores from two passages was recorded during baseline two times per week for 8 weeks. The *Reader Self-Perception Scale (RSPS)* (Henk & Melnick, 1995) was used to assess how students felt about themselves as readers before and after intervention using a Likert Scale (see Chapter Two for a more detailed description of the RSPS).

Before intervention, the students were videotaped reading a goal level passage from the end of a chapter book that they were currently reading. Any assistance provided during filming was edited out of the final videotape. The students viewed their videotapes every day for 4 weeks, and were assessed twice a week with a timed oral reading fluency probe. The assessments continued during follow-up. All students improved reading fluency from baseline to follow-up with the following rates reported: 51-85 CWPM, 37-58 CWPM, and 70-100 CWPM. All students showed an improvement in their self-perception as readers as well. This was indicated by their scores on the RSPS (Henk & Melnick, 1995).

Hitchcock et al. (2004) also demonstrated positive results utilizing VSM on reading fluency and comprehension. First graders were the subjects, with 3 of 4 receiving special education services (2 for specific learning disabilities and 1 for developmental delay). The fourth student was being considered for special education evaluation due to academic performance. All were reading below grade level including in the area of fluency. The students were administered the following standardized tests prior to intervention: *Woodcock Reading Mastery Test-Revised* (Woodcock, 1998, as cited in Hitchcock et al., 2004), and the *Achenbach Teacher Rating Scale* (Achenbach, 1991, as cited in Hitchcock et al., 2004).

Reading fluency probes were conducted in a manner similar to that used by Greenberg et al. (2002) to calculate correct words per min (CWPM). The passages were approximately 100 words in length and based on a basal reading series. The results of the CWPM of two passages were averaged to improve reliability of the oral reading rate. All participants were part Hawaiian. In consideration, Hawaiian Creole English pronunciations of words were not counted as mispronunciations. Reading comprehension was measured by having students answer 15 questions about a reading passage. The scores of two stories were averaged to improve reliability.

The design of the study included six phases in a multiple baseline across two behaviors (reading fluency and comprehension) and replicated across four subjects. The phases included baseline, tutoring for reading fluency, tutoring for fluency plus VSM, tutoring for comprehension, tutoring for comprehension plus VSM, and follow-up. Baseline was conducted on two nonconsecutive days per week until measures were stable. Tutoring sessions for reading fluency were carried out in 30-min sessions that included unison reading, echo reading, and independent reading, and sight-word review. When data were stable, the VSM for reading fluency was introduced. The video was viewed by the student and tutor at the beginning of each tutoring session. When the student reached individual criterion of wpm, the videotape was faded to twice per week.

The reading comprehension tutoring sessions began when data in the reading fluency phase were stable. The tutoring sessions included a graphic organizer and direct instruction on story structure. VSM was implemented when data were stable for the reading comprehension tutoring phase and continued until students reached individual criterion. Follow-up data were collected 1 and 6 months following intervention.

Generalization data were collected in the students' classroom. Social validity findings were derived from focus groups (i.e., written and oral comments) that were conducted with parents, tutors, and teachers.

All students improved their scores in reading fluency and comprehension with the greatest rate of increase occurring during the VSM phases. All students reached or exceeded 40 to 60 correct wpm during the VSM phase of the student. Those gains maintained and generalized in the classroom. The social validity measures from teachers, parents, and tutors showed that student improvements were valued and that the project and students' improvements were highly rated for reading and behavior.

Power et al. (1999) and Kim-Rupnow et al. (2008) both described cases in which first-graders improved reading fluency upon implementation of VSM. In Power et al. (1999), 3 students participated in a tutoring program (ACE Reading). Each session included unison reading (tutor and child read in unison), echo reading (student reads each phrase after the tutor), developing comprehension (discussion of passage), independent reading consisting of two trials, and sound recognition and production tasks. A 20-item protocol was followed by the tutors during each session. The students were assessed using curriculum based measures for oral reading, and standardized measures for phonological awareness and word and letter identification. Two of the students showed some improvement in reading fluency; however, one demonstrated no improvement. For that student, tutoring was increased to a daily basis over a 10-week period. Her reading improved 1.86 words correct per week during tutoring. VSM feedforward was implemented with the student for one week. The videotape was 3 min long and showed the student reading at a level beyond her typical fluency. Her rate of improvement

increased to a rate of 7.34 words correct per week during the “VSM feedforward + tutoring” phase. The authors stated that improved self-efficacy after observing the VSM feedforward videos enabled the student to take advantage of the reading opportunities afforded her during tutoring.

Kim-Rupnow et al. (2008) implemented VSM and tutoring with 50 first grade students of whom 80% improved in reading as a result of the intervention. Their improvement allowed them to benefit from typical instruction. The author described the case of one of the students who read at an average of 8 wpm during baseline. The student participated in the ACE Reading individualized tutoring program using repeated reading and a flashcard procedure. After 5 weeks, a VSM feedforward video was created depicting the student reading independently and with sight-word mastery. The student watched the tape on a daily basis for 2 weeks, after which time he was reading at 30 wpm.

A VSM video for positive self-review was created for the same student to watch at home or at school. This video depicted 3 min of his best work to promote maintenance. The student viewed the video for four months, at least one time per month. The student’s progress during a baseline and tutoring-only phase was flat; he read .8 words correct. During the VSM phase, his rate of oral reading fluency improved to 2.3 words correct per week. The authors stated that improved self-efficacy and motivation as a result of VSM resulted in the student’s improvement in oral reading. This supports Bandura’s (1993) assertion that “students’ belief in their efficacy to regulate their own learning and to master academic activities determines their aspirations, level of motivation, and academic accomplishments” (p.1).

A total of nine studies were found in the literature that addressed academic skills; six of those addressed reading skills. Findings from all of the studies described improvement in academic skills of all participants except for Kim-Rupnow et al.'s (2008) case study. In that study, the authors reported that over 80% of the 50 children for whom VSM (and tutoring) had been implemented had improved reading skills. Further information was not reported so it was impossible to glean insight from the implementation of the VSM intervention.

Three studies (Hitchcock et al., 2004; Schunk & Hanson, 1989; Woltersdorf, 1992) assessed social validity and reported positive results from parents, teachers, tutors, or students. Buggey (2007), Dowrick et al. (2006), and Greenburg et al. (2002) did not discuss social validity specifically; however, they discussed the positive results that students obtained and their enjoyment in watching their VSM recordings. Dowrick et al. (2006) noted the specific positive comments from teachers regarding improved student participation. Of the 6 studies that evaluated VSM and oral reading fluency, one-half were case studies (Buggey, 2007; Kim-Rupnow et al., 2008; Power et al., 1999). Although these studies provided anecdotal reports that seemed to support a causal effect between VSM and oral reading fluency, the absence of experimental or quasi-experimental design in these studies necessitates the need for additional research.

Of the 9 studies reviewed, 5 used a multiple baseline single-case design across participants. Three of the multiple baseline studies evaluated the functional relationship between VSM and reading skills (Dowrick et al., 2006; Greenburg et al., 2002; Hitchcock et al., 2004). Each of those studies reported interobserver agreement data (IOA). Dowrick et al. (2006) provided maintenance information. Although not stated as generalization

data, the authors reported how four subjects had maintained their reading skills at a level that enabled them to graduate from the program and progress to the next grade the following school year. Hitchcock et al. (2004) and Delano (2007) directly reported both maintenance and generalization findings. The Greenberg et al., (2002) study was not published in a peer-reviewed journal and did not assess social validity or generalization. Delano's (2007) study was important to this literature search although it did not address reading fluency as the dependent variable. Greenberg et al. (2002) informed this study in its utilization of RSPS (Henk & Melnick, 1995).

Only three studies employed single-case design standards to evaluate the functional relationship between VSM and its effect on oral reading fluency (Dowrick et al., 2006; Greenburg et al., 2002; Hitchcock et al., 2004). Only two of those were published in peer-reviewed journals (Dowrick et al., 2006; Hitchcock et al., 2004). These facts alone provided a viable rationale for the current study and demonstrated a need for more research in this area. The studies reviewed were summarized in Table 1.1.

Table 1.1

*The Research in VSM and Academic Skills*

Citation	Independent and Dependent Variables	VSM and Reading Skills				
		Design	Participants	IOA	Social Validity	Results
1. Buggey (2007)	VSM; reading fluency	Case study	$n=3$ ; 4th graders; at risk in reading	NA	NA	Increased 10 wpm; maintained 1 mo.
2. Dowrick et al. (2006)	VSM+tutoring; accelerating effect on reading fluency	MB across participants; A-B-BC-B (A=no treatment, B=tutoring, and C=video) in each case; pre/post test	$n=10$ ; 1st graders; 6 M, 4 F; special needs and at-risk for academic failure	92%	NA	Increased reading fluency for all with statistical significance for 9/10 students in VSM phase vs. peer tutoring phase. All students improved. 4 students maintained and 5 were provided additional tutoring during the following year. 8 students increased standard scores.
3. Greenburg et al. (2002)	VSM: oral reading fluency, perceptions of self	MB across participants	$n=3$ ; 3rd graders; 2 F, 1 M; 1 grade below avg. in reading	99%	NA	Increased reading fluency and reader self-perception.

Table 1. (continued)

Citation	Independent and Dependent Variables	Design	Participants	IOA	Social Validity	Results
4. Hitchcock et al. (2004)	VSM+tutoring; reading fluency, comprehension	MB across participants	n=4, 1st graders; Ages 6yrs. 4 mo.-7 yrs. 4 mo.; Learning Disability	96%	Focus group interview of parents, teachers and tutors rated the project highly and valued improvements in reading and behavior.	Increased reading fluency and comprehension skills. Students maintained at 1 and 6 mo. Skills generalized to a typical class setting.
5. Kim-Rupnow et al. (2008)	VSM+tutoring, PSR+tutoring; reading fluency	Case study	n=1; 1st grader; M; reading difficulties; n=50; 1st graders; reading difficulties	NA	NA	Increase in rate of progress improvement during VSM and PSR phases. 80% of 50 children improved reading skills.
6. Power et al. (1999)	VSM+tutoring; reading fluency	Case study	n=3; 1st graders; F	100	NA	Increase in rate of progress improvement during VSM phase.

Table 1. (continued)

Citation	Independent and Dependent Variables	VSM and Other Academic Skills				
		Design	Participants	IOA	Social Validity	Results
7. Delano (2007)	VSM: SRSD, written language	MB across responses	n=3; 13 yrs. 6 mo.-17 yrs. 4 mo.; Asperger syndrome	87%	NA	Increased words written, functional essay elements, and writing duration. Skills generalized from persuasive to expository texts. Writing duration maintained for 2/3 students. Functional essay elements did not.
8. Schunk and Hanson (1989)	VSM comparison study; math skills (fractions); self-efficacy	Pre/Posttest Group design: 3 experiments, ANOVA, & MANCOVA	n=21 M, 27 F; Ages 9-13; at risk in math		Participants believed they had an increase in skills.	Increased achievement in fraction problem solving and self-efficacy.

Table 1. (continued)

<u>VSM and Other Academic Skills</u>						
Citation	Independent and Dependent Variables	Design	Participants	IOA	Social Validity	Results
9. Woltersdorf (1992)	VSM: math performance, behaviors	MB across participants	4 Boys, Ages 9-10 ADHD		Reports from teachers and parents were positive.	Increase in math skills; PND=25%; maintained at 5 months; generalization indicated slight increase in a less structured classroom.

Note. ADHD =attention deficit Hyperactivity Disorder; F=female; IOA = interobserver agreement; Learning Disability=learning disabilities; M=male; MB=multiple baseline; PND=non over-lapping data points; NA=not addressed; SRSD=self-regulated strategy development; VSM = video self-modeling; wpm=words per minute.

## **Research Questions**

Those studies with oral reading fluency as the dependent variable demonstrated that deficits in this academic area were amenable to VSM intervention with elementary-age students. However, no studies were located where VSM was implemented to improve oral reading fluency for older students (i.e., middle and high school) with behavioral and/or learning disabilities.

Delano's (2007) was the only study located in which the participants were middle and high school students with an academic-type skill (i.e., written language) as the dependent variable. In the Baker et al. (2009) meta-analysis that focused on students with emotional and behavioral disorders, none of the studies that were reviewed targeted academic skills as the dependent variable. None of these studies located for this literature review employ VSM feedforward as a singular, independent variable, although, Bellini, Akullian, and Hopf (2007) successfully employed VSM as a singular independent variable to improve social interactions of young children with autism spectrum disorder (ASD). Dowrick et al. (2006) suggested that future research should determine whether VSM feedforward can make a contribution to the improvement of reading fluency when employed without tutoring. VSM feedforward is the only independent variable in the current study.

Hitchcock et al. (2003) noted that studies to improve reading of older students should be conducted using VSM. The purpose of this study was to examine the effects of VSM feedforward intervention on oral reading fluency for students with learning and behavioral disabilities in middle school, self-contained classroom settings. Quantitative and qualitative data were collected. Both standardized measures and CBMs were

administered to measure oral reading fluency. Students' reading self-efficacy was evaluated with a standardized assessment.

Outcomes of the assessments and qualitative data were reported to ascertain answers to the following research questions: (a) After implementation of a VSM intervention targeting oral reading fluency, will the rate of oral reading fluency improve for middle school participants with disabilities who have an oral reading fluency below their current grade level? (b) After implementation of a VSM intervention targeting oral reading fluency, will the participants' rate of oral reading fluency maintain after concluding the VSM intervention? (c) After implementation of a VSM intervention targeting oral reading fluency, will the participants' rate of oral reading fluency generalize to grade level text? (d) Will participants' self-efficacy improve in the area of reading fluency as determined by the *Reader Self-Perception Scale* (RSPS; Henk & Melnick, 1995)? (e) Is VSM a socially valid intervention for improving reading fluency?

The methods and results with a discussion of Experiment I are described first. The methods and results with a discussion of Experiment II follow. Finally, a general discussion of both experiments with implications and suggestions for future research are included.

## Definition of Terms

The terms in this section are those that are related directly to the topics within this research study. The terms include, but are not limited to, the topics of reading fluency assessment, special education and VSM.

*Curriculum based measures (CBM)* are frequent and objective assessments of student performance using an alternate form at each administration. CBMs should be representative of the curriculum and are used to measure student performance overtime. In this study, the CBMs were alternate forms of reading passages on a predetermined grade level and administered to measure student performance for the duration of the treatment (Fuchs & Fuchs, 1993).

*Feedforward* is a term coined by Dowrick (2000) that refers to using video to show a person's potential future and successful performance of a skill that he/she has not yet achieved (e.g., fluent reading).

*Individualized education program (IEP)* is a written document drawn up by the educational team (i.e., IEP committee) of any student who receives special education services. It must include: (a) academic and functional present levels of student performance, (b) academic and functional, measurable annual goals, (d) an explanation of how progress will be measured, (e) special education and related services and supplementary aids, (f) necessary accommodations, (g) a description of when parents will receive progress reports on performance, (h) transition needs for those over 16-years-old, and i) and justification for alternate assessment decisions.

*Integrated evaluation reports* refer to the document describing the results of a student's comprehensive evaluation for special education services.

*Lexiles* are a measure of a reader's ability and the difficulty level of text, as determined by word frequency and sentence length. Lexiles are used to make book-selections for readers and examine reader growth (Metametrics, 2011).

*Peer-models* refer to viewing peers via video who are similar to the observers (students) resulting in them seeing similar in competence as well. Peer models may better promote student self-efficacy than adult models that the students may deem as superior in competence (Schunk & Hanson, 1989).

*Reading self-efficacy* refers to children's self-perception of their reading ability. Their perceived reading self-efficacy can impact how children approach the process of reading and their reading outcomes (Henk & Melnick, 1995).

*Self-efficacy* refers to how one construes his/her own ability. It can impact cognitive effort and contribute to academic development (Bandura, 1993).

*Video self-modeling* refers to observers viewing themselves on video while performing only desired target behaviors (Dowrick, 1977, as cited in Dowrick & Dove, 1980).

## **Chapter Two**

### **Experiment I**

#### **Method**

Experiment I was conducted in order to evaluate the effects of VSM video feedforward on reading fluency of middle-school students. The researcher conducted reading fluency and self-efficacy assessments during pretests. Next, baseline probes were conducted in which participants read assigned passages and WCPM results were recorded. A VSM reading fluency video was then created for the participants to watch during instructional sessions. Oral reading fluency performance was assessed during each instructional session, just as it had been assessed during baseline probes. After participants reached criterion, posttests and maintenance sessions were conducted, also in the same manner as baseline probes. Generalization sessions were conducted and WCPM was assessed when students read 1-min timed passages from their social studies texts. The researcher hypothesized that the participants' reading fluency skills would improve as a result of the VSM video feedforward intervention.

#### **Participants**

The participants in Experiment I included the researcher, scorer, classroom teacher, and students. Summaries of student descriptors for Experiment I, as recommended by Rosenberg et al. (2001) for single-subject designs, are provided (see Table 2.1). The student descriptors provided within the narrative and Table 2.1 meet the minimum that were recommended by the Council for Learning Disabilities research committee for applied behavioral research studies with fewer than 10 [subjects].

Table 2.1

*Experiment I: Student Characteristics*

Descriptors	Experiment I			
	Lucas	Josiah	Selena	Jacob
Gender	M	M	F	M
Age	13	14	13	13
Grade Level	6	8	6	8
Ethnicity	W	W	W	W
Disability Category	EBD	MMD	OHI	EBD
Time in SE, SC	80%	80%	60%	100%
Intelligence, Full-scale IQ	<i>WJ-III</i> 79	<i>WISC-IV</i> 63	<i>WISC-IV</i> 91	–

Note. M = Male; F = Female; SE = Special Education; SC = Self-Contained; EBD = Emotional-Behavioral Disability; OHI = Other Health Impaired; MMD = Mild Mental Disability; MD = Multiple Disability; *WJ-III* = *Woodcock Johnson-Third Edition*; *WISC-IV* = *Wechsler Intelligence Scale, Fourth Edition*; *KABC-II* = *Kaufman Assessment Battery for Children, Second Edition*; *UNIT* = *Universal Nonverbal Intelligence Test*

**Researcher.** The researcher was a doctoral candidate at the University of Kentucky. In addition, she had over 25 years of teaching experience at all grade levels in the field of special education. This experience included public school teaching and consulting and university teaching. Prior to this study, the researcher completed two others using a single subject multiple probe research design: one was a published Master’s degree thesis in Learning and Behavior Disorders (Chandler, Stevens, & Schuster, 1993), and another was completed as a component of a Specialist in Education (Ed. S.) degree in Instructional Technology (Chandler, 1995). The researcher had prior

experience conducting qualitative research in her work with a national reading program as well.

The researcher implemented all procedures including videotaping and video production, student viewing of VSM videos, pretests/posttests, and baseline, instructional, maintenance, and generalization sessions. The procedures are summarized later in this chapter, and protocols are included in the Appendices (see Appendix A).

**Classroom teacher and contribution to the study.** The classroom teacher possessed special education teaching certification specific to his student population; he had a Master's degree and certification in learning and behavior disorders. He had taught middle school the majority of his career, over 10 years. He had been in his current position, teaching in a classroom with students identified with emotional and behavior disorders (EBD), for more than 6 years. He completed the online, research ethics training offered at the Collaborative Institutional Training Initiative (CITI, 2010) in anticipation of assisting in implementation of the independent variable, VSM feedforward intervention, administration of CBM reading passages, and procedural and inter-observer assessment (IOA) reliability data collection. However, the teacher's prior responsibilities precluded him from participation in these activities.

His contribution to the study primarily centered on supporting the researcher's access to the participants. He distributed and collected parent consent forms per Institutional Review Board (IRB) requirements (see Appendix B for parent consent form for student participation). He recommended students based upon the prerequisites for participation: (a) oral reading fluency below grade level and (b) participation in special education services. He provided the researcher with information (i.e., behavior) particular

to each student, including suggestions for student reinforcement according to existing classroom and individualized behavior management plans. He also provided information needed for participant demographics, such as types of services received, time spent in special education, assessment data, age, diagnoses, race, and socioeconomic status.

Additionally, the teacher outlined the schedule for researcher access to the participants based upon student and school schedules and special considerations or events that occurred over the course of the study. Some of these included state mandated testing, altered class schedules, special programs (e.g., assemblies, and other special events such as “field day” and “career day”), teacher absences, and problematic student behavior. He provided qualitative statements about the students and information useful toward determining the social validity of the study as well.

**Teacher training.** The researcher met with the teacher several times to inform him about the study, secure an appropriate setting, and discuss participant selection prior to beginning Experiment I. Other topics reviewed during these meetings included reasons for conducting the study and potential implications, VSM and procedures of the intervention, fidelity measures, reading passages and assessments, and qualitative instruments.

**Reliability data collector/scorer.** The researcher trained a scorer for reliability data collection. She was a graduate student in an Early Childhood Education program at another state university. She possessed certification in special education, Multiple and Severe Disability. She was experienced with data collection in the area of reading fluency and student progress. She completed the online research ethics training offered at CITI (CITI, 2010).

The scorer was not present during sessions with students. The researcher recorded a majority, >50%, of the sessions across conditions and participants to allow for procedural and IOA reliability evaluations. She completed a scoring sheet in order to calculate WCPM during each administration of the CBMs. She completed a protocol checklist (see Appendix A) at the end of each session and across all conditions in order to assess the accurate and complete implementation of all procedures (Hartley et al., 1998).

The sessions' video footage was edited and recorded to a DVD. Different sessions were labeled by condition (baseline probe, instructional, maintenance, and generalization) and reading passage. The same equipment and software used to create the VSM videos was used to create the "reliability" DVDs. A DVD for reliability data collection was recorded for each student.

While viewing the DVDs, the scorer conducted procedural and IOA reliability. The scorer completed CBM scoring sheets and protocol checklists identical to those completed by the researcher. During training, the researcher described the requirements for collecting procedural reliability and determining WCPM on CBM passages for IOA. Prior to scoring the participants' WCPM on CBM passages or procedural reliability, the researcher and scorer collected reliability on sample video clips until they reached 100% agreement on two consecutive samples.

**Students.** During the researcher's first meeting with individual students, their assent for participation in the study was requested and obtained. The procedures of the study were described to the students, and they were informed that they could withdraw from the study or choose not to participate at any time during the study (see Appendix C for a copy of the student assent for participation). Experiment I began with 4 students;

however, 1 withdrew from school before beginning intervention. An eighth grade student, Jacob, participated in the baseline condition only. He was slated to be the final student to begin the intervention condition. A total of 3 students completed the Experiment I.

For inclusion in the VSM study, pre-determined criteria required students' oral reading fluency to be below the expected level of performance based upon their grade placement. This score was obtained with the administration of an oral reading fluency assessment, GORT-4, used in the pretest. One student, had reading fluency listed as an IEP objective.

In addition to performing below grade level in oral reading fluency, students must have had a disability warranting special education services. Students with Learning Disability, EBD, Other Health Impairment, and Mild Mental Disability were included in the study. Criteria for determining eligibility for special education services were determined by the *Kentucky Special Education Program of Studies* (Kentucky Department of Education, 2006). Eligibility and disabilities were identified in each of the students' individualized education programs (IEPs) and integrated evaluation reports.

The 3 participants who completed the study received some or most instruction in a self-contained classroom for students with EBD. Weaknesses in the area of reading were noted in prior assessments, individualized education programs (IEP's), or identified during GORT-4 pre-tests that were administered by the researcher.

While the criteria required the participants to have weaknesses that would allow them to benefit from the VSM intervention, it also required the participants to possess the ability to attend to the VSM videos that were 1½- to 2½-min long. Participants needed expressive verbal skills to repeat words, phrases, or sentences after the researcher in order

to create the videos. Finally, adequate cognitive and behavioral capacities were required for students to participate in the study as the researcher designed it. The classroom teacher identified the students who would participate after being informed of the study procedures, materials, and equipment.

*Student descriptions.* Lucas was a 13-year-old white male, in the sixth-grade, with EBD. He was eligible for free and reduced lunch through the *National School Lunch Program* (Healthy Hungry-Free Kids Act, 2010). He resided in a foster care setting due to past abuse and neglect. He was prescribed medications to help control symptoms of Attention Deficit/Hyperactivity Disorder, Mood Disorder, Post Traumatic Stress Disorder, and Reactive Attachment Disorder. He had received special education services since third grade. Lucas received approximately 80% of his instruction in a self-contained classroom for students with EBD due to hyperactivity, tantrums, teasing others, and off-task behaviors. He participated in the following courses in the general education setting: Industrial Technology, and Physical Education. He scored a Full-Scale (FS) IQ of 79, borderline range, on the general intellectual measure of the *Woodcock Johnson-III* (WJ-III; Woodcock, McGrew, & Mather 2007). Lucas' General Adaptive Composite (GAC) score was in the extremely low range on the *Adaptive Behavior Assessment-II System* (ABAS-II; Harrelson & Oakland, 2003). He scored in the range of 134-284 Lexiles (L), low range, in reading on the *Measures of Academic Progress* (MAP; Northwest Evaluation Association, 2011). Lexiles are a measure of reading ability or the difficulty level of text (Metametrics, 2011). Lucas' IEP included a reading objective for fluency.

Josiah was a 14-year-old white male, with Mild Mental Disability, in the eighth-grade. He was eligible for free and reduced lunch through the *National School Lunch*

*Program* (Healthy Hungry-Free Kids Act, 2010). He resided with his mother. He had received special education services since kindergarten. Josiah received approximately 80% of his instruction in a self-contained classroom for students with EBD due to increased behavioral concerns in more typical classroom settings, low self-confidence, and off-task behavior. He participated in the following courses in the general education setting: Industrial Technology and Physical Education. He scored a FS-63 on the *Wechsler Intelligence Scale for Children-IV* (WISC-IV; Wechsler, 2003). Josiah's GAC score was in the above average range on the ABAS-II. He scored 174 L, low range of functioning, in reading on the MAP. Josiah's IEP contained an objective for reading.

Selena was a 13-year-old white female with Other Health Impairment and Specific Learning Disability in the areas of basic reading, reading comprehension, writing, and math reasoning. She was in the sixth-grade. She was eligible for free and reduced lunch through the *National School Lunch Program* (Healthy Hungry-Free Kids Act, 2010). She resided in a foster care setting with her grandparents, who were in the process of adopting her. She was prescribed medications to help control symptoms of Attention Deficit/Hyperactivity Disorder, Oppositional Defiant Disorder and Obsessive Compulsive Disorder. It was unclear how long Selena had received special education services. Selena received approximately 60% of her instruction in a self-contained classroom for students with EBD due to requiring constant redirection for off-task behavior, immaturity, and pre-occupation. She participated in the following courses in the general education setting: reading and Physical Education. She scored a FS-91 on the WISC-IV. Selena's GAC score was in the extremely low range on the ABAS-II. She

scored 149 L, low range, in reading on the MAP. Selena's IEP contained the following reading objectives: reading in the areas of vocabulary development and comprehension.

Jacob was a 13-year-old white male, with Other Health Impairment, in the eighth grade. He was eligible for free and reduced lunch through the *National School Lunch Program* (Healthy Hungry-Free Kids Act, 2010). He resided with his foster mother. He moved to the school district from another state, and enrolled in the school in the week prior to the beginning of the study. He was prescribed medication to help control symptoms of Attention Deficit/Hyperactivity Disorder. Jacob received 100% of his instruction in a self-contained classroom for students with EBD. The school had not received all of his school records. His intelligence score was unknown. He had been referred for re-evaluation for special education services. Jacob's adaptive behavior score was not available. His current reading scores on the MAP were not available. His special education teacher indicated that Jacob was performing below grade level in all areas. His GORT-4 pre-test score indicated that he was reading below grade level as shown in Table 3.2. Jacob's IEP objectives were unknown.

### **Setting**

**School and geographic locations.** The middle school where Experiment I was conducted was located in a small, rural town with a population calculated at 10,000. The school had approximately 794 students. The minority population of the school was 2.97%. About 47% of the total school population qualified for free and reduced lunches.

**Concurrent reading instruction.** The researcher anticipated that instruction in the special education, EBD self-contained classroom would resemble that of a general education (e.g., language arts) classroom. Therefore, some reading instruction (e.g.,

fluency and comprehension) in the classrooms was anticipated as well. Researcher expectations of the classroom teacher included delivering individualized, specially designed instruction (e.g., behavior intervention plans, small group instruction) as stated on the students' IEPs. The researcher obtained general descriptions from the teacher of a typical day of reading and other instruction that occurred in the self-contained classroom. Formal lesson plans were not available.

The students' instructional schedule was often written on the classroom's whiteboard. The teacher said that each day the students were expected to complete lessons from academic subjects (e.g., social studies, math, language arts, and science). During Experiment I, the students participated in state-mandated testing for 7 days. The teacher noted that the participants were not required to complete other assignments in the self-contained classroom on testing days as a reward for completing those required tests; however, they attended general classes unless the testing schedule interfered. All students were administered their state-mandated tests in a one-to-one setting. The teacher stated that no formal instruction in oral reading fluency occurred in the self-contained classroom.

**Recording of VSM DVDs and conditions.** During all digital video recording sessions the participant sat at a desk, 2.5 ft x 4 ft, and read an assigned passage. The researcher and the participant each had a copy of the passage to be read for the recording. The student repeated words, phrases, or sentences as directed by the researcher. The researcher sat or stood in proximity of the camera. The tripod and camera were situated 3-4 ft from the participant so that only his/her image was captured. During sessions in all conditions of this study, all students sat in the same desk to read a passage or view their

VSM video on a laptop computer. The participants agreed that they were comfortable in the setting.

Sessions were conducted in the school psychologist's office. This room's dimensions were 10 ft by 5 ft and had to be entered through the cafeteria. The arrangement of the room required the participants to sit at a desk and read their assigned passage. The digital camera was about 40°-45° to the right of the students' faces. The location of the room ensured infrequent interruptions; however, sessions were typically held before or after lunch each day in order to avoid noise from the cafeteria.

### **Materials and Equipment**

**VSM video recording.** Materials and equipment used for recording the individualized VSM videos were a tripod, DVD camcorder, and media specific to the camera. A Canon DC310 DVD Camcorder requiring a DVD-R disk was used to film the VSM feedforward digital videos. The researcher typically allowed the video to record as long as the student was able to repeat the words, phrases, or sentences of their assigned passage without additional assistance. If the student needed to take a break from the task, practice pronunciation, or if the session was otherwise interrupted, the recording was stopped until the student was ready to resume.

**VSM editing.** The researcher performed all video editing on a HP Pavilion Entertainment PC laptop computer equipped with Windows Vista™ Home Premium 6.0 (Microsoft® Windows®, 2007) operating system. A CODEC converter, Sony Media Converter DVMC-CA2 was used to download the digital video via a 9-pin fire wire connection from the Canon DC310 DVD camcorder. The digital video was downloaded to a Verbatim CE FC portable, 320 GB hard drive. The researcher used Windows Movie

Maker (Microsoft® Windows®, 2006) to edit the VSM digital recordings and Windows DVD Maker (Microsoft® Windows®, 2006). The VSM digital recordings were published to DVD-Rs.

**Viewing the VSM movie.** During the instructional sessions, the students viewed the VSM video on the same computer, a HP Pavilion Entertainment PC laptop computer, equipped with a DVD player. A “VSM DVD Viewing Protocol” with a checklist for viewing procedures was followed by administration of the CBM reading passage that can be found in Appendix F. It was utilized to support adherence to procedures and to record student behaviors or other anecdotal information during each session.

**Assessments.** Standardized measures were administered to participants to determine their oral-reading fluency grade level and perceived, reading self-efficacy. Another assessment was utilized because it had grade level text from which students could read in order to record their VSM DVDs.

**Reading.** The GORT-4 was used to obtain standardized fluency scores for all participants. It is norm-referenced for individuals ranging from the ages of 6-0 to 18-11. It provides five scores related to a student’s oral reading skills including: (a) rate - the amount of time taken by a student to read a story, (b) accuracy - the student's ability to pronounce each word in the story correctly, (c) fluency - the student's rate and accuracy scores combined, (d) comprehension - the appropriateness of the student's responses to questions about the content of each story read, and (e) overall reading ability - a combination of a student's fluency and comprehension scores. The GORT-4 is a reliable measure with the average coefficients for all subtests and composites at or exceeding .90 using Cronbach’s coefficient alpha method. The construct validity of the test is sound

according to documentation. In addition, the GORT-4 has two forms of the test so that an alternate form can be used as a posttest. It is recommended as ideal for documenting progress after special interventions to improve students' reading scores.

The *Multi-Level Academic Skills Inventory, Revised* (MASI-R; Diamond & Thorsnes, 2008) informal assessment was utilized to provide the text for the VSM fluency reading video. The passage the student read was determined based upon the his/her instructional reading levels according to the GORT-4.

*Self-efficacy. The Reader Self-perception Scale* (RSPS; Henk & Melnick, 1995) was developed as an evaluation instrument to measure the way readers appraise themselves. It was designed for easy administration to a group of students, and intended for grades 1 through 6. The researcher contacted the authors for their opinion regarding using the RSPS with the intended participants and in the manner proposed. W. Henk (personal communication, May 27, 2010) responded, noting that the RSPS was the right instrument to use. However, he asserted that there would not be age-appropriate norms for grades 7–8. He felt that the high school version of the RSPS was not appropriate. The norms were designed to help teachers predict students' reading behavior, habits, and attitudes based upon their reader self-perceptions.

The researcher chose to employ the RSPS to capture shifts in the participants' self-efficacy as a result of the VSM intervention. To determine how students felt about themselves as readers before and after a VSM intervention to improve oral reading fluency, Greenburg et al. (2002) administered the RSPS and results indicated that students had made gains on the Progress Scale. It was administered individually to each

participant in the present study, prior to and after VSM feedforward intervention, to assess any changes in reading self-efficacy as a result of the intervention.

The RSPS Scales were based upon the basic self-efficacy model described by Bandura (1977, 1984) and Schunk (1984, as cited in Henk & Melnick, 1995). Questions on the RSPS include one initial item that prompts students to consider their reading ability for the General Perception Scale. The item was important for this study because the students were asked to rate whether or not they believe themselves to be a good reader. Students were asked to respond to an additional 32 questions that represent the Scales: (a) Progress, (b) Observational Comparison, (c) Social Feedback, and (c) Physiological States. Suggestions for individualized application of the information obtained for students who score below the norm are (a) more intensive and individualized instruction, (b) opportunities for self-observation of favorable performance, (c) increased positive reinforcement for reading, and (d) opportunities to view models of reading that result in personal gratification. These suggestions are good descriptors of a VSM feedforward reading intervention. Participant improvement in these areas could indicate improved self-efficacy in reading as a result of the VSM intervention.

## **Procedures**

The following procedures were implemented during this investigation. Those procedures are summarized in Table 2.2.

Table 2.2

*Summary of the Procedures*

Procedure	Description
Reinforcer Assessment Interviews	The researcher interviewed students to determine what non-contingent food reinforcers they preferred following each session.
Pretests	<p>The GORT-4 was administered as a pretest to measure oral reading fluency.</p> <p>Based on the GORT-4 grade equivalent results, a passage from the MASI-R was selected and later utilized in the participants' VSM digital recordings.</p> <p>The RSPS was administered to each student, prior to and after intervention to assess any changes in oral reading fluency self-efficacy.</p>
Pre-Generalization Sessions	During generalization sessions, students read a passage from their social studies textbook for 1 min. The WCPM for that passage was calculated and recorded.
Baseline Probes	Timed, grade level reading fluency probe were administered. The average WCPM over baseline probe sessions was used to set criterion the dependent variable.
Independent Variable	Reading fluency, VSM, video feedforward, videos were recorded, edited and published to DVDs.
Instructional Sessions	The participant in the intervention condition viewed his/her VSM digital video during daily sessions on a computer monitor with headphones
Dependent Variable	Immediately after viewing the VSM video, participants read a timed, grade level passage. The WCPM for that passage was calculated and recorded.
Maintenance Sessions	Maintenance sessions were conducted like baseline probe sessions.
Post-Generalization Sessions	During generalization sessions, students read a passage from their social studies textbook for 1 min. The WCPM for that passage was calculated and recorded.
Posttests	All pretests were re-administered as posttests.

Table 2.2 (continued)

Sociality Validity	Documentation of participants who willingly attending sessions and the percentage of sessions in which students appeared motivated and engaged were noted.  Student interviews, teacher interviews, and data analysis were conducted. Self-efficacy was assessed.
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**Non-contingent reinforcer assessment interviews.** During the researcher's first meeting with each student, their assent was obtained for participation in the study. Additionally, the researcher conducted an interview to determine what type of non-contingent tangible reinforcers, food item(s), they preferred after completing sessions. The interviews consisted of the researcher asking the students what kind of candy, fruit, drink, or other item each wanted. The students requested a variety of items that included: beef jerky, sports drinks, candy bars, strawberries, and ice cream. The teacher was consulted and he consented to all of the items that the students requested. After each session, the students were offered one of a variety of reinforcers from which they could choose one for his/her participation.

**Reading: pre-tests and post-tests.** The GORT-4 was administered as a pre-test prior to baseline probe sessions and after all instructional sessions had been completed. Oral reading-fluency scores were obtained from this assessment. The scores were compared to determine if improvement was evident as a result of the VSM video feedforward intervention at the conclusion of Experiment I.

The RSPS was administered to participants individually, before and after intervention. Each question of the assessment was read to them as they followed with their own copy of the assessment. The participants were asked to respond to each question based on a Likert Scale that had been explained to them. All participants

responded to the practice items in a manner indicating an understanding of the Likert Scale assessment.

**Baseline probe procedures.** Baseline probe sessions were conducted with all participants prior to filming the VSM digital recording, and the implementation of the intervention to establish experimental control when compared with post intervention data.

Initially, all students were administered one baseline probe. The first participant was administered baseline probes until data were stable or in a contratherapeutic trend. After a minimum of three sessions, when the data were stable, the VSM movie for the participant was recorded. During baseline probes, each participant read a 1-min timed passage from *easyCBM* (Alonzo & Tindall, 2010) in order to obtain a reading fluency performance score (see an example of the passages in Appendix D).

**Determining oral reading fluency.** Oral reading fluency scores for WCPM were calculated in all conditions after students read a 1-min timed passage. Scores were determined based upon the recommendations of Hitchcock et al. (2006) and Alonzo and Tindall (2010).

1. Read the directions to the student.
2. Begin timing when the student says the first word of the reading passage.
3. Determine errors according to the following criteria. If the student:
  - does not read any words correctly in the first line of the first passage, discontinue the task and record a score of zero.
  - does not supply a word within 3-s, provide the word and mark the error with a slash through the word.

- omits a word, mark as incorrect and mark the error with a slash through the word.
  - hesitates or struggles with a word for 3-s, tell the student the word and mark the word as incorrect.
  - makes an error then self-corrects within 3-s,, do not count as an error.
  - omits a word, ignore it and do not count as an error.
4. For students with articulation disorders, mispronunciations of words do not count as errors when the student's intent is clear.
  5. Place a bracket after the last word read.
  6. Determine the number of words read in 1-min
  7. Determine the number of errors.
  8. Subtract the number of words correct from the number of errors and subtract for the WCPM score.

**Making the VSM recording.** Next, the students were assigned a reading passage from the MASI-R that was based upon the grade level they obtained on the GORT-4. The passage assigned was a grade level above the one obtained on the GORT-4. The reading passage that was assigned to the students was used to create the VSM digital recordings.

The researcher met with students individually to review the process of the recording and answer questions that he/she had. The VSM DVD recordings depicted each participant fluently reading a challenging text that was above his/her grade level (e. g., if the student had a reading fluency score of fourth grade level, he/she was assigned a reading passage at the fifth grade level). During video recording sessions, the procedures and general disposition of the student or problematic behavior were described (see

Appendix A). If behavior and circumstances were typical, it was indicated by leaving the area blank.

During videotaping, each participant was prompted to read the form of the MASI-R passage assigned them while the camera was recording. The camera was positioned so that a clear view of each student's face could be observed as they read and were obviously focused upon the reading passage they were assigned. They were directed to look at the passage and repeat a portion of it (word, phrase, or sentence) following the researcher's model. This procedure was followed for each participant in the study.

As the video-recordings were completed for each student, the researcher edited the video and copied it onto a DVD for use during instructional sessions. A title was inserted at the beginning of the video (e. g., Isaiah's VSM Video) and at the end of the video (e.g., The End). Also, the students were shown smiling immediately after they completed reading the passage. The VSM DVD movies were approximately 1½- to 2½-long.

**Instructional sessions.** After the first participant's VSM movie was edited and published to DVD, the instructional (VSM feedforward intervention) condition was initiated.

**Viewing the VSM recordings.** In each instructional session, participants viewed their VSM video, and then read a 1-min timed CBM oral reading fluency passage. After criterion, 1-seasons growth in reading fluency, as determined by WCPM, was reached or after three sessions, if data were stable, procedures to bring the next participant into the study began. The next participant completed at least three additional baseline probes until the probe data were stable. Next, he/she began the instructional condition. Experimental

control was established when the dependent variable (reading fluency) improved after the independent variable (VSM intervention) had been introduced. External validity was strengthened with the replication across participants.

The participants in the instructional conditions viewed the videotapes at the beginning of daily sessions until criterion was reached (i.e., one season's growth in reading fluency and /or stable or improving trend in data). With the researcher, the participants viewed their VSM DVDs in a one-on-one setting on a laptop computer with headphones. The researcher documented any time that students were distracted (looked away from their video) or did not fully attend to their respective VSM movies.

***Oral reading fluency, curriculum based measures.*** Assessment of oral reading fluency using an *easyCBM*, reading passage was conducted each day after a participant viewed his/her VSM movie. Criterion was established as one season's growth in reading fluency as determined by WCPM or after a minimum of three sessions if data were stable. As the participant in the intervention condition reached criterion, subsequent participants began a more rigorous baseline probe schedule. When baseline probe data were stable or demonstrated a contratherapeutic trend after a minimum of three baseline probe sessions, the participant entered the instructional condition.

Procedures for administering the oral reading fluency, *easyCBM* passages were identical to those administered during baseline probe sessions. A different reading passage was selected for the CBM each day. Dowrick (2006) chose CBM because it was supported in the research, was sensitive to relatively small changes in performance, was relevant in diverse settings, allowed analyses of rate of improvement, was recommended for use with students in special education, and was reliable.

The oral reading fluency WCPM scores of participants were measured and graphed. Participants continued in the intervention condition of the study and viewed their VSM video recordings until his/her WCPM scores on the CBM reached criterion or there was a stable data trend. This criterion was based upon the grade level of oral reading fluency that the participant possessed upon entering the study and the average of the baseline probe scores that a participant obtained.

***Oral reading fluency criterion.*** Hasbrouck and Tindal (2006) have established three scores for oral reading fluency percentiles with corresponding WCPM per grade level for fall, winter, and spring. Oral reading-fluency criterion for each participant was set at one season's growth beyond the oral reading fluency score of the participant at pretest. As an example, if a participant had an oral reading fluency score of 177 WCPM, raw score for seventh grade: Fall, then their criterion was set at 195 WCPM, raw score for seventh grade: Winter. The procedures for baseline and instructional conditions were followed subsequently until each participant reached criterion or in the case of Selena, the school year ended.

**Generalization.** Generalization sessions occurred for each participant prior to the beginning of the study and at the conclusion of the intervention condition. A reading fluency probe was administrated using a CBM passage from the participants' social studies texts. These sessions were conducted to determine if there was any observable change in students' oral-reading fluency with other school-based materials.

Generalization data were recorded in the graphical depiction of participant data.

**Post-test.** When the instructional condition of the study had ended for each participant, The GORT-4 was administered for a final time. Additionally, the RSPS was

administered prior to and after VSM intervention to evaluate changes in participants' self-efficacy in relation to reading fluency.

**Social validity procedures.** The students were interviewed on an individual basis and asked whether they believed VSM to be an effective intervention for improving their oral reading fluency. They were asked the following questions: (a) Did you like participating in this study? (b) What did you like about it? (c) Do you feel this has helped you read better? (d) Would you like to make another tape with me to improve reading or for other skills? (e) Why or why not? (f) Did you like the reinforcers? (g) Would you have participated without them? (h) Is there anything else you would like to tell me?

One of the measures of social validity for this study was to evaluate if students with a history of serious behavioral challenges participated willingly in the sessions of the treatment (i.e., were they engaged in the intervention and motivated to participate). Kehle et al. (2002) discussed that addressing those students with severe emotional disabilities who evidence problematic classroom behaviors (i.e., non-compliant, disruptive, inattentive) "is often a tedious, frustrating, and unsuccessful experience" (p. 204). Baker et al. (2009) suggested that video modeling may prove promising for students with EBD because it is not a punitive intervention, "but rather instructive and designed to empower students" (p. 9). For students who are involved in the VSM process, classroom routines may be less disrupted with VSM than with other interventions, it can be implemented with limited intrusiveness, and others in the classroom who are not involved can remain uninformed.

In attempting to assess whether the VSM feedforward intervention was one in which students would freely participate, the researcher noted on the protocol checklists if

students resisted attending the sessions, exhibited acceptable/unacceptable behavior, were motivated/engaged in the intervention, or were, for example, disgruntled, during the sessions (see Appendix A). The percentage of times that the students attended sessions willingly, with acceptable behavior (i.e., behavior that did not prevent the student from participating) was reported. This percentage was calculated by first determining the number of sessions in which the students demonstrated acceptable behavior. The number of sessions in which each demonstrated unacceptable behavior was subtracted from total number of sessions. The difference, number of sessions in which they participated with acceptable behavior, was divided by the total number of sessions. The resulting quotient was then multiplied by 100.

The percentage of sessions in which the students appeared motivated/engaged (i.e., no resistance to participation, easy disposition) in treatment was reported. This percentage was calculated by subtracting the number of sessions in which the students appeared motivated/engaged in the intervention from total number of sessions, dividing the number of sessions in which they appeared motivated/engaged by the total number of sessions, and multiplying the quotient by 100.

The teacher was interviewed as a measure of social validity as well. He was asked if he believed that he could implement VSM on his own and to describe supports he would need. He was also asked if he believed that students benefited from the study.

**Maintenance.** A maintenance condition occurred after the VSM intervention was discontinued. These sessions were conducted in the same manner as instructional sessions except that the participants did not view their VSM DVDs (independent variable) prior to the CBM assessment. Maintenance sessions were conducted at 2 days for Lucas, 5 days

for Josiah, and 1 week for Selena. The number of days between the end of instructional and maintenance sessions was regimented due to the school years' end.

### **Experimental Design**

**Multiple probe single subject design across participants with a pre-test and post-test.** A multiple probe single subject design across participants with a pre-test and post-test was employed to analyze the effectiveness of the VSM intervention to improve oral reading fluency of participants receiving special education services at the middle school level. Intermittent probes trials permit analysis between dependent (reading fluency) and independent (VSM) conditions (Horner & Baer, 1978). After introduction of the independent variable to the first tier, probe trials continue in subsequent tiers (Gast, 2010).

The researcher chose this design due to the impracticality of continuous administration of oral reading fluency CBMs during the baseline probe conditions for each student. This design allows for a reduction in the number assessment probes that must be administered in the baseline condition, and thereby controls for testing (i.e., repeated administration of oral reading fluency measures). Baseline probe data were collected from all participants during the first session of this study. Intermittent baseline probe data were collected within 5 days of the prior baseline probe, prior to another participant beginning intervention, or when a participant reached criterion.

The multiple probe design allows for control of history (i.e., reading instruction), and maturation effects, as well as testing. Additionally, these threats to internal validity are evaluated when the introduction of the independent variable is staggered across tiers. The participant is his/her own control in the multiple probe single subject research design

and visual inspection can occur between graphed baseline probe and instructional conditions to determine if a functional relationship between the dependent and independent variable exists. (Gast, 2010; Horner & Baer, 1978) That relationship can then be replicated in subsequent tiers (Gast, 2010).

### **Data Analysis**

**Visual analysis of data.** The researcher made data-based decisions within and between conditions based upon the visual analysis of the participant data. This is the most frequently used procedure for evaluating data in single subject research designs (Gast, 2010). Generalization and pre-test and post-test measures were analyzed by comparing the differences in participant performance that was assessed prior to and after the VSM feedforward intervention condition. Maintenance data were analyzed by comparing differences between the maintenance condition, and the baseline and instructional conditions.

**Between-condition analysis.** A between-condition analysis of adjacent conditions, baseline probe and intervention, was conducted to evaluate experimental control (Gast, 2010). The absolute level value change was calculated by comparing the last data point of the baseline probe condition with the first data point of the VSM feedforward intervention condition (Gast, 2010). The relative level change was calculated by comparing the median value of the last half of the baseline probe condition with the median value of the first half of the VSM feedforward intervention condition (Gast, 2010). Trend was calculated using the split-middle method, and trend stability was established with a stability envelope based on an 80%-25% formula. In this formula, 80% of the data points within condition must fall on or within 25% of the median value of the

data points in the baseline condition in order for the data path to be considered stable. Gast (2010) utilized this formula to exemplify hypothetical data representing approximately the same number of data points in the baseline and intervention conditions as were collected in this study.

**Percentage of non-overlapping data points (PND).** PND data were also computed to determine intervention effects of the VSM procedures on participants' oral reading fluency. This nonparametric procedure was chosen because the purpose of this study was to improve oral reading fluency. PND was determined by calculating the number of data points that did not overlap between the VSM intervention condition (B) and the highest data point in the baseline probe condition (A). The percentage was found by dividing the number of data points in B that did not overlap by the total number of data points collected in B (i.e., [# non-overlapping data points/# total data points] x 100 = PND) (Gast, 2010). The PND scores may be interpreted according to the following criteria:

- scores above 90% represent very effective interventions;
- scores from 70% to 89% represent effective intervention;
- scores from 50% to 69% are questionable;
- and scores below 50% are ineffective (Bellini, 2007).

Although Bellini (2007) provided these guidelines for interpretation, Gast (2010) warned against relying on PND alone to determine findings. PND can lead to incorrect conclusions due to trends, variability, or duration of interventions that may prove effective, yet result in overlapping data points. He stated that PND (or POD) should be reported, but along with other calculations.

## **Fidelity of Implementation**

In order to assess the results of either effectiveness or efficacy of studies, reporting fidelity of implementation is required. This allows educators and researchers to determine the internal and external validity of curriculum interventions. Fidelity of implementation refers to the extent that an intervention is applied as designed according to structure and process. If fidelity of implementation exists in effectiveness studies there is a greater chance that the intervention is externally valid and can be replicated in similar setting and generalized to others. Fidelity of implementation in efficacy studies assures observers that the implementation is internally valid. It can also reveal the components of an intervention that need to be manipulated in order to improve the intervention. When fidelity of implementation is high it improves the likelihood that an intervention is feasible and will be utilized to improve students' academic skills (O'Donnell, 2008).

**Procedural reliability.** Treatment fidelity of the independent variable (VSM DVD) was examined to ensure that it accurately depicted the target skill, reading fluency (i.e., that the reading of the passage was modeled correctly in the VSM DVD) as suggested by Delano (2007). All of the participants were recorded while reading his/her assigned passages. The researcher edited the videos to depict the participants fluently reading those passages. The researcher and scorer viewed the VSM DVDs and compared them with the assigned passages for any discrepancies between the text and participants' reading of the text. No discrepancies between the assigned MASI-R passages and VSM DVDs were detected for any of the participants. The fidelity score of 100% was derived by both scorer and researcher by calculating the percentage of words read correctly

(accurate representation of the assigned passage) on the VSM DVD (Gersten et al., 2005) and dividing by the total number of words per passage.

Procedural reliability agreement was assessed in the form of a checklist to insure that all conditions of the study were administered properly (see Appendix A for the protocol checklists). The researcher completed the procedural protocol checklists that included the steps involved in the teacher administration and student viewing of the VSM DVD. The students' demeanor, level of attention and any reaction (e.g., verbal statements) to the VSM DVD were entered in an area on the checklist that was reserved for comments (Bellini et al., 2007).

As the scorer assessed interobserver agreement for the dependent variable, she also completed a procedural protocol checklist (see Appendix A) when viewing recordings of the sessions across conditions. She made notes regarding her observations of the participants' behavior; however, some researcher notes included information that the scorer was unable to observe. This item was not included when calculating procedural reliability for the independent variable. The procedural reliability was calculated by dividing the total number of the observed researcher behaviors by the total number of planned researcher behaviors. The quotient was multiplied by 100. Procedures for delivering the independent variable were followed at 100% for generalization, baseline probe, and VSM intervention conditions across all participants.

**Interobserver agreement (IOA).** Over 50% of the sessions in each condition across all participants, with the exception of maintenance, were recorded by the researcher. IOA was evaluated when the scorer reviewed those recordings to determine researcher accuracy in calculating the dependent variable, WCPM. The scorer completed

the same assessment as the researcher of WCPM on the CBMs that were administered to the participants.

IOA was calculated for event recording systems to yield a total percent agreement (Gast, 2010). This total percent agreement was obtained by dividing the smaller WCPM score by the larger WCPM score obtained by the researcher and scorer for each passage evaluated for reliability agreement. When participants read a 1-min timed passage, they obtained a raw score for number of words read. Errors were then subtracted from the number of words read. For example, if the researcher observed a participant who read 100 words with five errors, a 95 WCPM score would have been recorded (i.e.,  $100 - 5 = 95$ ). If the scorer observed a 98 WCPM for that same participant, then IOA was calculated as follows:  $95$  (lower score)/ $98$  (higher score) =  $96.9\%$ .

IOA was calculated at  $98.7\%$  for  $49\%$  of the sessions in those conditions in which students participated (e.g., Jacob did not participate in all conditions.) except for maintenance. Sessions in the maintenance condition were recorded for Lucas and Isaiah. Those recordings were not accessible for IOA data collection. Selena did not have a maintenance session recorded due to brevity of time and her protests against doing so.

IOA was calculated for  $50\%$  of generalization sessions at  $98.9\%$ . For  $65.1\%$  of the baseline probes sessions, IOA was calculated at  $98.5\%$ . During VSM intervention, IOA data were collected for  $43.8\%$  of the sessions and calculated at  $98.2\%$ . The IOA data for individual participants were displayed in Table 2.3.

Table 2.3

*Experiment I: Interobserver Agreement (IOA) for Words Correct per Min WCPM)*

Conditions & IOA	Participants			
	Lucas	Josiah	Selena	Jacob
<b>Generalization</b>				
Total Sessions %	50.0	50.0	50.0	50.0
Total IOA %	98.2	97.5	100.0	100.0
Range	–	–	–	–
<b>Baseline Probe</b>				
Total Sessions %	100.0	80.0	42.9	37.5
Total IOA %	98.3	98.8	97.0	100.0
Range %	96-100.0	96-100.0	93-100.0	–
<b>VSM Intervention</b>				
Total Sessions %	38.5	33.0	60.0	0
Total IOA %	98.3	99.2	97.0	–
Range %	97-100.0	98-100.0	94-100.0	–
<b>All Conditions</b>				
Total Sessions %	47.8	53.3	51.0	43.8
Total IOA %	98.23	98.5	98.0	100.0

*Note.* IOA = interobserver agreement; VSM = video self-modeling.

## Chapter Three

### Experiment I

#### Results

The data indicated that the 3 participants who completed the study demonstrated improved oral-reading fluency, as evidenced by performance on CBMs after a VSM feedforward intervention and their performance on pre-tests and post-tests of a standardized reading fluency assessment. They demonstrated some maintenance of the improved performance. Generalization of improved oral-reading fluency to a 6<sup>th</sup>-grade social studies text was demonstrated by 2 of 3 participants. Performances on pre-test and post-test administrations of the RSPS indicated improvement in the Progress Scale for 2 out of 3 participants. Finally, based upon the effectiveness, qualitative and quantitative measures, VSM feedforward was a socially valid, oral reading-fluency treatment. See Table 3.1 for baseline probe and intervention means, and criterion.

Table 3.1

*Experiment I: Criterion and Mean Levels*

Name and Reading GE	BL Range	BL Mean Season %	Criterion Season %	Sessions to Criterion	VSM Condition Range	VSM Condition Mean
Lucas (4 <sup>th</sup> )	108-106	106/Fall/50	112/Winter/50	1	109-149	124.3
Josiah (1 <sup>st</sup> )	51-47	50/Winter/75	82/Spring/75	2	49-110	63.5
Selena (1 <sup>st</sup> )	43-54	47/Winter/75	82/Spring/75	1	42-66	51.2
Jacob (6 <sup>th</sup> )	141-161	152/Fall/75	167/Winter/75	-	-	-

*Note.* BL = baseline; VSM = video self-modeling intervention condition

#### Lucas

**Acquisition.** The data maintained a stable, zero-celerating trend during baseline probes. During the intervention condition, a positive 21 WCPM change in the median level and 18.3 WCPM change in the mean level were observed. He had positive changes in absolute and relative levels (Gast, 2010) and a stable therapeutic trend was established during VSM intervention He improved from a 4.0 to a 4.7 oral reading-fluency GE on the Gort-4 after 13 VSM feedforward intervention sessions (see Table 3.2).

Table 3.2

*Experiment I: GORT-4Pretest and Posttest Result for Oral Reading Fluency*

Student	GE	
	Pretest	Posttest
Lucas	4	4.7
Josiah	1.4	1.7
Selena	<1.0	2
Jacob	6.4	---

*Note.* GE = grade equivalent.

Lucas' criterion was established at 112 WCPM which he obtained in one session. PND was calculated at 100% representing a very effective intervention (Gast, 2010; Bellini, 2007). Lucas' oral-reading fluency seemed to improve as a result of the VSM feedforward intervention (see Table 3.3).

**Maintenance and generalization.** Lucas maintained his improved oral-reading fluency at a 1-week follow-up. He read a passage at 119 WCPM, 13 words over above his baseline mean level. When reading a grade-level social studies text prior to the VSM feedforward intervention, Lucas read 96 WCPM. Following intervention, he read 109

CWPM, an improvement of 13 WCPM, and 3 WCPM above his baseline-probe mean indicating a generalization of skills (see Figures 3.1 and 3.2).

Table 3.3

*Experiment I: Condition Analysis and Functional Relationship*

Condition Properties	Lucas		Josiah		Selena	
	A <sub>1</sub>	B <sub>1</sub>	A <sub>1</sub>	B <sub>1</sub>	A <sub>1</sub>	B <sub>1</sub>
Condition length	3	13	5	12	6	10
Level:						
Median	106	127	51	54.5	49	48
Median change	21 I		3.5 I		1 D	
Mean	106	124.3	50	63.5	47	51.2
Mean change	18.3 I		13.5 I		4.2 I	
Mean range	106-108	109-127	51-47	49-110	43-54	42-66
Absolute change	106	131 I	51	82 I	44	56 I
Relative change	107	117 I	51	51 N	44	43 D
Trend	Zero	Acc	Zero	Acc	Dec	Acc
Direction		I		I	D	I
Stability envelop (median)	26.5	31.7	12.8	13.6	11	13.3
(80/25=___)	Stable	Stable	Stable	Variable 66%	Stable	Variable 50%
Multiple paths within trend	No	No	No	No	No	Yes
PND	100%		75%		40%	

*Note.* A1 = baseline; B1= intervention; Acc = accelerating; Dec= decelerating; Zero= zero-celerating; D=deteriorating; I=improving; N=no change; S=stable; V=variable; PND=percentage of nonoverlapping data-points

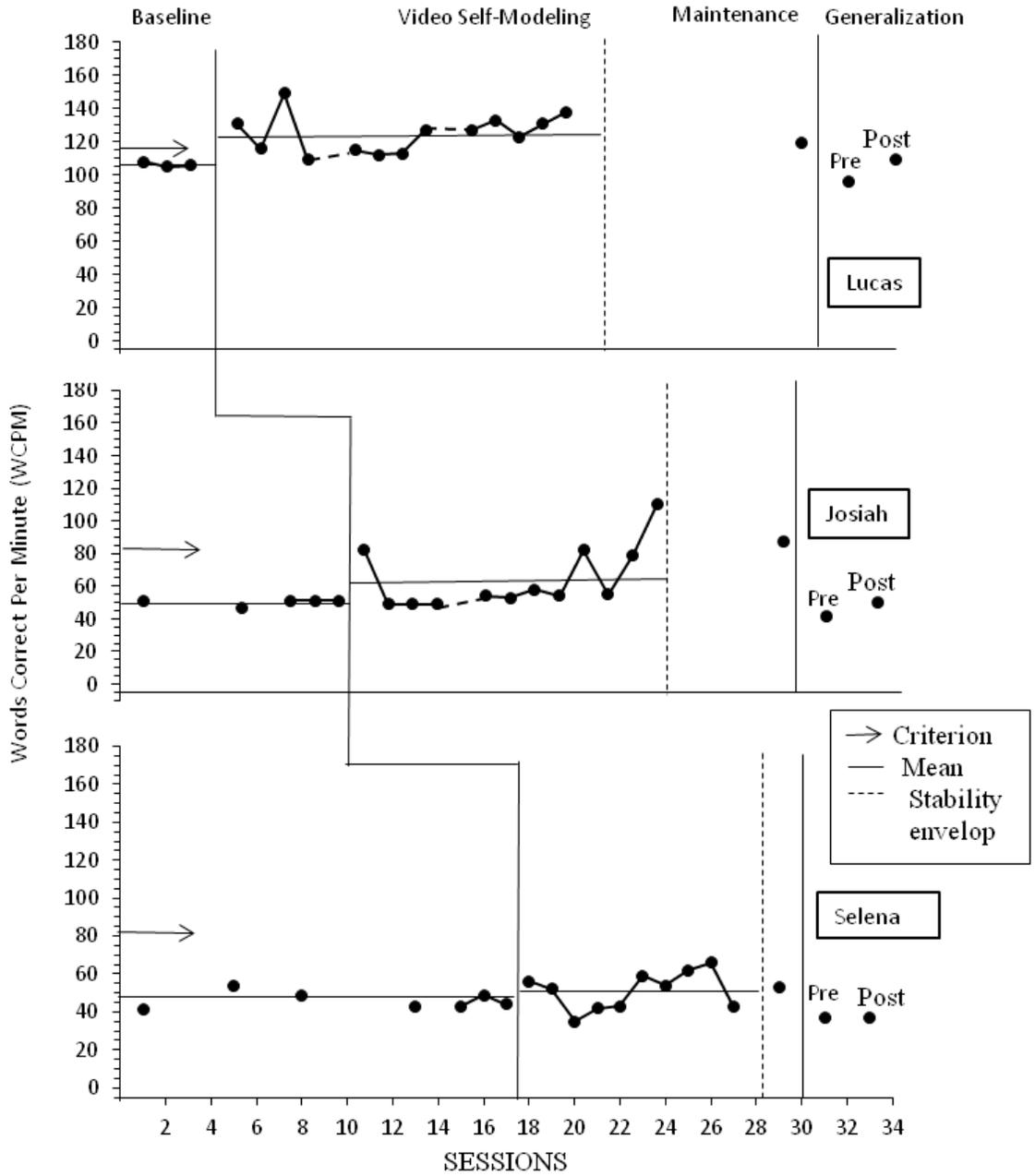


Figure 3.1. Graphic Display of Mean for Oral Reading Fluency Results for Experiment I

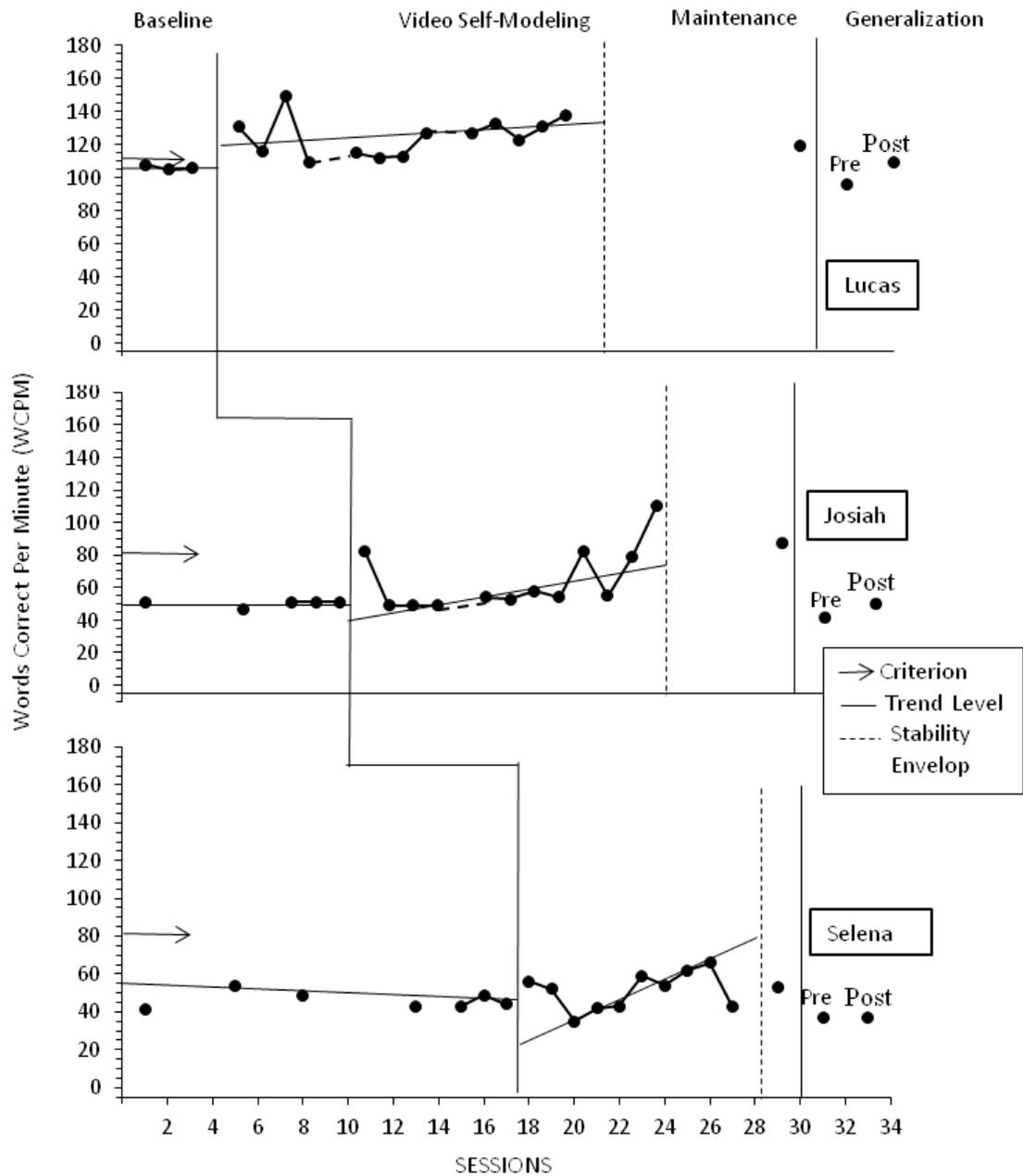


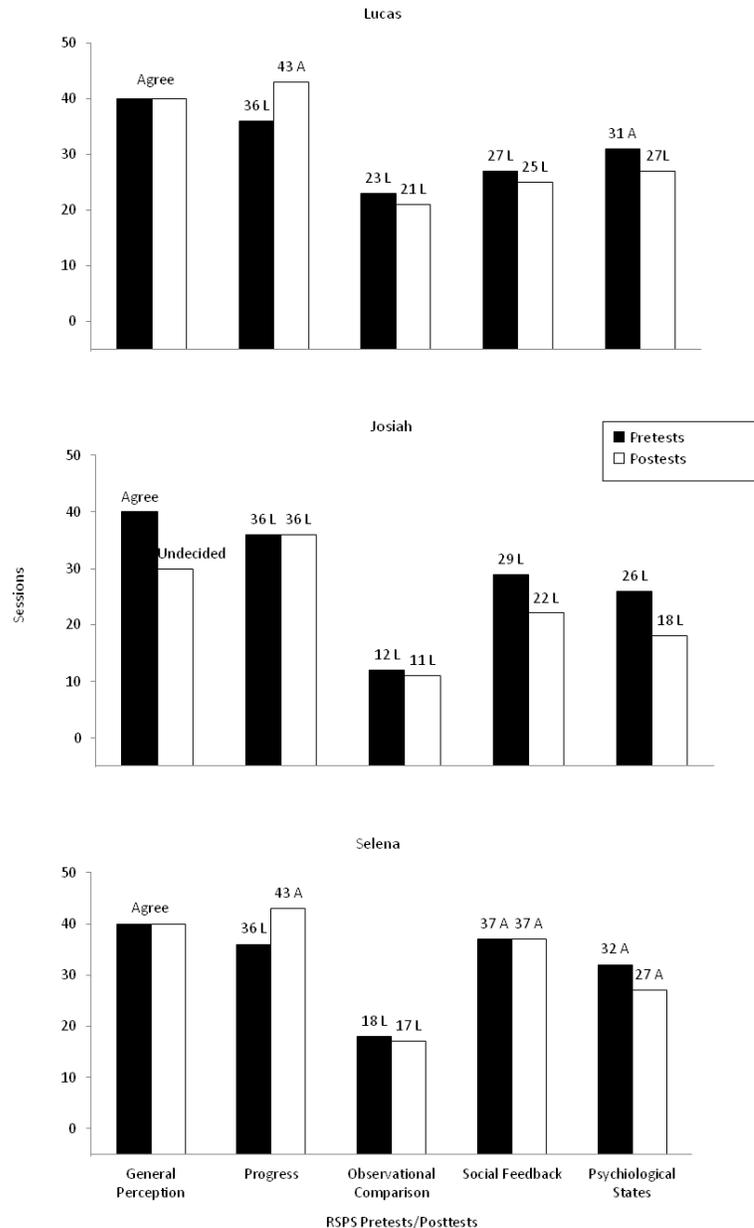
Figure 3.2. Graphic Display of Trend for Oral Reading Fluency Results for Experiment I

**Self-efficacy.** Lucas completed a pre-test and post-test of the RSPS. Prior to and after completion of the study, he stated that he agreed with the statement that measured General Perception: I think I am a good reader. On the Progress Scale, he improved from a score in the low range to the average range. This indicated that he had an improved

perception of his present reading performance after the VSM intervention in comparison to his past performance. On the Observational Comparison and Social Feedback Scales, results depicted a slight decline with both pre-test and post-test responses remaining in the low range. This decline indicated that Lucas may have changed his perception of how he compared his reading with that of his peers and of the social feedback he received for reading performance. His responses to questions on the Psychological States Scale resulted in a decline from the average range to the low range which may have indicated a decrease in internal comfort when reading. Lucas' results on the RSPS are mixed (see Figure 3.3 and Discussion section).

**Social validity.** Lucas maintained an acceptable level of appropriate behavior during the time he spent with the researcher during pre-assessments and post-assessments, introduction and interviews, and participation in all conditions of the study. During 4 out of 19 sessions, notes were made that the Lucas complained about participating, seemed disgruntled, and was distracted by a friend's situation. Notes were also made that Lucas volunteered to go first, and seemed very excited during other sessions. These behavioral observations indicated that Lucas maintained acceptable behavior 100% of the time and seemed motivated and engaged while procedures were implemented during 80% of the sessions and while recording his VSM DVD.

In response to the interview questions, Lucas answered that he liked participating in the study and really liked the video that we made. He said he liked making the video and thought that it helped him to read better. He said that he would make another video because it helped his reading. He liked the reinforcers and stated that at the beginning of the study he did not know if he would have participated without the reinforcers, but that



*Figure 3.3.* Graphic display of *Readers Self Perception Scale* (RSPS; Henk and Melnick, 1995) pretests/posttests results for Experiment I. The RSPS was employed to assess changes in participants’ oral reading self-efficacy. Each datum label includes the raw score and score interpretation of each Scale for each administration (pre/posttest) of the assessment. Each Scale has a different, raw-score range. The raw scores were interpreted (H=high, A=average, and L=low) as directed in RSPS. Adapted from “The Reader Self-Perception Scale (RSPS): A New tool for Measuring How Children Feel about Themselves as Readers” by W. A. Henk and S. A. Melnick, 1995, *The Reading Teacher*, 48(6), pp. 478-480.

he would the next time. Based upon Lucas' improved oral reading-fluency level, maintenance and generalization of improved skills, number of sessions to criterion, percentage of acceptable behavior during sessions, motivation and participation, and his responses to interview question, VSM feedforward appeared to be a socially valid intervention for Lucas.

### **Josiah**

**Acquisition.** Josiah was assigned a MASI-R reading passage based upon a miscalculation. His oral reading fluency, GORT-4, pre-intervention GE was miscalculated at 4.0, and he was assigned a reading passage at the fifth-grade level according to the procedures outlined in the study. That was the passage he read for the VSM DVD used for intervention.

The data demonstrated a stable, zero-celerating trend during baseline probes. A positive 3.5 WCPM change in the median level and 13.46 WCPM change in the mean level were observed. Josiah had a positive change in absolute level of 31 WCPM and a zero-celerating relative level. A variable, therapeutic trend was observed during VSM intervention. PND was calculated at 75% and in the effective range (see Table 3.3). He improved from a 1.4 to a 1.7 oral reading-fluency GE on the Gort-4 after 12 VSM intervention sessions (see Table 3.2).

Josiah's criterion was established at 72 WCPM (based upon a miscalculation) which he obtained in one session. His actual oral reading fluency GE was 1.4. Josiah should have been assigned a MASI-R passage on the second, grade level and his criterion should have been set at 82 WCPM, a criterion which he achieved in one session as well.

Josiah read a passage on the fifth grade level instead of the second; Figures 3.1 and 3.2 identify 82 CWPM as the criterion for Josiah.

Josiah's data indicated a zero-celerating data path in the baseline probe condition to a variable data path in a therapeutic trend during the intervention condition. He also had a relative change level and a . However, in consideration of the other data presented (i.e., immediate improvement in the dependent variable after introduction of the independent variable, an improving therapeutic trend during intervention, improvement in the mean and median levels, 75% PND, and criterion met), Josiah's oral-reading fluency seemed to improve as a result of the VSM feedforward intervention.

**Maintenance and generalization.** Josiah maintained his improved oral-reading fluency at a 5-day follow-up. He read a passage at 95 WCPM, 45 words over above his baseline mean level. When reading a grade-level social studies text prior to the VSM intervention, he read 40 WCPM. Following intervention, he read 48 CWPM, an improvement of 8 CWPM, indicating a generalization of improved oral reading-fluency skills (see Figure 3.1 and Figure 3.2).

**Self-efficacy.** Josiah completed a pre-administration and post-administration of the RSPS. Prior to initiating the study, he stated that he agreed with the statement that measured General Perception: I think I am a good reader. After the completion of the study, Josiah said that he was undecided. On the Progress Scale, his pre/post-test scores remained unchanged and in the low range. On the Observational Comparison, Social Feedback, and Psychological States Scales, results depicted a decline and pre/post-responses remained in the low range. This decline indicated that Josiah may have changed his perception in how he compared his reading with that of his peers and of the

social feedback he received for reading performance. His responses to questions on the Psychological States Scale may have indicated a decrease in internal comfort when reading. Josiah' results on the RSPS seem to indicate that he did not improve his reading self-efficacy (see Figure 3.3 and Discussion section).

**Social validity.** Josiah maintained an acceptable level of appropriate behavior during the time that he spent with the researcher and participated in all conditions of the study. During 2 out of 20 sessions, notes were made that the Josiah complained about participating. On one occasion, he was playing basketball and did not want to participate; he participated with encouragement and reassurance that he could return to his game. On another, he appeared to not want his peers to see him walk with the researcher; upon recognizing this, the researcher suggested they take different routes, and he agreed to participate with that condition. Other notes stated that Josiah thought his reading was improving; he was happy with how he read on two different occasions. He wanted to try second attempts to improve his performance in two other accounts. The behavior observations indicated that Josiah maintained an acceptable level of appropriate behavior 100% of the time and seemed motivated and engaged while procedures were implemented during 90% of the sessions and while recording his VSM DVD.

In response to the interview questions, Josiah answered that he liked participating in the study and never thought he would ever see himself read as well as he did in the video. He said he liked making the video and thought that it helped him to read better. He said he wanted to make another video and asked if he could take his VSM DVD home to show his mother. He liked the reinforcers but said he would have participated without them. Based upon Josiah's improved oral reading-fluency level, maintenance and

generalization of improved skills, number of sessions to criterion, percentage of acceptable behavior during sessions, motivation and participation, and his responses to interview question, VSM feedforward appeared to be a socially valid intervention for Josiah.

### **Selena**

**Acquisition.** There was a contratherapeutic data path with stability during baseline probes. During the intervention condition, a negative 1 WCPM change in the median level and a positive 4.2 WCPM change in the mean level were observed. Selena had a positive change in absolute level of 12 WCPM and a decrease of 9 CWPM in relative level. A multiple path, with a variable, improving, therapeutic trend was observed during VSM intervention. PND was calculated at 40%, ineffective (see Table 3.3). She improved from a <1.0 to a 2.0 oral reading-fluency GE on the Gort-4 after 10 VSM intervention sessions (see Table 3.2).

Selena did not meet her established criterion of 82 WCPM. The PND of Selena's data is low, she did not meet criterion, there was a slight decrease in median and relative levels, and the data path was variable in the intervention condition. However, in consideration of the other data presented (i.e., immediate improvement in the dependent variable after introduction of the independent variable, an improving therapeutic trend during intervention following a stable contratherapeutic trend in the baseline probe condition, improvement in GE, and improvement in the mean level), Selena's oral-reading fluency seemed to improve as a result of the VSM feedforward intervention; however, it was not enough to demonstrate a positive effect.

**Maintenance and generalization.** Selena maintained her improved oral-reading fluency at a 2 day follow-up. She read a passage at 53 WCPM, 9 WCPM above the baseline probe condition mean and 1.8 WCPM above the intervention mean level. When reading a 6th-grade, social studies text prior to and after the VSM intervention she read 37 WCPM during both. The static data indicate that Selena's oral reading-fluency skills did not generalize with the chosen text (see Figure 3.1 and 3.2).

**Self-efficacy.** Selena completed a pre-test and post-test of the RSPS. Prior to and after completion of the study, she stated that she agreed with the statement that measured General Perception: I think I am a good reader. On the Progress Scale, she improved from a score in the low range to the average range. This indicated that she had an improved perception of her present reading performance after the VSM intervention in comparison to his past performance. On the Observational Comparison Scale, results depicted a slight decline with both pre- and post-responses remaining in the low range. This indicated that Selena may have changed her perception of how she compared her reading with that of her peers. Her scores were the same on the Social Feedback Scale indicating her perception of the social feedback she received for reading performance remained unchanged. Her responses to questions on the Psychological States Scale resulted in a decline in scores with both remaining in the average range. This may have indicated a decrease in internal comfort when reading. Selena's results on the RSPS are mixed (see figure 3.3 and Discussion section).

**Social validity.** Selena maintained an acceptable level of appropriate behavior during the time she spent with the researcher and participated in all conditions of the study. During 3 out of 20 sessions, notes were made that the Selena complained about

participating. During the first session, she needed reassurance that her grandmother gave permission for her to participate. At another session, she seemed very distracted, as evidenced by asking about the researcher's bracelet during VSM DVD viewing, and said she was not feeling well when questioned. During her maintenance session on the last day of the school year, she did not want to participate. After encouragement, she agreed to participate if the researcher did not record the session. It was also noted that Selena was cooperative, was attentive to the video, and put forth good effort. She asked for a second attempt to improve her performance as Josiah had done. The behavior observations indicated that Selena maintained an acceptable level of appropriate behavior 100% of the time and seemed motivated and engaged while procedures were implemented during approximately 85% of the sessions and while recording her VSM DVD.

In response to the interview questions, Selena answered that she liked participating in the study and she thought it helped her reading. She said she liked making the video, but it was jumpy. She said she wanted to make another video and asked if she could take her DVD home to show her mother. She liked the reinforcers but said she would have participated without them. Based upon Selena's improved oral reading-fluency level and reader self-efficacy on the Progress Scale, maintenance of improved skills, percentage of acceptable behavior during sessions, motivation and participation, and her responses to interview question, VSM feedforward appears to be a socially valid intervention for Selena.

The teacher was interviewed as a measure of social validity as well. He was asked if he believed that he could implement VSM on his own and to describe supports he

would need. He was also asked if he believed that students benefited from the study. His responses indicated that he believed he could implement VSM but needed support with videotaping and editing. He said he needed someone to teach him because he did not have time to learn on his own. He responded that he believed that VSM had helped his students become more confident readers because they wanted to read in class and practice their oral reading.

### **Teacher**

**Social validity.** The teacher was interviewed as a measure of social validity. He was asked if he believed that he could implement VSM on his own and to describe supports he would need. He was also asked if he believed that students benefited from the study. His responses indicated that he believed he could implement VSM but needed support with videotaping and editing. He said he needed someone to teach him because he did not have time to learn on his own. He responded that he believed that VSM had helped his students become more confident readers because they wanted to read in class and practice their oral reading.

## **Chapter Four**

### **Experiment I**

#### **Discussion**

A treatment effect was demonstrated for 2 out of 3 of the participants based on data for each of the 2 indicating effective (75%) or very effective (100%) PND (Bellini & Akullian, 2007; Gast, 2010). Additionally, the data demonstrated that criteria were met, and that there were maintenance and generalization of improved oral reading-fluency skills. Improvements in GE were also evident. The research questions, data analysis and revelations of the study are discussed in the paragraphs below.

The researcher investigated five research questions in the current study. First, after implementation of a VSM intervention targeting oral reading fluency, will the rate of oral reading fluency improve for middle school students with disabilities, a history of behavior problems, and who are below grade level in oral reading fluency? The data indicated that the 3 participants who completed the study improved their mean levels for oral-reading fluency during the VSM intervention condition (see Figure 3.1). The two 13-year-old middle-school students and one 14-year-old who were the participants of this study exhibited behaviors associated with the following diagnoses: Attention Deficit/Hyperactivity Disorder, Post Traumatic Stress Disorder, Reactive Attachment Disorder, Oppositional Defiant Disorder, and Obsessive Compulsive Disorder. Their IQ scores ranged from FS 63- FS 91, and they were all in the same self-contained classroom for students with EBD due to a history of problematic behaviors. The disability areas under which the individual students qualified for special education services included the following: EBD, Other Health Impairment, Specific Learning Disability, and Mild Mental

Disability. Additionally, each read 2-6 years below the grade level in which they were enrolled.

All 3 participants demonstrated stable, zero-celerating or contratherapeutic data paths during baseline-probe conditions. In the case of each participant, there was an observed change in the dependent variable after introduction of the independent variable (i.e., absolute change in level) (see Table 3.3). This indicated a functional relationship between the dependent variable, and oral-reading skills and the independent variable (VSM self-modeling).

Additionally, two of the students had positive relative-level changes; one had increased median levels, and all three improved mean levels. All participants had improved oral-reading fluency, grade-equivalent scores (e.g., .4 to 1.0 GE) between the GORT-4 pretest and posttest measures (see Table 3.2). The calculated PNDs across participants were 100%-very effective, 75%-effective, and 40%-ineffective (Bellini & Akullian, 2007; Gast, 2010). A PND calculation of 40% for one student, and variability in data for two are concerning. An analysis of the data over multiple measures, shows some indication that after implementation of a VSM intervention that oral reading fluency improved for these middle school students with disabilities, a history of behavior problems, and who were below grade level in oral reading fluency. However, threats to validity and other limitations must be considered and further replication of this study is necessary before that functional relationship can be drawn from these findings.

Treatment efficiency was not specifically addressed in this study, but it is worth noting. Lucas made a gain in oral reading fluency of .7 GE on the standardized GORT-4 assessment. Josiah made a .3 GE gain and Selena made a gain of 1.0. The students

participated in an average of 11.7 sessions at approximately 10 min/session. Given that these gains occurred after participating in instruction an average 117 min indicates that VSM feedforward appeared to be an efficient instructional procedure. This seemed more impressive when the information is contrasted with the fact that Selena was reading at the pre-primer level near the end of sixth grade, when the study began.

Second, after implementation of a VSM intervention targeting oral reading fluency, will the participants' rate of oral reading fluency maintain after concluding the VSM intervention? The maintenance data for all 3 participants were above the mean levels demonstrated during baseline-probe conditions for each, although only slightly for one. Additionally, for 2 participants, the data were above the mean levels for the intervention condition (see Figure 3.1 and 3.2). Maintenance sessions were conducted at 1 week for Lucas, 5 days for Josiah and 2 days for Selena. The reason that there was not a greater duration of time between the intervention condition and maintenance session was because the study was conducted through the last day of the school year for participants in Experiment I. The improved oral-reading fluency skills that the participants' acquired were maintained as indicated by the data on the days that they were collected.

Third, after implementation of a VSM intervention targeting oral reading fluency, will the participants' rate of oral reading fluency generalize to grade level text? Generalization of improved oral-reading fluency to grade-level, social studies text was demonstrated by two of three participants. One participant's generalization performance remained unchanged (see Figure 3.1 and 3.2). Lucas had an improvement of 10 WCPM and obtained a level above his baseline mean. Josiah improved by 8 CWPM, although he did not reach a level above baseline. In all three cases, the generalization WCPM was

below the participants' baseline mean. The researcher discovered near the end of the study that the participants had not actually used their social studies books during the school year, or had used them rarely, indicating a generalization of improved skills to unfamiliar grade-level text by two of the participants.

Another caveat regarding generalization in this study is that the social studies text was intended for students who read on the 6<sup>th</sup> grade level or above. None of participants in this study read at that grade level. The context and vocabulary may have been at a level beyond which the participants have could have better demonstrated improved skills. For future studies, generalization might be conducted with unfamiliar, instructional texts on the actual reading level of the individual participants.

Fourth, will student self-efficacy improve in the area of reading fluency as determined by the RSPS? Performances on pre/post-administrations of the RSPS only indicated improvement in the Progress Scale for two out of three participants. This scale refers to how a student's perception of past performance compared to their present. Other responses remained unchanged or indicated a decline in reader self-efficacy.

The participants made comments that certainly indicated that they had improved their self-efficacy in reading. Both their teacher and the researcher observed behaviors or comments made by the participants that indicated that reading self-efficacy had improved. They seemed to engage in the treatment freely and often seemed happy to do so. They made gains in oral-reading fluency. Additionally, their reading scores improved from pre-test to posttest; however, based upon this RSPS assessment, The VSM feedforward intervention did not result in improved reading self-efficacy. More research

is needed in this area. Another instrument may be needed to assess student, reading self-efficacy.

Fifth, is VSM a socially valid intervention for improving reading fluency?

Improved participant performance in oral-reading fluency, and participant and teacher responses to interview questions demonstrated that VSM feedforward was a socially valid oral reading-fluency treatment. The social validity of the intervention is evidenced by the treatment gains (Pigott & Gonzales, 1987). Both Lucas and Josiah met the criteria established for them, and Selena made improvement on CWPM and improved oral-reading fluency by one grade level on a standardized assessment after the intervention. Lucas improved his oral-reading fluency by a .7 grade level. Josiah, after 9 years in a public school setting, was reading on a first-grade level. That he improved his CWPM by one season after the VSM feedforward intervention condition seemed to indicate that it was an efficacious treatment for improving oral-reading fluency as well.

Finally, social validity is evidenced in the data collected from the protocol checklists (see Appendix A). Though participants' problematic behaviors were encountered by the researcher, they were able to participate in the study sessions 100% of the time. The percentage range in which they participated willingly (without the need of encouragement from the researcher) was 80-90%. Additionally, during most sessions the students seemed engaged and motivated by their VSM DVD's and the intervention. Just as reported in Buggey (2007) and Marcus and Wilder (2009), all participants in this study seemed to enjoy viewing their video tapes. All 3 made this clear when they asked for copies to take home and show their parents. The participants attended to the videos during intervention sessions. Only one, Selena, had brief instances of inattention to her

video. She responded to all prompts when the researcher reminded her to look at her video.

The participants seemed to enjoy making the videos as well. The videos were created in one session for all three participants. The teacher expressed surprise by this fact as he noted that lengthy, on-task behavior was difficult for these participants to maintain. They each seemed motivated and engaged in creating and watching their videos. Buggey (2007) stated that, “we have never encountered a student who did not enjoy the taping process and viewing the videos” (p. 157). That was this researcher’s experience as well.

### **Limitations and Threats to Validity**

The current study provided valuable information on the effectiveness of VSM feedforward in improving oral reading fluency. Some procedures and occurrences need further explanation. Limitations and suggestions are noted in the topics below.

**Fidelity of implementation.** Did this study adhere to procedures? Fidelity of implementation refers to the extent that an intervention is applied as designed according to structure and process. It can also reveal the components of an intervention that need to be manipulated in order to improve the intervention. When fidelity of implementation is high, it increases the likelihood that an intervention is feasible and will be utilized to improve students’ academic skills (O’Donnell, 2008). According to the protocol checklists, procedures for this study were followed 100% of the time, and IOA was calculated at 98.48% across all conditions and participants.

A fidelity of implementation threat occurred; however, it was not measured by the protocol checklist or during IOA data collection. This threat was a misinterpretation of

Josiah's Gort-4 scores that resulted in the researcher assigning him a passage to record for his VSM DVD that was on the fifth-grade level rather than the second-grade level passage as should have occurred per the procedures of the study. The mistake was not discovered until after the VSM DVD had been recorded. During intervention, Josiah used the VSM DVD recorded with the fifth-grade level passage. Re-recording the VSM DVD with a second-grade level passage could have posed other maturation and history threats.

Would Josiah have experienced a greater improvement in oral reading fluency had he read from a second-grade rather than fifth-grade passage? In a discussion of operant conditioning, Skinner (1953) wrote that the change in a pattern will be greater if the height (i.e., level) that is reinforced is one that is seldom reached. The fifth-grade reading level is certainly one that Josiah had seldom reached. Did this misinterpretation result in reinforcement of a greater "height" and expectation?

For the procedures of this study, the researcher made the decision to set the VSM DVD passage at one grade level beyond that of the participants; however, current VSM literature does not indicate how to determine an ideal level. In Dowrick et al. (2006), the participants read passages "at a frustration level" (p. 198) for their VSM oral reading fluency video. In Greenburg et al. (2002), the participants read a "goal level" (p. 10) passage for their videos. In Power et al. (1999) a student read a pre-primer passage "more fluently than she ever had before" for her video. In Hitchcock et al. (2004), students read a passage "on their instructional level" (p.95). The level of the VSM video passages was not defined in any of those studies.

Although the decision of the reading level of the passage for the VSM DVD was well-informed, it was made somewhat arbitrarily, by necessity. Perhaps a decision for a

passage, two grade levels above current reading level might have been a better choice. Skinner (1953) may offer additional insight. He noted that, “The organism must be stimulated by the consequences of its behavior if conditioning is to take place” (p.66). Protocol checklist notes elucidate that the students were engaged and motivated to participate in the treatment. Josiah’s smiles and comments seemed to indicate that he was motivated by his expectations of improving his reading and was excited to see himself reading at that fifth grade level, well beyond what he previously imagined possible. What are those increments of expected improvements (reading passage difficulty for VSM feedforward videos) that are most likely to motivate and facilitate greater increases in self-efficacy, or in fluency? This question cannot be answered without further research.

Although, the procedures for determining the reading fluency level of Josiah’s VSM DVD were altered, his oral-reading fluency did improve. The multiple-probe design demonstrated that that there was a positive effect for Josiah. The misinterpretation could have posed a serious threat to the study, but Josiah’s performance improved, and the literature does not support a particular method for selecting the level of reading passages for VSM. Therefore, a threat does not seem to have occurred in this case.

**Instrumentation.** Instrumentation is a threat to internal validity. Did the quality of the VSM DVD’s impact the participants’ progress towards acquisition of improved oral reading fluency? As discussed in the methods section, all of the VSM DVD’s were reviewed by the researcher and the scorer to ensure they exactly reflected the assigned passage from the MASI-R. This was achieved at 100%. However, Selena’s VSM DVD lacked the same viewing quality and aesthetics of the others.

Selena read at <1.0 GE and her reading passage was on a second grade level. She decoded many of the words she encountered, slowly. She often spent nearly 3-s on each word she pronounced and resisted assistance. The researcher's oral reading of the passage gave Selena the model she needed. The video was recorded in short phrases or individual words. Selena's video, partially due to the extensive editing required to publish the video, was "jumpy." Jumpy is the word she used to describe her DVD. The researcher concurred that jumpy was an accurate assessment of the quality of her edited DVD. The quality of the sound of the DVD and verbal depiction of the reading passage seemed adequate, if not perfect. However, viewing the DVD clearly exposed the many edits required to publish the DVD with auditory accuracy.

Could a passage with a reduced difficulty level have resulted in a better quality, reading fluency DVD for Selena and improved her performance? Should a new video have been recorded? Neither of these options was available for this study as they veered from the procedures and could have resulted in a threat to internal validity and history. Nor can we answer the question as to whether or not a better DVD would have improved her performance without further research. These questions are addressed in implications for further research.

**History.** Did reading instruction occur that could have influenced the outcome of the study? Only Selena was reported to have regular reading instruction over the course of the study. The teacher was interviewed and asked to describe the typical instructional day for the participants. He was not asked to refrain from engaging in reading instruction; however, he was asked to refrain from providing instruction in reading fluency that would not otherwise have occurred in the absence of the study. He was asked to reveal if

he did engage the participants in oral reading-fluency instruction so the researcher could document it. These precautions were employed to control for history threats.

Additionally, all participants had stable baselines followed by an immediate change in the dependent variable. That is one standard necessary to establish a functional relationship between the dependent and independent variable, and controls for the threat of history.

Nevertheless, it is possible that the very act of orally reading a passage and the attention of the researcher could have had the same results. While all of the participants demonstrated maintenance of oral reading improvement above mean baseline levels, Selena's maintenance performance was only slightly above the mean. Only 2 out of 3 students demonstrated a generalization of skills to unfamiliar text. Selena's improvement in skills did not generalize.

Additionally, Selena demonstrated slight improvement in mean level, 4.2 WCPM, during the intervention condition. The PND for Selena was in the "failed" level; however, the data path in the intervention condition was similar to one (Gast, 2010, Figure 9.9, p. 216) that could lead to an incorrect conclusion when relying on PND alone. Initially, there was a contratherapeutic trend, perhaps due to novelty (see Novelty, described in this section). Selena was apprehensive in the initial sessions and read more slowly. As her comfort level improved, the data path changed to a therapeutic trend. Regardless, the absence of a third replication with more definitive results is a limitation that prevents the determination that a functional relationship exists between VSM feedforward and the improvements made in oral reading fluency by these participants.

**Maturation.** Did maturation threats occur during implementation of the study?

*Dependent variable.* The study was carried out in a relatively short amount of time. The stable zero-celerating and contratherapeutic data paths during the baseline probe conditions controlled for the threat of maturation. It is unlikely that maturation could have occurred; however, one concern was that the researcher could require an extensive amount of time to prepare the VSM DVDs and maturation could occur in the interim. To control for this threat, each video was edited and produced the day after taping or over a weekend. There was no interruption in the schedule of the experiment due to tape preparation.

A second concern was that conditions could have been lengthened beyond the time anticipated due to student attrition, absences or school interruptions. Participants' attendance was good during this experiment; however, interruptions and student attrition did occur. On different occasions, the researcher was asked to refrain from seeing students because the study fell during the state testing window, the teacher was absent, or due to end-of-school-year activities. Maturation could have occurred and impacted the performance of students due to learning during participation in the state mandated testing. A factor that reduces that possibility was that the participants were not required to participate in instruction when in their self-contained classroom on testing days.

Another factor that limited the possibility of maturation was that the students were administered the state-mandated tests in a one-to-one setting. All questions were read to students per the requirements for testing modifications and accommodations as outlined in their IEPs, and oral reading was not a component of the state-mandated tests. Therefore, reading opportunities that may have resulted in a maturation threat were avoided.

*Reading self-efficacy.* While the multiple baseline probe single subject research design controlled for maturation for the independent variable, VSM feedforward, it could not control for the unexpected decline in the participants' reading self-efficacy nor reveal the reasons that it occurred. The researcher noted in the social validity assessment of the participants that they believed that their reading had improved as a result of the study; however, in most cases, the RSPS did not substantiate those claims.

One plausible explanation for the apparent decline in reading self-efficacy may be due to maturation confounding. The participants may have matured in their assessment of their own reading ability, or they may have provided the researcher with a more honest assessment at the time of the RSPS post-test. When the researcher administered the RSPS pretest, the participants, whether reading on a first or fourth-grade level, reported that they were good readers. At pre-test, the researcher was previously unknown to the students. The participants may not have wanted to admit to the "novel" individual, the researcher, that his/her reading skills were below the level expected of them. They may not have been aware of their actual reading level or the extent of their reading deficits prior to participating in the study.

Dowrick et al. (2006) stated that 6-year-olds had difficulty making reliable assessments of their reading when using a Likert type scale, even after attempts had been made to simplify the measure. Although, the RSPS is a standardized measure, perhaps such an assessment is also difficult for students who have a history of behavior problems and learning disabilities and spend much of their instructional time in a self-contained classroom for students with EBD. He suggested that a better assessment may be one that teachers could complete based on their observations of student behaviors related to

reading self-efficacy. This researcher tends to agree. The negative outcomes of the RSPS post-test, when contrasted with the positive responses to the social validity interviews, and both teacher and researcher observations suggest that the participants in this study did not provide a reliable assessment of their reading performance, at least in their initial perception of their reading skill.

**Participant attrition.** Student attrition presented a threat to this experiment. Jacob, the final participant, was administered the pretest and generalization CBM, and completed the baseline condition. He was withdrawn from school before his VSM DVD was recorded. His completion of the study would have provided a fourth replication of the VSM intervention, thereby lessening the threat posed by the mistake in the selection of Josiah's reading passage and Selena's failure to reach criterion or generalize the slight gains she made in oral-reading fluency to unfamiliar text.

**Compensatory rivalry.** Shadish, Cook, and Campbell (2002) warned against compensatory rivalry as a possible threat to construct validity. The participants of the study were in contact with each other. Competition could have developed between participants to outperform or underperform those in the same classroom. In order to control for this threat, participants were reminded that they were not competing with each other. Compensatory rivalry was not observed by the researcher.

**Novelty and disruption effects.** Novelty and disruption effects could have occurred. The participants had not experienced a VSM intervention. Planning and taping a VSM videotape, viewing it each day, followed by reading timed passages was an interruption to the participants' typical school day. Josiah complained that he did not want to miss his basketball game at one point. To avoid most disruptions, the researcher

planned the schedule with the teacher. Additionally, each of the participants had a decrease in performance after the initial intervention session. This decrease could have occurred due to a novelty effect: a reaction to novel conditions, researcher, video-recording, or other changes from the ordinary. This threat was diminished by controlling for factors that could impact the typical environment (e. g., limiting disruption of schedules).

**Experimenter expectancy (i.e., bias) and Hawthorne effect.** Did the researcher's expectations influence the outcomes of the study? The teacher or researcher could have expected positive changes in the students' reading fluency and passed this expectation along to the students. In fact, the students knew that the purpose of the study was to improve their oral-reading fluency, and they were attempting to read as well as possible in creating their VSM DVDs. The attributes of the multiple baseline-probe design and an adherence to ensuring stable data trends in the baseline probe condition before introducing participants to intervention controlled for this threat. Additionally, multiple measures (i.e., RSPS, GORT-4) were employed to ensure that the researcher's opinion could not influence outcomes.

Non-contingent reinforcement of participants was paired with the independent variable, VSM feedforward. Did non-contingent, tangible reinforcers (i.e., food items) used to reinforce student participation influence outcomes of this study? The students were not reinforced with food items for their performances on the CBMs.

The VSM DVD was recorded with the students smiling at the end of the video. The purpose was to depict the students as they might appear if proud of their own performance, and the researcher focused her reinforcement of students on their

participation. The teacher was asked to avoid atypical encouragement regarding oral reading by students as well. These procedures were employed to control for bias.

**External validity.** Was external validity threatened due to the variation in the disabilities of the different participants? Are the characteristics of the participants similar enough that VSM feedforward can be expected to have the same effect on a similar population of students? Will generalities be able to be drawn from this study?

Participants with similar characteristics (i.e., intelligence, disabilities, grade, and age) were chosen to the extent possible. They differed by gender, slightly by age and grade, and somewhat in intelligence, diagnoses, and disability. Regardless, these participants were highly similar in behavioral characteristics and learning needs as evidenced by their placement in an EBD, self-contained classroom, perhaps the most segregated population (based upon learning and behavioral characteristics) of any other school population.

External validity was strengthened by the selection of this population. Based upon the results of this study, with 2 out of 3 students meeting criterion, some gains in reading fluency may be expected when VSM feedforward is employed with middle-school students with EBD in other self-contained setting. Some improvement in results may also be expected when VSM feedforward is applied to oral reading fluency for students with EBD who are included in typical classrooms due to the generalization of skills for 2 out of 3 participants. However, Selena did not make the same gains as Lucas and Josiah.

Baker et al. (2007) stated that VSM was a treatment that could be employed for students with EBD in inclusive settings without interruption of the instruction in the typical setting. More research is needed to substantiate the external validity of VSM and academic skills of students with disabilities. Further research is also needed to expand the

literature about VSM when employed to improve the academic skills of students with EBD in self-contained and inclusive settings.

**Ecological validity.** Ecological validity refers to whether a study is relevant and to the extent at which it can be implemented in a non-clinical setting (Gast, 2010). Can a VSM feedforward intervention to improve oral-reading fluency be implemented in school (non-clinical) settings? The outcomes for this study indicated that it can be; however, the school staff had only limited involvement in this study. The entire study was conducted by the researcher in the school setting and without any other assistance beyond that described in the procedures. It was convenient that the other students in the classroom were under the supervision of their classroom teacher and two paraprofessionals.

A teacher could implement this strategy alone, but having the assistance of additional staff would be of benefit. The current study was an outcome of past research in the study of VSM, and this researcher's own successful implementations of VSM feedforward to teach students bowling skills, pencil use, and classroom rules; decrease spitting, assaults, and time to initiate tasks; and increase time-on-task. This researcher's prior, school-based implementations of VSM interventions were conducted with the help of paraprofessionals or other professionals in all cases. It is expected that a classroom teacher would find similar support helpful when implementing VSM feedforward in the classroom setting.

## **Chapter Five**

### **Experiment II**

#### **Method**

Like Experiment I, Experiment II was conducted in order to evaluate the effects of VSM, video feedforward, on reading fluency of middle-school students. Experiment II was a replication of Experiment I. The procedures of this study were identical to the ones followed in Experiment I with few exceptions. Most differences involved changes in participants and setting. Procedures for Experiment II, along with any variations from Experiment I, were described in this section.

#### **Participants**

The participants in Experiment II included the researcher, scorer, 2 classroom teachers, and 5 students.

**Researcher.** The researcher of Experiment I also conducted Experiment II. The researcher implemented all procedures including videotaping and video production, student viewing of VSM videos, pretests/posttests, and baseline, instructional, maintenance, and generalization sessions. The procedures were summarized in Table 3.1. The protocols were the same as those used for Experiment I (see Appendix A).

**Classroom teachers/contributions.** There were two classroom teachers involved in Experiment II. Both possessed special education teaching certification specific to their student population. The first teacher in Experiment II had certification in Learning and Behavior Disorders. She had taught middle school for 7 years. She had been in her current position, teaching in a classroom for students identified with EBD, for 5 years.

The second teacher in Experiment II had taught special education for 15 years, and had students who were identified with Multiple Disability or Moderate/Severe

Disability for approximately 11 years. The second teacher assisted in observing instructional sessions (independent variable) and inter-observer assessment (IOA; dependent variable reliability). She had recently successfully defended her thesis for a Master's degree and held certification in Moderate/Severe Disabilities.

The teachers made the same contributions in this study as did the teacher in Experiment I with the exception described above. The teachers outlined the schedule for researcher access to the participants based upon student and classroom schedules or events that occurred during this study. Some of those included altered class schedules, special programs (e.g., assemblies), and holidays.

The second teacher in Experiment II was the only one to collect procedural reliability in either study. She collected data on the independent variable during two sessions. She used a Protocol Checklist Reliability Data Sheet (see Appendix A). The researcher explained procedures for completing the checklist. The teacher acknowledged understanding of the procedures: place a check mark by each event as it occurs during the session.

**Teacher training.** Teacher training was identical for Experiments I and II with one exception. One teacher was trained to collect procedural reliability as described above. She had previously completed the online research ethics training (CITI; 2010).

**Reliability data collector/scorer.** The same scorer collected procedural and IOA reliability during Experiment I and Experiment II. She followed the same methods for each with one exception. The scorer viewed raw video footage of individual participants rather than footage that was edited for the purpose of reliability data collection. In Experiment II, the researcher cued the raw video footage for the scorer. When the tape

was cued, the scorer was able to observe session procedures, the VSM intervention, or administration of CBMs. The researcher asked the scorer if she agreed that the alternative viewing method was equivalent with the method in Experiment I. She stated that the alternative method did not have an effect on the procedural or IOA reliability data collection.

**Students.** The researcher obtained students' assents for participation in the study in a manner identical to that in Experiment I. Criteria for participation in Experiment II were identical to Experiment II as well. A total of 5 middle-school students with a history of behavioral problems completed the study in Experiment II.

**Students Descriptions.** Dennis was a 12-year-old white male with EBD in the seventh-grade. He was eligible for free and reduced lunch through the *National School Lunch Program* (Healthy Hungry-Free Kids Act, 2010). He resided with his mother. He was prescribed medications to help control symptoms of Attention Deficit/Hyperactivity Disorder, Oppositional Defiant Disorder, and Mood Disorder. Documentation of when he first began receiving special education services was not available. Dennis received approximately 80% of his instruction in a self-contained classroom for students with EBD. He participated in Related Arts in the general education setting when the study was initiated. He scored a FS-78 on the WISC-IV. Dennis's adaptive behavior score was 84, moderately low, on the *Vineland Adaptive Behavior Scale, Second Edition* (Vineland-II; Sparrow, Cicchetti, & Bolla, 2005). He scored 833 L in reading on the MAP, indicating that he was performing below his current grade level. He did not have reading objectives on his current IEP. Dennis' teacher said that he read better when his behavior was under control.

Adam was a 13-year-old white male with EBD in the seventh-grade. He was eligible for free and reduced lunch through the *National School Lunch Program* (Healthy Hungry-Free Kids Act, 2010). He resided with his mother. He was prescribed medications to help control symptoms that contribute to his EBD. Specific diagnoses were not documented. Knowledge of when he first began receiving special education services was not available. Adam received approximately 80% of his instruction in a self-contained classroom for students with EBD. He participated in the following courses in the general education setting when the study was initiated: Related Arts. He scored a FS-72 on the *Wechsler Intelligence Scale for Children-R* (WISC-R; Wechsler, 2003). Adam's adaptive behavior score of 73 on the Vineland-II was in the moderately low range. He scored 586 L, the low range, in reading on the MAP, indicating that he was performing below his current grade level. Adam's IEP contained a reading objective for predicting outcomes.

Isaiah was a 12-year-old male whose race was indicated as "other." He was in the seventh-grade. He was eligible for free and reduced lunch through the *National School Lunch Program* (Healthy Hungry-Free Kids Act, 2010). He resided with his parents. He had a learning disability; the specific area of the learning disability was not available. He was prescribed medications to help control symptoms of Attention Deficit/Hyperactivity Disorder, Oppositional Defiant Disorder. It was unclear how long Isaiah had received special education services. Isaiah received approximately 100% of his instruction in a self-contained classroom for students with EBD. He scored a FS-67 on the WISC-IV. Isaiah's adaptive behavior score was unavailable. He scored 0 L in reading, beginning level, on the MAP during the most recent attempt, as reported by his teacher. Isaiah's IEP

contained reading objectives for scanning a passage for specific information and answering comprehension questions. Isaiah's teacher stated that he was working on basic sight words.

Tobias was a 13-year-old white male with Other Health Impairment in the seventh-grade. He was eligible for free and reduced lunch through the *National School Lunch Program* (Healthy Hungry-Free Kids Act, 2010). He resided with his mother. He was prescribed medications to help control symptoms of Attention Deficit/Hyperactivity Disorder. Documentation of when he first began receiving special education services was not available. Tobias received 13% of his instruction, Advisory, in a self-contained classroom for students with EBD. He participated in the general education setting with collaborative support for all other academic instruction. He scored a FS-91 on the WISC-IV. Tobias's adaptive behavior score was 69, low, on the Vineland-II. His current reading scores on the MAP were not available. His special education teacher indicated that he was performing at his current grade level with adequate comprehension; she referred him for this study to improve his reading fluency. His Gort-4 pretest scores indicated that he was reading below grade level as shown in Table 3. Tobias did not have reading objectives on his current IEP.

Melissa was a 12-year-old white female with articulation disorder and Multiple Disability in the areas of Other Health Impairment and Mild Mental Disability. She was in the sixth grade. She was not eligible for free and reduced lunch. Melissa resided with her parents. She was prescribed medications to help control symptoms of allergies, Attention Deficit/Hyperactivity Disorder, aggression, and medical conditions associated with a genetic disorder: heart defect and palatal abnormalities. Melissa had received special

education services since preschool. Prior to the current school year she had received most instruction in special education resource or general education/collaborative settings. Melissa received 40% of her instruction in a self-contained classroom for students with MD to address functional academic skills. She participated in general education classrooms 40%-80% of the time: Reading, Related Arts. Due to Melissa’s articulation disorder and language deficits, she was administered nonverbal, standardized intellectual assessments so that she could respond without being penalized for those deficits. She scored a 48, lower extreme, on the Nonverbal Index Scale (NVI) of the *Kaufman Assessment Battery for Children, Second Edition* (KABC-II; Kaufman & Kaufman, 2004) and, previously, FS-71, delayed, on the *Universal Nonverbal Intelligence Test* (UNIT; Bracken & McCallum, 1998). The examiner noted that Melissa’s score on the KABC-II should be interpreted with caution due to observed impulsivity and questionable effort. Her score of 78 on the Vineland-II was in the moderately low range. Melissa’s individualized education program contained objectives for functional reading and articulation. Her mispronunciations of words were not counted as errors as long as the researcher and scorer could determine that Melissa’s intention was to read the corresponding word in the CBM passage.

Table 5.1.

*Experiment II: Student Characteristics*

Descriptors	Participants				
	Dennis	Adam	Isaiah	Tobias	Melissa
Gender	M	M	M	M	F
Age	12	13	12	13	12
Grade Level	7	7	7	7	6

Table 5.1 (continued)

Descriptors	Dennis	Adam	Isaiah	Tobias	Melissa
Ethnicity	W	W	Other	W	W
Disability	EBD	EBD	EBD	OHI	MD
Time in SE, SC	80%	80%	100%	20%	40%-80%
Intelligence	WJ-III 78	WISC-R 72	WISC-R 67	WISC-R 91	KABC-II 48 UNIT 71

Note. M = Male; F = Female; SE = Special Education; SC = Self-Contained; EBD = Emotional-Behavioral Disability; Other Health Impairment = Other Health Impaired; MMD = Mild Mental Disability; MD = Multiple Disability; WJ-III = *Woodcock Johnson-Third Edition*; WISC-VI = *Wechsler Intelligence Scale, Fourth Edition*; KABC-II = *Kaufman Assessment Battery for Children, Second Edition*; UNIT = *Universal Nonverbal Intelligence Test*

## Setting

**School and geographic locations.** The middle school where Experiment II was conducted was located in a city with a population calculated at 31,364. The school had approximately 631 students. The minority population of the school was 9%. About 45% of the total school population qualified for free and reduced lunches.

**Concurrent reading instruction.** The researcher obtained general descriptions from the teachers about the typical, daily instruction in their classrooms in a manner identical to that in Experiment II. The first teacher's classroom instruction adhered to a schedule that was maintained every day. At the beginning of the day, all of the students read silently for 20 min. Dennis, Adam, and Isaiah read silently for 20 min in the EBD self-contained classroom. Tobias read silently in another classroom. Following silent reading, Dennis, Adam, and Isaiah engaged in language arts instruction. Tobias came to

the classroom for advising and then attended a class for language arts instruction. Dennis and Adam went to a reading class in the second quarter of the school year but stayed in the classroom during the first quarter when the study was conducted. Isaiah remained in the EBD classroom for more reading instruction and a break. Oral reading fluency was not formally addressed as reported by the teacher. The students engaged in math, science, and social studies instruction in the afternoon.

**Recording of VSM DVD's and conditions.** Recordings took place in the school's conference room. This room's dimensions were 10 ft by 10 ft and it was entered via a school corridor. It was located across from the participant's classroom. The arrangement of the room included a round table. The participants sat across from the researcher to create their VSM videos. In this setting, the camera was set to capture a direct view of the students' faces as they appeared to read fluently from their assigned, reading passage. Videotaping was occasionally paused due to noise in the hallway during class changes.

The same room was used for most sessions across all conditions. Occasionally, if the primary conference room was occupied, another adjacent conference room was available. It was 8 ft by 10 ft in dimension and had a rectangular table at which the student usually sat perpendicularly to the researcher to read his/her assigned passage or view his/her VSM video.

### **Materials and Equipment**

The following materials and equipment were utilized in the commission of Experiment II.

**VSM video recording.** Materials and equipment used for recording the individualized VSM videos in Experiment II were the same used for Experiment I.

**VSM editing.** All video editing was conducted in the same manner in Experiment II as they were in Experiment I.

**Viewing the VSM movie.** During the VSM intervention sessions, the students viewed the VSM video in the same manner as the students in Experiment I.

**Assessments.** Standardized measures were administered to participants to determine their oral-reading fluency grade level and perceived, reading self-efficacy. Another assessment was utilized with grade level text from which students could read passages in order to record their VSM DVDs.

**Reading.** The GORT-4 was used to obtain standardized fluency scores for all participants. The administration of the test was identical to that in Experiment I. The MASI-R informal assessment was utilized to provide the text for the VSM fluency reading video. The passage that was used was determined based upon the students' instructional reading levels according to the GORT-4

**Self-efficacy.** The RSPS was administered to each student in Experiment II in the same manner as in Experiment I.

## **Procedures**

The procedures for this investigation were identical to those of Experiment I.

**Non-contingent reinforcer assessment interviews.** The researcher conducted preferred reinforcer interviews identically to those conducted in Experiment I. The students in Experiment II requested a variety of items: sports drinks, candy bars, and chips. Teachers consented to all of the items that the students requested. After each

session, the students were offered several non-contingent reinforcers from which they could choose one for their participation.

**Reading: pre-test/post-test.** The GORT-4 was administered as a pretest prior to baseline probe sessions and after all instructional sessions had been completed. These were administered in the same manner as in Experiment I. Oral reading fluency scores were obtained from this assessment and then compared to determine if improvement was evident as a result of the VSM video feedforward intervention.

**Baseline probe procedures.** Baseline probe sessions were conducted with all participants prior to filming the VSM digital recording and beginning instructional probe sessions identically to the baseline probe sessions in Experiment I (see an example of the passages in Appendix D).

**Determining oral reading fluency.** Oral reading fluency scores were determined based upon the recommendations for criteria from Alonzo and Tindall (2010) that were revised by the investigator. These criteria were identical to those followed in Experiment I.

**Making the VSM recording.** The students were assigned a reading passage from the MASI-R that was based upon the grade level they obtained on the GORT-4. The reading passage that was assigned to the students was used to create the VSM digital recordings. The recordings were created according to the same methods followed in Experiment I.

**Instructional sessions.** Instructional sessions consisted of participants viewing their individualized VSM recordings (VSM intervention). Immediately after viewing their videos, the participants read a 1-min timed CBM oral reading fluency passage

during the administration of a CBM. The instructional sessions were conducted identically to those in Experiment I. The oral reading-fluency WCPM scores of participants' were obtained and graphed.

**Post-test.** When the conditions of the study had ended for each participant, the GORT-4 and the RSPS were administered for a final time as in Experiment I.

**Social validity procedures.** The students were interviewed with the same questions and in the same way that students were interviewed in Experiment I. Their responses were summarized in the following section. The protocol checklists (see Appendix A) were also evaluated to calculate the number of sessions where students had acceptable behavior, and motivation and engagement.

The teachers in this study were also interviewed and asked questions regarding implementation and benefits of VSM feedforward for oral reading fluency based upon their observations of the researcher and the descriptions of the treatment and observations of their students. They were asked if they believed that that could implement VSM on their own and to describe supports they would need. Both were also asked if they believed the participants benefited from the study.

**Maintenance procedures.** A maintenance condition occurred after the VSM intervention has been discontinued. The maintenance sessions were conducted in the same manner as those in Experiment I. The sessions were conducted at approximately 1 and 2 weeks after intervention.

### **Experimental Design**

A multiple probe single subject design across participants with a pretest and posttest was employed to analyze the effectiveness of the VSM intervention to improve

reading fluency of participants receiving special education services at the middle school level. The procedures followed in Experiment II were identical to those implemented for Experiment I.

### **Data Analysis**

The data analysis for Experiment II was conducted with the same analysis and scrutiny the data of Experiment I.

**Visual analysis of data.** The researcher made decisions within and between conditions based upon the visual analysis of the participant data, just as decisions were made in the previous experiment. Generalization and pre- and posttest measures were analyzed by comparing the differences of measures taken prior to and after the VSM intervention condition. Maintenance data were analyzed by comparing differences between the baseline probe conditions and VSM feedforward intervention conditions.

**Between-condition analysis.** A between-condition analysis of adjacent conditions, baseline probe and intervention, was conducted to evaluate experimental control (Gast, 2010). The absolute level value change, relative level change, trend levels and stability were calculated as they were in Experiment I.

**Percentage of non-overlapping data points (PND).** PND were computed to evaluate the magnitude of effects of the VSM procedures on participants' oral reading fluency. Those effects were determined in the same manner as they were in the prior experiment.

### **Fidelity of Implementation**

The researcher and scorer viewed the VSM DVDs and compared them with the assigned passages for any discrepancies between the text and participants' reading of the

text. No discrepancies were detected for any of the participants. Procedural reliability and IOA were evaluated in the same manner as in Experiment I.

**Procedural reliability.** The scorer completed a protocol checklist to assess procedural fidelity. The researcher's and scorer's findings were compared to insure that all conditions were administered according to protocol. Procedures for delivering the independent variable were followed at 100% accuracy according to the comparison of procedural protocol checklists for generalization, baseline probe, and VSM intervention conditions across all participants.

**Interobserver agreement (IOA).** Over 50% of sessions of most conditions across all participants were recorded by the researcher. As described In Experiment 1, the researcher's and scorer's calculations for WCPM were compared to assess IOA and total method for event recording systems was employed to yield a total percent agreement (Gast, 2010).

IOA was calculated at 98.3% for 37% of all sessions across all conditions. IOA was calculated for 50% of generalization sessions at 98.6%. For 32.5% of the baseline probes sessions, IOA was calculated at 98.2%. During VSM intervention, IOA data were collected for 33.3% of the sessions and calculated at 97.8%. IOA was calculated for 50% of the maintenance sessions at 98.5%. Dennis' initial maintenance sessions were not videotaped, and the camera was not available for his final session. The IOA data for individual students can be viewed in Table 5.2.

Table 5.2.

*Experiment II: Interobserver Agreement for Words Correct per Minute (WCPM)*

Conditions & IOA	Participants				
	Dennis	Adam	Isaiah	Tobias	Melissa
<b>Generalization</b>					
Total Sessions %	50.0	50.0	50.0	50.0	50.0
Total IOA %	98.0	100.0	97.0	100.0	98.0
<b>Baseline Probe</b>					
Total Sessions %	33.3	37.5	33.3	22.0	36.4
Total IOA %	100.0	97.6	96.6	100.0	96.6
Range %	–	94-100.0	95-98.0	–	92-100.0
<b>VSM Intervention</b>					
Total Sessions %	30.7	50.0	28.5	28.6	28.5
Total IOA %	100.0	95.8	95.5	100.0	97.8
Range %	–	90-98.0	95-96.0	–	96.6-99.0
<b>Maintenance</b>					
Total Sessions %	0	50.0	50.0	50.0	100.0
Total IOA %	–	97.0	98.0	99.0	100.0
<b>All Conditions</b>					
Total Sessions %	28.6	42.8	30.0	30.0	53.7
Total IOA %	99.3	97.5	96.8	99.8	98.1

*Note.* IOA = interobserver agreement; VSM = video self-modeling.

**Chapter Six**  
**Experiment II**  
**Results**

The data indicated that the 5 participants demonstrated improved oral-reading fluency on CBMs and a standardized oral reading-fluency assessment after participating in a VSM feedforward. Each met a predetermined criterion based upon their obtained mean level during a baseline-probe condition for WCPM (see Table 6.1).

Table 6.1

*Experiment II: Criterion, and Mean Levels*

Name	BL Mean Season Percentile	Criterion Season Percentile	Sessions to Criterion	VSM Mean
Dennis (5 <sup>th</sup> )	133/Fall/75%	156/Winter/75%	11	145.8
Adam (4 <sup>th</sup> )	102/Fall/50%	135/Winter/50%	2	124.9
Isaiah (1 <sup>st</sup> )	51/Winter/75%	82/Spring/75%	6	74.6
Tobias (5 <sup>th</sup> )	150/Fall/90%	182/Winter/90%	2	174.2
Melissa (2 <sup>nd</sup> )	85/Winter/ 90%	125/Spring/90%	4	113.7

*Note.* BL = baseline; VSM = video self-modeling intervention condition

Of the participants, three maintained and generalized their improved fluency to above baseline-probe mean levels. Maintenance data for one participant was above his intervention-condition mean level. Generalization of improved oral-reading fluency to a 6<sup>th</sup>-grade, social studies text was demonstrated by 3 out of 5 of the participants. All participants had improved GE scores on the GORT-4 post-assessment (see Table 6.2).

Performances on pre-test/post-tests of the RSPS indicated improvement in

Table 6.2

*Experiment II: GORT-4 Pretest and Posttest Results for Oral Reading Fluency*

Student	GE	
	Pretest	Posttest
Dennis	5.7	7.2
Adam	4.2	5.0
Isaiah	1.4	1.7
Tobias	5.7	7.4
Megan	2.2	2.7

the General Perception Scale for 1 participant, Progress Scale for 3 participants, Observational Comparison Scale for two participants, Social Feedback Scale for 2 participants, and the Physiological States Scale for 1 participant. Finally, based upon the effectiveness, qualitative and quantitative measures, VSM feedforward was a socially valid, oral reading-fluency treatment.

**Dennis**

**Acquisition.** The data resulted in a stable, but slightly therapeutic data path after 3 baseline probes. Intervention began after a downturn in the baseline data. During the intervention condition, a positive 13WCPM change in the median level and 12.79 WCPM change in the mean level were observed. He had positive changes in absolute and relative levels between baseline probe and intervention conditions (Gast, 2010). A stable and improving therapeutic trend was established during VSM intervention (see Table 6.3). He improved from a 5.7 to a 7.2 oral reading-fluency GE on the Gort-4 after 13 VSM intervention sessions. Dennis' criterion was established at 156 WCPM which he obtained in 11 sessions (see Table 6.1). PND was calculated at 69%, in the questionable range (Gast, 2010; Bellini, 2007), of for intervention (see Table 6.3). Dennis' oral-reading

Table 6.3

*Experiment II: Condition Analysis and Functional Relationship*

Condition Properties	Dennis		Adam		Isaiah		Tobias		Melissa	
	A <sub>1</sub>	B <sub>1</sub>								
Condition length	3	13	8	9	9	7	9	7	11	7
Level:										
Median	134	147	102.5	125	51	77	146	168	90	113
Median change	13 I		22.5 I		26 I		22 I		23 I	
Mean	133	145.8	95.5	124.9	51	74.6	150	174.2	85	113.7
Mean change	12.79 I		29.4 I		23.6 I		24 I		28.7 I	
Mean range	124-140	131-165	72-111	94-157	40- 61	71-90	130-161	154-200	61-107	103-121
Absolute change	134	142 I	106	123 I	61	77 I	137	163 I	99	113 I
Relative change	137	142 I	99	124 I	53	77 I	152.5	158 I	99	113 I

Table 6.3 (continued)

Condition Properties	Dennis		Adam		Isaiah		Tobias		Melissa	
	A <sub>1</sub>	B <sub>1</sub>								
Trend:	Acc	Dec	Acc	Dec	Dec	Acc	Dec	Dec	Acc	Acc
Direction	I	I	I	D	D	I	D	D	I	I
Stability Envelop	33.5		25.6		12.8		36.5		22.5	
(80/25=___)	S	S	S	V	S	V	S	S	S	S
			67%		71.4%					
Multiple paths within trend	Yes	Yes	Yes	Yes	No	No	No	Yes	Yes	No
PND	69%		88%		100%		71%		86%	

*Note.* A1 = baseline; B1 = intervention; Acc = accelerating; Dec = decelerating; Zero = zero-accelerating; D = deteriorating; I = improve; S = stable; V = variable; PND = percentage of nonoverlapping data-points

fluency seemed to Dennis' oral-reading fluency seemed to improve as a result of the VSM feedforward intervention.

**Maintenance and generalization.** Dennis was absent from school for nearly two weeks. Upon his return, the researcher conducted a maintenance session probe. He had reached criterion prior to his absence. A total of three maintenance probes were conducted with Dennis; the 4 week probe was 1 WCPM over the baseline probe condition' mean level. Dennis complained of a cold during one of the sessions. When reading a grade-level social studies text prior to the VSM intervention, he read 85 WCPM. Following intervention, he read a different passage at 125 CWPM, an improvement of 30 WCPM indicating a generalization of skills (see Figure 6.1 and 6.2).

**Self-efficacy.** Dennis completed a pre-test/post-test of the RSPS. Prior to and after completion of the study, he stated that he agreed with the statement that measured General Perception: I think I am a good reader. On the Progress Scale he improved from a score in the low range to the average range. This indicated that he had an improved perception of his present reading performance after the VSM intervention in comparison to his past performance. On the Observational Comparison and Social Feedback Scales, results depicted a slight decline with both pre- and post-responses remaining in the average range. This decline indicated that Dennis may have changed his perception of how he compared his reading with that of his peers, and of the social feedback he received for reading performance. His responses to questions on the Psychological States Scale resulted in an improvement from the low range to the near-average range which

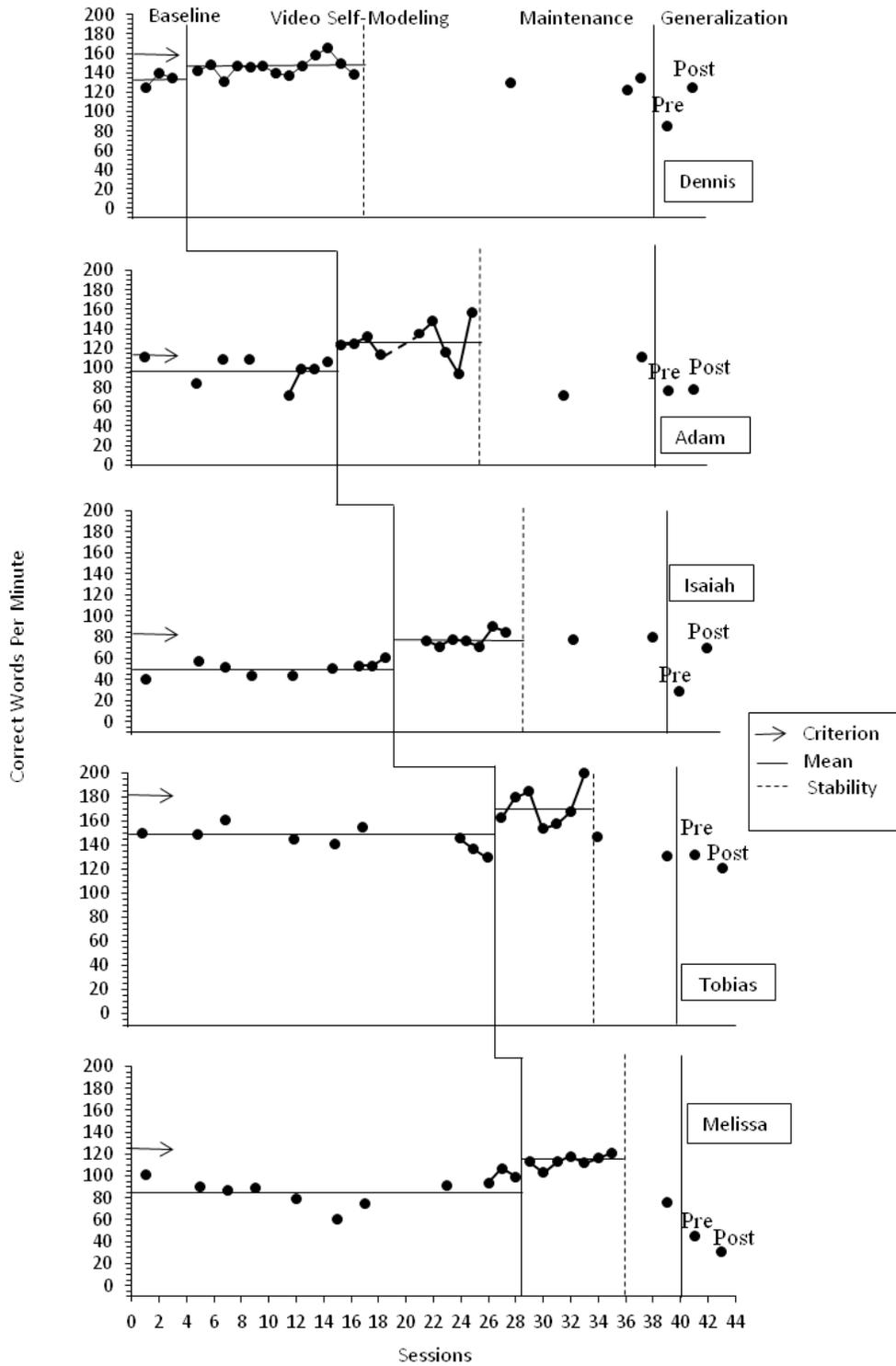


Figure 6.1. Experiment II: Graphic Display of Meant Results for Oral Reading Fluency

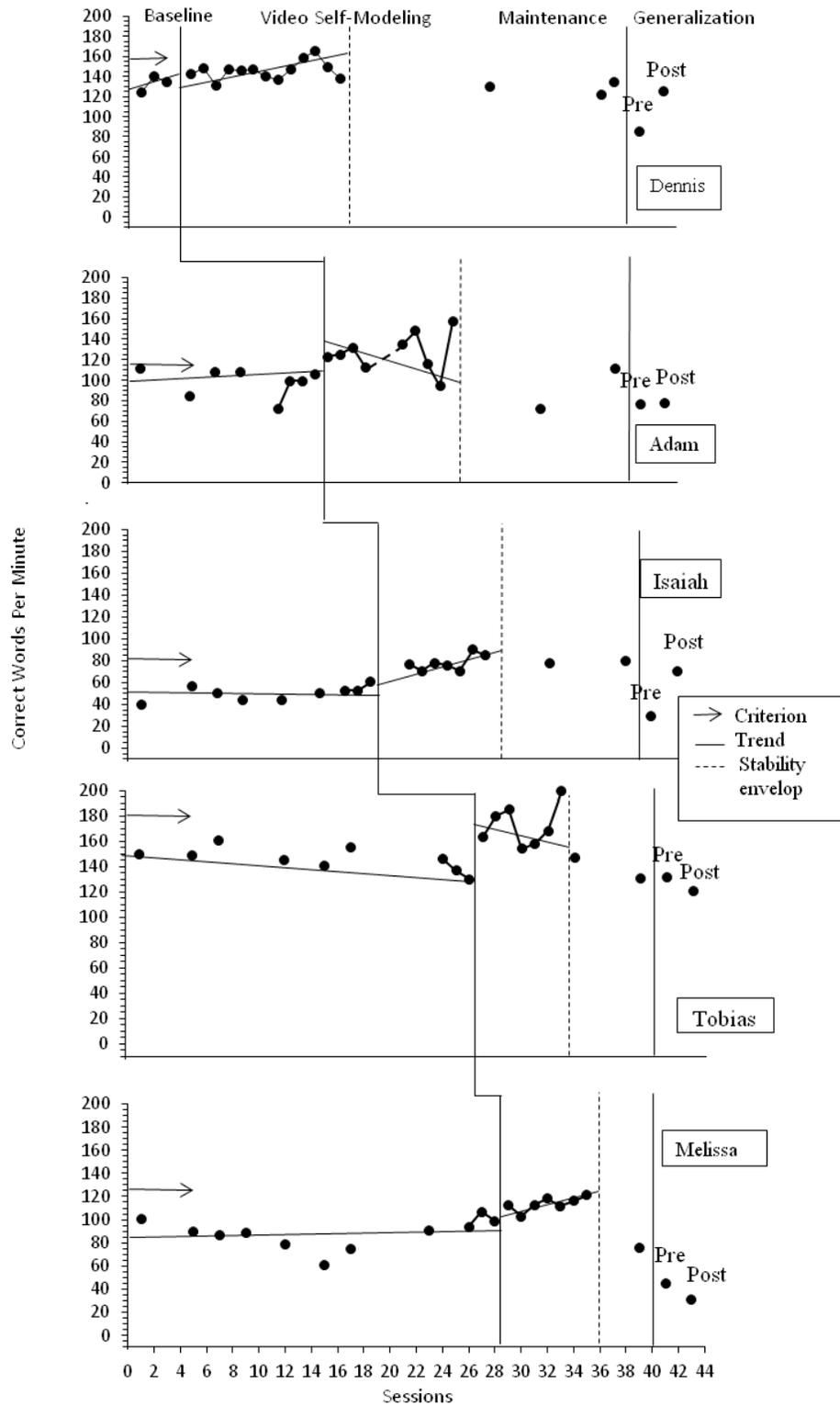


Figure 6.2. for Experiment II: Graphic Display of Trend Results for Oral Reading Fluency

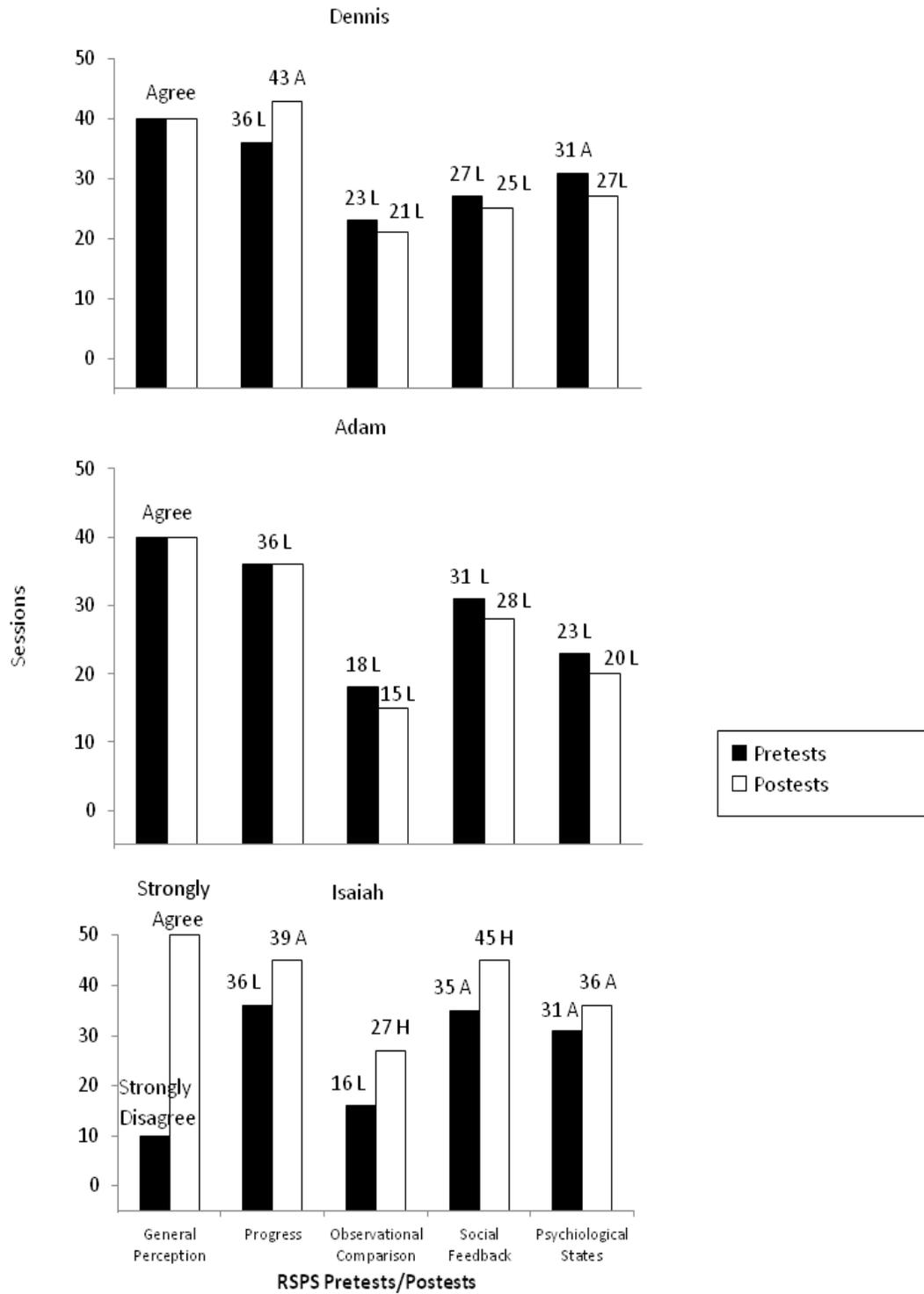


Figure 6.3.1 Graphic display of *Readers Self Perception Scale* (RSPS; Henk and Melnick, 1995) pretests/posttests results for Experiment I (see Figure 6.3.2).

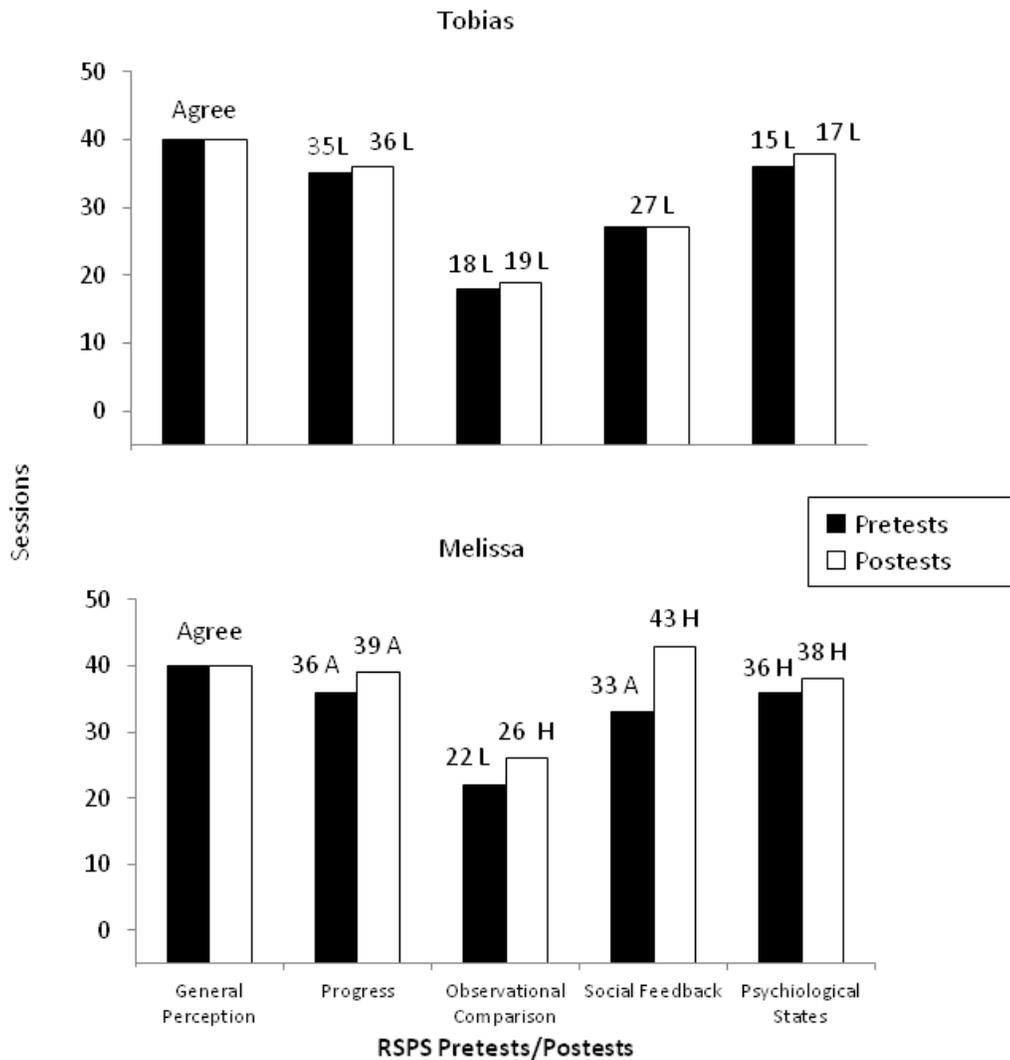


Figure 6.3.2 Graphic display of *Readers Self Perception Scale* (RSPS; Henk and Melnick, 1995) pretests/posttests results for Experiment I. The RSPS was employed to assess changes in participants’ oral reading self-efficacy. Each datum label includes the raw score and score interpretation of each Scale for each administration (pre/posttest) of to the assessment. Each Scale has a different, raw-score range. The raw scores were interpreted (H=high, A=average, and L=low) as directed in RSPS. Adapted from “The Reader Self-Perception Scale (RSPS): A New tool for Measuring How Children Feel about Themselves as Readers” by W. A. Henk and S. A. Melnick, 1995, *The Reading Teacher*, 48(6), pp. 478-480.

may have indicated an increase in internal comfort when reading. Dennis' results on the RSPS are mixed (see Figure 6.3).

**Social validity.** Dennis displayed an acceptable level of appropriate behavior during the time he spent with the researcher during pre-/post-assessments, introduction and interviews and participation in all conditions of the study. During 2 out of 20 sessions, notes were made that the Dennis complained about participating because he was tired due to being out late or that he had a cold. Dennis first complained about being tired during the third session of intervention. The teacher stated that due to a change in circumstances, Dennis was not getting appropriate rest and experiencing an emotionally trying time.

The behavioral observations indicated that Dennis participated with acceptable behavior 100% of the time; although, he sometimes needed encouragement to do so. Dennis typically seemed motivated and engaged while procedures were implemented during approximately 90% of the sessions and while recording his VSM DVD. Notes were also made that, upon watching his VSM DVD for the first time, Dennis said, "I liked the tape but I didn't know that I sounded like that. I think I was like a movie star!"

In response to the interview questions, Dennis answered that he liked participating in the study "a little bit." He said he liked when the study was over, making the video, and thought that it helped him to read better. He said that he would make another video, but was not sure why. He liked the reinforcers and said he would have participated without them. Based upon Dennis' improved oral reading-fluency level and reader self-efficacy on the Progress Scale, number of

sessions to criterion, generalization of improved skills, percentage of acceptable behavior during sessions, motivation and participation, and his responses to interview question, VSM feedforward appeared to be a socially valid intervention for Dennis.

### **Adam**

**Acquisition.** The data resulted in a stable, but slightly therapeutic data path after 8 baseline probes for Adam. Intervention began after baseline probe data were stable as determined by visual analysis. During the intervention condition, a positive 22.5 WCPM change in the median level and a 29.4 WCPM change in the mean level were observed. He had positive changes in absolute and relative levels between baseline probe and intervention conditions. A stable, deteriorating, contratherapeutic trend was observed during the VSM intervention condition due to multiple data paths (see Table 6.3.1). He improved from a 4.2 to a 5.0 oral reading-fluency GE on the Gort-4 after 9 VSM intervention sessions (see Table 6.2). Adam's criterion was established at 112 WCPM which he obtained in 2 sessions (see Table 6.1). PND was calculated at 88%, in the effective range of intervention (see Table 6.3). Adam's oral-reading fluency seemed to improve as a result of the VSM feedforward intervention.

**Maintenance and generalization.** Adam demonstrated maintenance of improved oral-reading fluency at the second follow-up. He read a passage at 111 WCPM, 5.5 words above his baseline probe mean level. When reading a 6<sup>th</sup>-grade social studies text prior to the VSM intervention, he read 77 WCPM. Following

intervention, he read 78 CWPM, a slight improvement, possibly indicating generalization of skills (see Figure 6.1 and 6.2).

**Self-efficacy.** Adam completed a pre-test/post-test of the RSPS. Prior to and after completion of the study, he stated that he agreed with the statement that measured General Perception: I think I am a good reader. He maintained a score in the low range, 36, on the Progress Scale indicating that the perception of his reading performance after the VSM intervention was about the same as his perception prior to treatment. On the Observational Comparison and Social Feedback Scales, results depicted a slight decline with both pre- and post-responses remaining in the low range. This decline indicated that Adam may have changed his perception of how he compared his reading with that of his peers and of the social feedback he received for reading performance. His responses to questions on the Psychological States Scale also declined which may have indicated a decrease in internal comfort when reading. Adam's results on the RSPS do not indicate improvement in his perceived reading self-efficacy (see Figure 6.3).

**Social validity.** Adam maintained an acceptable level of appropriate behavior during the time he spent with the researcher during pre-/post-assessments, introduction and interviews, and participation in all conditions of the study. During 3 out of 17 sessions, notes were made that Adam once seemed unmotivated and mumbled during the reading of his CBM passage, during another session he seemed unhappy and agitated, and during another he stated that he was tired. On the occasion that he seemed unhappy and agitated, his teacher spoke

with him per her request and he returned to the session appearing much more animated and participated fully. Other notes were made that Adam gave his VSM DVD a “thumbs-up,” and volunteered to go first when the researcher entered the classroom. These behavioral observations indicated that Adam maintained acceptable behavior 100% of the time; although, he sometimes needed encouragement to do so. Adam typically seemed motivated and engaged while procedures were implemented in approximately 82% of the sessions and while recording his VSM DVD.

In response to the interview questions, Adam answered that he liked participating in the study. He did not have a response when asked what he liked about it, but acknowledged that he felt it had helped him to read better. He said that he would not want to make another video because it was “too much reading.” He stated that he liked the reinforcers and would have participated without them. Based upon Adam’s improved oral reading-fluency level, number of sessions to criterion, maintenance of improved skills, percentage of sessions with acceptable behavior, his motivation and participation, and his responses to interview questions, VSM feedforward appeared to be a socially valid intervention for Adam.

### **Isaiah**

**Acquisition.** The data resulted in a variable, slightly contratherapeutic data path after 9 baseline probes. During the intervention condition, a positive 26 WCPM change in the median level and a 23.6 WCPM change in the mean level were observed. He had positive changes in absolute and relative levels between

baseline probe and intervention conditions. A variable, improving, therapeutic data path was observed during VSM intervention (see Table 6.3.1). He improved from a 1.4 to a 1.7 oral reading-fluency GE on the Gort-4 after 7 VSM intervention sessions (see Table 6.2). Isaiah's criterion was established at 82 WCPM which he reached in 6 sessions (see Table 6.1). PND was calculated at 100%, in the very effective range of intervention (see Table 6.3). Isaiah's oral-reading fluency seemed to improve as a result of the VSM feedforward intervention.

**Maintenance and generalization.** Isaiah maintained his improved his oral-reading fluency above the intervention-condition mean. When reading a grade-level social studies text prior to the VSM intervention, he read 29 WCPM. Following intervention he read 70 WCPM, an improvement indicating a generalization of skills (see Figure 6.1 and 6.2).

**Self-efficacy.** Isaiah completed a pre-test/post-test of the RSPS. Prior to the study, he responded that he strongly disagreed with the statement that measured General Perception: I think I am a good reader. After completion, he stated that he strongly agreed that he was a good reader. He scores improved on all scales of the RSPS. He had an improvement from the low to average range on the Progress Scale indicating that his perception of his reading performance after the VSM intervention increased. On the Observational Comparison Scale, he improved from the low to high range indicating a positive change in his perception of how he compared his reading with that of his peers. Isaiah's scores on the Social Feedback Scale improved from the average to high range regarding

his perception of the social feedback he received for reading performance. His responses to questions on the Psychological States Scale improved within the average range, indicating an increase in his perceived internal comfort when reading. Isaiah's results on the RSPS indicated improvement in his perceived reading self-efficacy (see Figure 6.3.1).

**Social validity.** Isaiah maintained an acceptable level of appropriate behavior during the time he spent with the researcher during pre-/post-assessments, introduction and interviews, and participation in all conditions of the study. He was motivated and engaged during all sessions. He and Adam occasionally argued about which of them would have the first session with the researcher. The researcher noted that Isaiah seemed very excited to participate. During one session, he had a cold that caused him to cough during the reading of his CBM passage; it did not impact his motivation. These behavioral observations indicated that Isaiah maintained acceptable behavior during 100% of the sessions. Isaiah seemed motivated and engaged while procedures were implemented in 100% of the sessions and while recording his VSM DVD.

In response to the interview questions, Isaiah answered that he liked participating in the study because it helped him read. When asked if he felt that VSM had helped him read better, he responded with, "Yes, I know my words better." He said that he would "probably" make another video when asked if he would be willing to do so. He liked the reinforcers and said he would have participated without them. When asked if he had anything more that he wanted to tell the researcher, Isaiah responded that he wanted to add more [video of him

reading] to his tape. Based upon Isaiah's improved oral reading-fluency level and reader self-efficacy, number of sessions to criterion, maintenance and generalization of improved skills, percentage of acceptable behavior during sessions, motivation and participation, and his responses to interview question, VSM feedforward appeared to be a socially valid intervention for Isaiah.

### **Tobias**

**Acquisition.** The data resulted in a stable, contratherapeutic data path after nine baseline probes. During the intervention condition, a positive 22 WCPM change in the median level and a 24 WCPM change in the mean level were observed. Tobias had positive changes in absolute and relative levels between baseline probe and intervention conditions. A stable, deteriorating, contratherapeutic trend was observed during VSM intervention as a result of multiple data paths (see Table 6.3). He improved from a 5.7 to a 7.7 oral reading-fluency GE on the Gort-4 after 7 VSM intervention sessions (see Table 6.2). Tobias' criterion was established at 182 WCPM which he reached in three sessions (see Table 6.1). PND was calculated at 71%, in the effective range of intervention (see Table 6.3.2). Tobias's oral-reading fluency seemed to improve as a result of the VSM feedforward intervention.

**Maintenance and generalization.** Tobias did not maintain his improved oral-reading fluency above the baseline probe-condition mean. When reading a grade-level social studies text prior to the VSM intervention, he read 132 WCPM. Following intervention he read 121 CWPM, a decline that indicated that his

improved skills during intervention did not generalize to the selected text (see Figure 6.1 and 6.2).

**Self-efficacy.** Tobias completed a pre-test/post-test of the RSPS. Prior to and after this study, he responded that he agreed with the statement that measured General Perception: I think I am a good reader. His scores improved slightly within the low range on the Progress Scale indicating that his perception of his reading performance after the VSM intervention may have increased. On the Observational Comparison Scale he improved slightly within the low range indicating that his perception of how he compared his reading with that of his peers may have increased. Tobias' scores on the Social Feedback Scale remained the same indicating that he experienced no change in perception of the social feedback he received for reading performance. His responses to questions on the Psychological States Scale showed slight improvement within the low range, indicating a possible increase in his perceived internal comfort when reading. Tobias's results on the RSPS indicated some improvement in his perceived reading self-efficacy; however, all scores remained in the low range (see Figure 6.3.2).

**Social validity.** Tobias maintained an acceptable level of appropriate behavior during the time he spent with the researcher during pre-/post-assessments, introduction and interviews, and participation in all conditions of the study. He was motivated and engaged during all sessions. The researcher noted that Tobias seemed conversational as well. On the day that Tobias reached criterion, he offered that he had volunteered to read during his social studies class

and was nervous, but thought that he “did good.” He also stated that he had not volunteered to read in the class prior to the intervention. Tobias developed a cold during the intervention condition that seemed to impact his performance, but it did not impact his motivation. The behavioral observations indicated that Tobias maintained acceptable behavior during 100% of the session. Tobias seemed motivated and engaged while procedures were implemented in 100% of the sessions and while recording his VSM DVD.

In response to the interview questions, Tobias answered that he liked participating in the study because it helped him read. When asked if he felt that VSM had helped him read better, he responded with, “Yes, I don’t stutter when I read as much.” When asked if he would be willing to do so, he said that he would make another video because he like the snacks and it [the video] helped him. He said he liked the reinforcers and would have participated without them. Based upon Tobias’s improved oral reading-fluency level, improvements in reader self-efficacy, number of sessions to criterion, percentage of acceptable behavior during sessions, motivation and participation, and his responses to interview question, VSM feedforward appeared to be a socially valid intervention for Tobias.

### **Melissa**

**Acquisition.** The data resulted in a variable and slightly therapeutic data path after 11 baseline probes. Intervention began after a downturn in the baseline data. During the intervention condition, a positive 23 WCPM change in the median level and 28.7 WCPM change in the mean level were observed. She had

positive changes in absolute and relative levels between baseline probe and intervention conditions. A stable and improving therapeutic trend was established during VSM intervention (see Table 6.3). She improved from a 2.7 to a 2.2 oral reading-fluency GE on the Gort-4 after 9 sessions (see Table 6.2). Melissa's criterion was established at 125 WCPM which she obtained in 7 sessions (see Table 6.1). PND was calculated at 86%, the effective range of intervention (see Table 6.3). Melissa's oral-reading fluency seemed to improve as a result of the VSM feedforward intervention.

**Maintenance and generalization.** Melissa did not maintain her improved oral-reading fluency above the baseline probe-condition mean. When reading a grade-level social studies text prior to the VSM intervention, she read 45 WCPM. Following intervention she read 31 CWPM, a decline that indicated that her improved skills during intervention did not generalize to the selected text (see Figure 6.1 and 6.2). The researcher noted on the post-generalization and maintenance protocol checklists that Melissa had a cold and coughed during the session. Additionally, Melissa did not typically use the social studies textbook that was read by participants when evaluating generalization of oral reading-fluency skills.

**Self-efficacy.** Melissa completed a pre-test/post-test of the RSPS. Prior to and after this study, she responded that she agreed with the statement that measured General Perception: I think I am a good reader. Her scores improved within the average range on the Progress Scale indicating that her perception of her reading performance after the VSM intervention may have increased. On the

Observational Comparison Scale she improved from the average to high range indicating a positive change in her perception of how she compared her reading skills with that of his peers. Melissa's scores on the Social Feedback Scale improved from the average to high range regarding her perception of the social feedback she received for reading performance. Her responses to questions on the Psychological States Scale improved within the average range, indicating an increase in her perceived internal comfort when reading. Melissa's results on the RSPS indicated improvement in her perceived reading self-efficacy (see Figure 6.3.2).

**Social validity.** Melissa maintained an acceptable level of appropriate behavior during the time she spent with the researcher during pre-tests/post-tests, introduction and interviews, and participation in all conditions of the study. She was motivated and engaged during all sessions. The researcher noted that Melissa was very cooperative. During one session, she needed to be reminded to watch her VSM DVD on two occasions. These behavioral observations indicated that Melissa maintained acceptable behavior during 100% of the sessions. Melissa seemed motivated and engaged while procedures were implemented in 100% of the sessions and while recording her VSM DVD.

In response to the interview questions, Melissa answered that she liked participating in the study and responded that it was fun and she liked her movie. When asked if she felt that VSM had helped her read better, she responded with, "Yes." She said that she would make another video because it helped her to read better. She liked the reinforcers and said she would have participated without

them. Based upon Melissa's improved oral reading-fluency level and reader self-efficacy, number of sessions to criterion, percentage of acceptable behavior during sessions, motivation and participation, and her responses to interview question, VSM feedforward appeared to be a socially valid intervention for Melissa.

### **Teachers**

**Social validity.** Both teachers were asked if they believed that that could implement VSM on their own and to describe supports they would need. Both were also asked if they believed the participants benefited from the study. The teachers stated that their greatest concern was the time required for implementing the intervention and the skill required to edit the videos. Both said that they thought the time invested in the intervention was worth the gains that their students made in oral reading fluency. Based upon their observations, the teachers felt that the students enjoyed participation in the study, showed improvement in their reading fluency, and demonstrated willingness or motivation to read orally.

## **Chapter Seven**

### **Experiment II**

#### **Discussion**

In Experiment II, the five research questions that were investigated were the same as those investigated in Experiment I. The first was: Will the rate of oral reading fluency improve for middle school students with disabilities, a history of behavior problems, and who are below grade level in oral reading fluency? The data analysis confirms that all participants demonstrated improvement on their mean and median scores for oral-reading fluency (dependent variable) and met the criterion established for them during the VSM feedforward (independent variable) instructional condition.

The three 12-year-old middle-school students and two 13-year-olds who were the participants of this study exhibited behaviors associated with the following diagnoses: Attention Deficit/Hyperactivity Disorder, Mood Disorder, Oppositional Defiant Disorder, Learning Disability, and an articulation and genetic disorder. The IQ scores of the four males ranged from FS 67 to FS 91, and they were all in the same self-contained classroom for students with EBD due to a history of problematic behaviors. Additionally, each read from 1.5 to 6 years below the grade level in which they were enrolled.

The only female, Melissa, had conflicting IQ scores, one previous score of 71 and a more recent score of 48, both from non-verbal assessments administered due to her articulation disorder. About the more recent score, the psychologist who administered the assessment noted that Melissa's oppositional behavior heavily impacted the lower score and that it could not be considered a true representation of her actual IQ.

All participants demonstrated an improved and observable change in the dependent variable after introduction of the independent variable (i.e., absolute and

relative changes in level; see Table 6.3). That change seemed apparent in the visual analysis of the data (see Figure 6.1 and Figure 6.2) across 5 participants. It seemed to indicate a positive effect as a result of the treatment. Additionally, improvements in mean levels of WCPM oral reading-fluency scores ranged from 12.79 to 29.4, and median levels ranged in improvement from 13 to 26 WCPM across all students (see Table 6.3).

All PND calculations were not in the effective range. The calculated PNDs across participants ranged from 69% to 100%. Dennis' PND score of 69% falls in the questionable range; the scores of 71%, 86%, and 88% are in the effective range, and 100% is in the very effective range (see Table 6.3). This indicated that the treatment had positive intervention effect for 4 of the participants.

Additionally, all participants had improved oral-reading fluency, grade-equivalent scores (e.g., .3 to 1.7 GE) between the GORT-4 pre-test and post-test measures (see Table 6.2). These gains in GE scores on the standardized measure were achieved in an average of 50 min in the VSM feedforward instructional condition of the study.

Analyzes of the data over multiple measures revealed the rate of oral reading fluency improved after implementation of a VSM feedforward intervention for middle school students with disabilities, a history of behavior problems, and who were below grade level in oral reading fluency In Experiment II. However, a functional relationship could not be established between the independent variable (VSM feedforward) and dependent variable (oral-reading fluency) for the 4 participants with effective or very effective PNDs without first evaluating the research questions for maintenance and generalization.

Second, after implementation of a VSM intervention targeting oral reading fluency, will the participants' improvement maintain after concluding the VSM feedforward intervention? The maintenance data varied across participants (see Figure 6.1 and 6.2). Follow-up was conducted at approximately 2, 3, and 4 weeks for Dennis; it was conducted at approximately 1 and 2 weeks for Adam, Isaiah, and Tobias; and it was conducted at approximately 1 week for Melissa. Dennis, Adam and Isaiah obtained scores above the mean level of their baseline-probe conditions; however, Dennis's maintenance score was only 1 WCPM above his baseline level. Isaiah scored above his intervention-condition mean. Neither Tobias nor Melissa demonstrated maintenance of improved oral reading-fluency skills.

Third, after implementation of a VSM intervention targeting oral reading fluency, will the participants' improvements in oral-reading fluency generalize to grade level text? Generalization of improved oral-reading fluency to a 6<sup>th</sup>-grade, social studies text with novel passages was demonstrated by 3 of the 5 participants. Dennis improved by 40 WCPM, and Adam improved only slightly, by 1 WCPM. Isaiah's post-generalization scores showed the greatest improvement. His score of 41 WCPM, was above the mean level (70 WCPM) of his intervention condition. As during the maintenance phase, Tobias and Melissa did not generalize their improved oral reading-fluency skills to the selected text. The 6<sup>th</sup>-grade social studies text was unfamiliar to Melissa and rarely or never used by the other participants.

All participants demonstrated improvement in oral-reading fluency according to changes in mean and median levels. In order to establish a functional relationship between the independent and dependent variables, the data must also confirm an effective

or very effective PND for the intervention, and generalization and maintenance of treatment gains. Isaiah was the only participant who had data demonstrating those standards, therefore, positive effect.

Fourth, will student self-efficacy improve in the area of reading fluency as determined by the RSPS? Performances on pre-test/post-tests of the RSPS varied, but four out of five participants provided responses that demonstrated improvement in their reader self-efficacy. On the General Perception Scale, Isaiah improved from “strongly disagree” to “strongly agree”. The other participants said they agreed that they were good readers before and after the VSM feedforward intervention. The responses provided on the Progress Scale demonstrated that 4 out of 5 participants had an improved perception of reading performance after the VSM intervention in comparison to past performance. On the Observational Comparison and Social Feedback Scales, 3 out of 5 participants made gains indicating a positive change in their perception of how their reading compared with that of their peers and of the social feedback they received for reading performance following treatment. The responses of four out of five participants to questions on the Psychological States indicated increased perceived internal comfort when reading. Adam’s responses on the RSPS remained unchanged or indicated a decline in reader self-efficacy; however, he had made statements indicating that he had improved self-efficacy in reading. At a celebration after the study was over he and Isaiah bragged to the researcher about how they had won a prize for improving their reading scores in a reading class that they began after the study’s conclusion. Adam and Isaiah agreed that their participation in the study had helped them improve. Isaiah and Melissa

demonstrated improved reader self-efficacy on all 5 scales of the RSPS, Tobias improved on 3 scales and Dennis improved on 1.

The participants made those and other comments that indicated that they made gains in reading self-efficacy. At the celebration, Dennis encouraged the other participants to allow their video to play on a large screen in the classroom. All of the participants accepted copies of their videos to take home to their parents. They seemed to engage in the treatment freely and often seemed happy to do so. Additionally, their reading scores improved from pre- to post-assessment; however, based upon the RSPS results, improvements in reader self-efficacy can be determined for four of the five participants. More research is needed in this area. The RSPS seemed to be an appropriate measure for the participants in Experiment II. The need for a different instrument to measure reader self-efficacy was suggested in the Discussion section of Experiment I (e.g., an assessment that the teacher could complete based upon observation of student reading behaviors). Perhaps a better suggestion would be for a teacher assessment of student reading self-efficacy that could be used in tandem with the standardized RSPS assessment.

Fifth, is VSM a socially valid intervention for improving reading fluency? Improved participant performance in oral-reading fluency, and participant and teacher responses to interview questions demonstrated that VSM feedforward was a socially valid oral reading-fluency treatment. The social validity of the intervention is evidenced by the treatment gains (Pigott & Gonzales, 1987). Although the data of only one of the participants met the standards to demonstrate a positive effect from the VSM feedforward

intervention, All of the participants met the criteria established for them, a seasons growth in reading.

Additionally, the gains were made with minimal instruction time. Consider that, Isaiah, a seventh grader, was reading at an early first-grade level when the study began. Fuchs and Fuchs (1993) reported weekly rates of expected growth in reading as .3–.65 words for sixth graders. Although expected weekly rates for seventh graders were not reported, Isaiah’s improvement was well beyond the expected growth for a 12-year-old student (i.e., 31 WCPM in 6 instructional sessions). That he, and 4 other students, improved CWPM by one season after the VSM feedforward intervention condition seemed to indicate that it was an efficacious treatment for improving oral-reading fluency. Those improvements were achieved in an average 50 min of instructional time across participants. This lends additional support that VSM feedforward was a socially valid treatment.

Social validity was also evidenced in the data collected from the protocol checklists (see Appendix A). Although participants’ problematic behaviors were encountered by the researcher, they were able to participate in the study sessions 100% of the time. The percentage range in which they participated willingly (without the need of encouragement from the researcher) was 82-100%. Additionally, during most sessions the students seemed engaged and motivated by their VSM DVD’s and the intervention. As in Experiment I, all participants in Experiment II study seemed to enjoy viewing their video tapes. Only one, Melissa, had brief instances of inattention to her video. She promptly responded when the researcher reminded her to look at her video.

The participants seemed to enjoy making the videos as well. The videos were created in one session for all five participants. Dennis mirrored what the researcher observed when he expressed that making the VSM DVD and viewing it made him feel like a movie star, and Isaiah asked several times if he could add more to his video and when he could take it home with him.

Finally, the teacher responses to the interview questions supplement the primary student data collected to assess social validity. The three levels of social validation (goals, procedures, and effects) were addressed. Their answers lend support for the social validation of the study and outcomes of the VSM feedforward treatment (Gast, 2010).

### **Limitations and Threats to Validity**

Experiment II was initially undertaken to replicate the procedures outlined for Experiment I, while also instituting some of the lessons learned (e. g., improved video recording techniques) and limiting threats to validity (i.e., attrition, procedural fidelity). It provided additional, valuable information on the effectiveness of VSM feedforward as singular treatment for improving oral-reading fluency. There are limitations and suggestions that must be noted.

**Fidelity of implementation.** Did Experiment II adhere to procedures? According to the protocol checklists, procedures for this study were followed 100% of the time. IOA was calculated at 98.3% for 37% of all sessions across all conditions (see Table 5.2). There were no occurrences that impacted the outcome of the study (e.g., a handheld camera was used for video recording for reliability due to a forgotten tripod, use of teacher reinforcers rather than the intended researcher reinforcers).

**Instrumentation.** Instrumentation is a threat to internal validity. Did the quality of the VSM DVD's impact the participants' progress towards acquisition of improved oral reading fluency? In Experiment II as in Experiment I, one VSM DVD lacked the same viewing quality and aesthetics of the others.

Melissa's GORT-4 reading level was calculated at 2.2 GE, but her articulation disorder greatly impeded her ability to enunciate words so that they were understandable to those who did not know her or were not following the words she was reading with a written copy. Melissa received special education, speech and language instruction from a speech and language pathologist during the school day. The researcher was concerned that the VSM DVD could reinforce Melissa's disarticulation if measures were not taken to make it appear that her articulation as well as oral-reading fluency had improved.

After a discussion with Melissa's speech and language pathologist (SLP), the researcher decided to work with Melissa to pronounce each word as clearly as possible during the recording. More time was spent making Melissa's video. Some words were necessarily pronounced one syllable at a time. Many words were practiced until Melissa could pronounce them more articulately. As Melissa's passage was recorded, she was instructed to maintain the same position to limit the jumpiness that was evident in Selena's (Experiment I) video. The outcome of the audio quality of Melissa's VSM DVD was the depiction of a more fluent and articulate reader.

Both Melissa's teacher and SLP viewed the DVD to confirm the researcher's assessment of the quality. However, viewing the DVD exposed the edits required to publish it with auditory accuracy; although, the quality was better than that of Selena's. It is possible that the jumpiness of Melissa's video had a role in the moments of distraction

she experienced while viewing her VSM DVD. Again, as with Selena, could a passage with a reduced difficulty level have resulted in a better quality, reading-fluency DVD for Melissa? These answers may impact future research in VSM feedforward for improving oral-reading fluency and classroom implementation.

**History.** Did reading instruction occur that could have influenced the outcome of the study? The teachers were interviewed and asked to describe the typical instructional day for the participants. Each day, the participants in the EBD self-contained classroom followed a structured instructional schedule that included reading. The students read silently for 20 min. each day, had a language assignment, and followed the teacher as she read out-loud to the students. They took quizzes over the stories they read. Oral-reading fluency was not taught in isolation.

Melissa participated on most days per week, in a reading class. She did not participate when her class had off-campus, community based instruction. Oral-reading fluency was not part of the assessment or instruction in the class.

As in Experiment I, the teachers were not asked to refrain from engaging in reading instruction; however, they were asked to refrain from providing instruction in reading fluency that would not otherwise have occurred in the absence of the study. They were asked to reveal if they engaged the participants in oral reading-fluency instruction so the researcher could document it. These precautions were employed to control for history threats.

All participants had data paths that were stable during baseline conditions, followed by immediate improvement (i.e., absolute level change) in the dependent variable upon introduction of the independent variable. However, that only one of the

participants both maintained and generalized treatment gains, suggests that other variables may have influenced the participants' oral reading-fluency performances. It is possible that the very act of orally reading a passage at an increased frequency as occurred during the study, the one-on-one instructional time, and the attention of the researcher could have impacted the improved performances in CWPM gains.

**Maturation.** Did maturation threats occur during implementation of the study? The study was carried out in a relatively short amount of time. The study's design controlled for the threat of maturation. It is unlikely that maturation could have occurred; however, one concern was that the researcher could require an extensive amount of time to prepare the VSM DVDs and maturation could occur in the interim. As in Experiment I, to control for this threat, each video was edited and produced the day after taping or over a weekend. There was no interruption in the schedule of the experiment due to tape preparation.

A second concern was that conditions could have been lengthened beyond the time anticipated due to student attrition, absences or school interruptions. Most attendance was good during this experiment. Dennis was absent for several days; however, this occurred after he had reached criterion. Only on one occasion was the researcher unable to see the participants due to a school assembly. Finally, all students that began Experiment II completed it.

**Participant attrition.** Student attrition was not a threat in Experiment II. All students that began Experiment II completed it. Although Dennis missed several days of school, he had reached criterion so that this did not impact the progression of the study. However, his absence afforded no opportunity to determine if the downward change in

trend (last 2 data points) in his intervention condition may have improved if continuation of treatment had been possible.

**Compensatory rivalry.** Was compensatory rivalry a possible threat to Experiment II? The participants of the study were in contact with each other and sometimes vied to be the first participant that the researcher saw in the day. Following days when this occurred, the researcher called to the classroom and asked the teacher to send a student to the conference room for his/her session. Although, competition could have developed between participants to outperform or underperform others, they were reminded that they were not competing with each other. Compensatory rivalry was not observed by the researcher.

**Novelty and disruption effects.** Novelty and disruption effects could have occurred. The participants had not experienced a VSM intervention prior to Experiment II. Planning and taping a VSM videotape, viewing it each day, followed by reading timed passages was an interruption to the participants' typical school day. On occasion, there were complaints from participants that they were missing "fun" classroom activities. To avoid most disruptions, the researcher planned the schedule with the teacher.

Additionally, each of the participants had some decrease in performance in their trend level during the intervention condition. This decrease could have occurred due to a novelty effect, a reaction to novel conditions, researcher, video-recording, or other changes from the ordinary. This threat was controlled by visual analysis of the data and ensuring that data were stable for one participant before introducing another to intervention. Although the baseline probe condition data paths were stable for two participants, Isaiah and Adam, the intervention was begun when there was a slight

upward trend in the last data point in the baseline-probe condition. Positive absolute level changes occurred for all students. Regardless, the trend of the last data point lessons the impact of the gains made during the intervention condition.

**Experimenter expectancy (i.e., bias) and Hawthorne effect.** Did the researcher's expectations influence the outcomes of the study? As in Experiment I the students knew that the purpose of the study was to improve their oral-reading fluency, and they were attempting to read as well as possible in creating their VSM DVDs. The attributes of the multiple baseline-probe design and an adherence to ensuring stable data trends via visual analysis before introducing participants to intervention controlled for this threat. Additionally, multiple measures (i.e., RSPS, GORT-4) and IOA were employed to ensure that the researcher's opinion could not influence outcomes.

Did participant reinforcement influence outcomes? The same procedures were employed to control for bias in both Experiments I and II. Students were reinforced with non-contingent reinforcers, food items, for their participation, not for performance. The VSM DVD was recorded with the students smiling at the end of the video as they might appear if proud of their own performance, and the researcher focused verbal reinforcement on participation. The teachers were asked to avoid atypical encouragement for student performance, as well.

**External validity.** Was external validity threatened due to the variation in the disabilities of the different participants? Participants with similar characteristics were chosen for Experiment II. All met the criteria to be included in the study: 4 were in the same EBD, self-contained classroom. Melissa's primary placement was in a classroom for students with multiple disabilities; however, in the previous school year she had

received instruction in resource and typical classrooms. Due to behavioral difficulties, placement in the EBD self-contained classroom was considered for her. Placement in her current classroom was determined in order to allow her to work on more functional skills. External validity was strengthened by the selection of this population.

**Ecological validity.** Can a VSM feedforward intervention to improve oral-reading fluency be implemented in school settings? The procedures for Experiment II were conducted by the researcher without any other assistance and in the school setting just as they had been in Experiment I. It was convenient that the other students in both classrooms were under the supervision of their classroom teacher and several paraprofessionals. A teacher could implement this strategy alone, especially with intelligent scheduling or including the class in the intervention. Having the assistance of additional staff would be of benefit. VSM feedforward was an ecologically valid intervention for improving oral-reading fluency and could be implemented in a classroom setting.

## **Chapter Eight**

### **General Discussion**

The results of Experiment I and Experiment II were mixed. If we look at the two experiments together, 3 out of 8 participants, Lucas and Josiah from Experiment I and Isaiah from Experiment II, achieved all of the following: (a) met criterion, (b) had data that demonstrated effective or very effective PND, (c) maintained improved performance in WCPM, and (d) generalized improvement in WCPM. That the results of their individual data met these standards indicated that VSM feedforward was an effective treatment for improving oral reading fluency for these participants.

Nevertheless, for Isaiah, the last data point in the baseline-probe condition was in an upward trend, bringing the data into question. The data point fell within a stable, contratherapeutic data path with a range of 40-61 WCPM. He had an improvement of 16 WCPM, absolute level, when the independent variable was introduced. In addition, relative changes of 23 WCPM, a change in mean of 26.6 WCPM, and a median change of 26 WCPM, all improvements, were documented upon completion of the study. His maintenance sessions at 1 week and 3 weeks were both above his intervention mean, and his post-generalization measure was 41 WCPM above his pre-generalization measure. Regardless of the encouraging results of these measures, the upward trend in Isaiah's data just prior to implementing treatment must be considered a limitation of the study.

Dennis' and Adam's (Experiment II) data demonstrated improvements in mean, median, absolute change, and relative change. Both demonstrated maintenance of improvements above the mean baseline level and improvements in generalization. Dennis improved 40 WCPM in post-generalization condition; however, Adam improved only by

1 WCPM. Adams' PND were in the effective range (88%), but Dennis' fell short, 69%, in the questionable range.

Additionally, an occurrence similar to the limitation in Isaiah's data was revealed in Adam's. Although occurring within a stable data path, the last data point in his baseline condition was in an upward trend prior to him beginning the intervention condition. Dennis' intervention ended in a deteriorating data path after he reached criterion. He had multiple data paths within his intervention condition, as did Adam. While Dennis' overall trend was improving and therapeutic, within that trend, his data indicated continued improvement until he reached criterion. After reaching criterion, the results of the CBMs administered during his instructional sessions declined. Dennis was absent for nearly 2 weeks following the brief decline, preventing opportunities for a demonstration of any additional improvement in the data.

Some of the data that were analyzed for Dennis and Adam showed promise for the VSM feedforward treatment. However, the limitations, Dennis' questionable PND effect and narrow improvement of maintenance at 1 WCPM above baseline mean and Adam's narrow improvement of 1WCPM above his baseline mean for generalization prevented a claim of positive treatment effect for those participants.

The analysis of Selena's (Experiment I), and Tobias' and Melissa's (Experiment II) data suggested some improvements in oral-reading fluency; however, those improvements did not constitute the evidence required for a claim of positive treatment effect for those participants. Selena did not meet criterion, had the least change in mean level (4.2 WCPM), had the only decline in median (1 WCPM), had the only decline in relative change (1 WCPM), and had the only PND measure in the "ineffective" range.

Although Selena's PND score was in the ineffective range, it must be noted that she had a deteriorating, contratherapeutic data path in baseline contrasted with an improving, therapeutic trend during the instructional condition. A decline, after an initial absolute level change of 12 WCPM, resulted in the 40% PND. Gast (2010) discussed that the PND measure alone could not be relied upon to establish effect in similar, exemplar data. In addition, Selena maintained her improved reading-fluency skills at a level above her intervention condition mean, however slight, but she did not demonstrate a generalization of skills.

The data for Tobias and Melissa demonstrated improvements in mean, median, and absolute and relative levels. In contrast, neither demonstrated maintenance of treatment gains; all maintenance data were below the mean of the baseline conditions. Rather than showing improvement from pre-test and post-test generalization, both had declines in generalization. Effect, maintenance, and generalization were not demonstrated in the data for Selena. Tobias' and Melissa's PND scores were within the effective range, yet failure of the treatment gains to maintain or generalize prevent a claim of positive effect for either of them.

Another limitation of the study was the assignment of criterion. Criterion was set at one season of growth. Because assignment of the current season was based upon an interval or range of WCPM, some participants had to achieve higher rates of improvement than others. Some participant's assignments were based on WCPM at the upper level of an interval, resulting in that participant needing to make a larger gain in WCPM to reach the criterion than others. The rationale for setting criterion based upon seasons was valid; this was typical of how student reading gains were determined. For the

purposes of this study, the criteria resulted in uneven expectations for participants. For future studies, criterion should be set at a percentage gain (i.e., 10%, 15%, 20%) in WCPM.

### **Contributions to the Literature**

This study expands the literature base for VSM and academic skills, and for students with EBD and academic skills (i.e., reading). Only three other single-subject studies (Dowrick et al., 2006; Greenburg et al., 2002; Hitchcock et al., 2004) have been conducted that evaluated VSM feedforward and oral-reading fluency. Only two (Dowrick et al., 2006; Hitchcock et al., 2004) were peer-reviewed. First and second-graders were the participants in those studies in contrast with those in this study that included participants who ranged in age from 12-14 years.

Several outcomes of the data analysis were positive when VSM feedforward was implemented to improve oral-reading fluency for 8 participants in special education placements in two different experiments. Seven participants were in self-contained classrooms for students with EBD and one was in a self-contained classroom for students with Multiple Disabilities. The experiments of the study occurred in two different middle schools. Prior to this study, VSM feedforward had not been employed to improve oral-reading fluency with this population of school-age students nor in middle school-based settings.

Furthermore, VSM feedforward, the only independent variable aside from non-contingent reinforcement, was not paired with tutoring or reading instruction in this study. Belinni et al. (2007) were the only other researchers who utilized VSM as a singular treatment in a study. They utilized the treatment to improve the social skills of

young children in natural settings. The results provided an immediate and sustained demonstration of the dependent variable. Although, Hitchcock et al. (2003) noted that VSM appeared to have an additive effect when combined with other interventions, Dowrick et al. (2006) asked the important question of whether VSM feedforward could result in improved reading skills when implemented without tutoring.

In the two experiments of this study, while 6 out of 8 participants experienced regular reading instruction that was not part of the intervention, instruction in oral-reading fluency (the dependent variable) occurred rarely or not at all. No instances of oral-reading fluency instruction were noted by the teachers from Experiment I or Experiment II.

Although Melissa and Selena attended classes for reading instruction on most days during the study, 2 students, Lucas and Josiah from Experiment I received no specific instruction in reading, neither in the self-contained classroom nor in other classes. The teacher in Experiment I later reported that as a result of the study, his students were beginning to ask if they could read orally in class as a result of their participation in the study.

The reading instructors in the outside classes in both experiments were asked if the students received specific instruction in oral-reading fluency. Those instructors replied that the participants neither received instruction nor were they assessed for oral-reading fluency. The participants in Experiment II received daily reading/language arts instruction in their EBD self-contained classroom.

The researcher observed one variable that was shared by the participants who experienced positive treatment results in effect, maintenance and generalization. They

either received less reading instruction, or less reading instruction on their instructional level than the other participants. Positive treatment effects were established for Lucas, Josiah, and Isaiah. In the absence of other reading instruction, the reading gains that Lucas and Josiah made during this study could be directly attributable to the VSM intervention. Evidence such as the students' attainment of criterion, change in mean levels, and a contratherapeutic change in trend between baseline-probe and VSM feedforward intervention conditions, effective and very effective PND, maintenance and generalization of skills, and improvements in GORT-4 pre-tests and post-tests scores suggest that was the case.

Isaiah did have access to reading instruction, but, as a reader on the 1<sup>st</sup>-grade level, the reading instruction may have been beyond his instructional level or at a level from which he could not benefit. His classroom teacher stated that he frequently struggled with the classroom assignments and required 1-on-1 assistance to complete assignments.

The minimum of three direct replications within the same study that are required to demonstrate a functional relationship between the independent and dependent variables were not obtained in either Experiment I or II (Gast, 2010). In order to establish functional relationship at least three participants in each study must have met criterion, demonstrated effective/very effective PND, and both maintained and generalized improved oral reading-fluency skills.

It is possible that the multiple-probe baseline single-case design controlled for and revealed history confounding and the gains that the participants made in oral- reading fluency were a result of daily sessions where students received 1-on-1 attention from the

researcher and read a CBM passage for 1 min, rather than a result of the VSM feedforward treatment. It is also possible that the results were impacted by a combination of both factors (Buggey, Toombs, Gardener, & Cervetti, 1999).

Although it is disappointing that all students did not maintain and generalize the gains made during the intervention condition, the inquiry informed future studies that may employ VSM feedforward as a treatment to improve oral-reading fluency and other academic skills. It contributed to the literature by employing an adapted multiple-probe design across participants with a pretest/posttest in two experiments. At the time this study was conducted there were no others in the literature that employed this design to evaluate the effects of VSM feedforward on oral-reading fluency. The adapted component of the design, standardized pre-test and post-test measures (i.e. GORT-4), supported the findings evidenced in the graphical depictions of the data that indicated improved changes in mean and trend.

The design reduced the number of times that the participants' oral-reading fluency was assessed prior to beginning the instructional condition. However, it is possible that a multiple baseline design would have been a better choice of designs for this study. Considering that the multiple baseline design would have required an increased quantity and frequency of CBMs administered during baseline, the resulting data may have revealed a better understanding of the impact that history effects had on participant performance.

Due to the relatively short duration of the treatment (i.e., 10-13 sessions in Experiment I; 7- 13 sessions in Experiment II), it is possible that the treatment dosage was great enough for the 8 participants to improve oral reading-fluency skills in trend and

level but that it was not sufficiently robust enough for 5 of the participants to maintain or for 3 of the 8 to generalize his/her improved oral reading-fluency skills. The individualized attention from the researcher (Buggey et al., 1999) and novel sessions dedicated to oral reading may have resulted in history and novelty effects.

Finally, this study revealed information about the many variables that must be controlled in pursuing the research. The mechanics of creating VSM recordings require consideration in relation to the individual participants. Those variables and considerations should be applicable to other studies or interventions in which VSM feedforward is employed to improve academic skills. They are discussed in Recommendations for Practice and Implications for Future Research.

### **Recommendations for Practice**

A passage that is especially difficult for a participant to read may be detrimental to the viewing quality of their VSM DVD, thereby impacting the validity of an experiment or implementation in a classroom. If a participant is critical of the quality of his or her DVD, it may decrease his or her self-efficacy and/or negatively impact the likelihood that he or she will engage in viewing it over time. In both experiments, students, Melissa and Selena, had a VSM DVDs that seemed “jumpy”, the edits were obvious. Selena complained that her video seemed jumpy. Melissa did not complain but the researcher noticed the effect. The “jumpiness” was a result of the many edits that the recording required. The audio qualities of the recording were not affected. There were, however, occurrences where Selena and Melissa seemed distracted and had more difficulty attending to the video. That distractedness was not observed in the other

participants. It is possible that Selena and Melissa found the visual quality of the video unpleasant.

The VSM feedforward, reading fluency DVD's aesthetic viewing quality should impact the determination of the difficulty of the reading passage that is assigned for the recording. This should either be considered before making a decision about the difficulty level of the reading passage, or procedures should allow for changing the difficulty level of the passage if the resulting video is unpleasant to watch. Short practice video recordings with different passages that vary in difficulty may be one practical solution to establishing a reading level that will be conducive to editing and producing an aesthetically pleasing VSM DVD. When conducting future research studies that employ VSM, the procedure may help limit history effects that could occur if an entire video had to be reproduced due to poor quality. This need not be a concern for teacher-implemented interventions.

In order to increase the implementation of VSM feedforward to improve reading and other academic skills, pre-service teachers and practicing teachers must be taught how to implement it. Bellini et al., (2007) suggested that more research is required to evaluate the implementation of VSM with teachers as the implementers. Bellini and McConnell (2010) and Dowrick (2000) have created guides for teachers/practitioners to aid them in VSM implementation. The researcher successfully taught pre-service teachers and teachers to implement VSM in an undergraduate special education instructional technology course. This study demonstrated that VSM feedforward was effective in improving oral-reading fluency skills. Considering its many applications (see Chapter

One), instructing teacher candidates in how to implement VSM may facilitate its use in school settings (see Appendix H for VSM teaching suggestions).

Additionally, Dowrick et al. (2006) stated that “feedforward videos were time-limited in their effect” (p. 205). If students improve to the level of skill demonstrated on the video (e. g., learned all of the words in the video) than the videos were no longer *feedforward* and students were likely to become bored with them. In Experiment II, Dennis and Adam indicated that they may have become bored with their VSM DVDs. As students become bored with their videos, new recordings should be made.

### **Implications for Future Research**

This study and others (Delano, 2007; Dowrick et al., 2006; Greenburg et al., 2002; Hitchcock et al., 2004; Schunk & Hanson, 1989) demonstrated that VSM feedforward can improve academic skills (i.e., reading, writing, and math) in school-based settings for some students.. However, the VSM studies to improve reading fluency do not reveal how the level of difficulty for reading passages utilized in VSM recordings should be determined. Morgan, Wilcox, and Eldredge (2000) determined that text at two grade levels above a student’s instructional level is the most effective for those using the dyad strategy to improve reading fluency.

This is an area for future research that would assist practitioners in implementing VSM feedforward in the classroom. If researchers can discover a procedure (i.e., the most efficacious manner) to determine passage difficulty levels to assign students for a VSM feedforward, reading-fluency movie, the classroom teacher will not have to make that decision arbitrarily. A single-case design that replicates results across behaviors and participants may prove advantageous and worthy of consideration for such an endeavor.

VSM is an evidenced based practice (Bellini & Akullian, 2007; Delano, 2007) for teaching discrete skills. VSM may improve generative tasks like oral-reading fluency by helping a student to gain self-confidence and motivation to use the skills that they already possess. VSM does not teach the student to read when implemented as a singular independent variable and paired with non-contingent reinforcers.

Questions about what dosages or durations of VSM treatment are most effective, establishing a timeframe for creating new feedforward recordings as students tire of the most recent, evaluating the use of VSM in a daily center that students visit prior to engaging in a generative task or applied behavior, contingent and non-contingent reinforcers paired with VSM, and self-monitoring paired with self-modeling are all examples of possible research inquiries from which the results can inform classroom-based applications. A replication of VSM feedforward as a stand-alone intervention for oral-reading fluency with high-school students may be warranted; however, the results of an evaluation that pairs VSM with a decoding strategy to further improve oral-reading fluency may prove more valuable at this time.

VSM feedforward in combination with other strategies has proven successful in other studies and deserves further exploration. Delano (2007) evaluated an SRSD strategy delivered via VSM to improve student writing; Schunk and Hanson (1989) taught students to use strategies to solve fraction problems via VSM (see Chapter One). Students demonstrated improvements in both studies. Future research that evaluates the effect of a VSM feedforward treatment that depicts students using decoding strategies while self-modeling fluent reading would provide a much needed contribution to the literature. A reiteration of Waltersdorf's (1992) plea for future research warrants repeating. Further

application on a variety of academic subjects is needed. “If VSM alone is efficacious, what might its potential be in a multi-modality treatment package” (p. 70)?

## **Conclusion**

While the results of Experiment I and II were disappointing in that a definitive positive effect of the independent variable was demonstrated for only 3 out of 8 students, the implications were positive. In 2 experiments, Experiments I and Experiment II, VSM feedforward was employed as an intervention to improve the oral-reading fluency of 8 middle-school students with a history of behavioral problems in a self-contained classrooms. Criterion was met by 7 out of 8 students. The student who did not reach criterion improved in mean level of CWPM.

Six students maintained levels above the baseline mean, and 1 maintained above his intervention mean. Generalization of skills was evident for 4 out of 8 of the students and one showed slight improvement. Although all participants’ statements and affects seemed to reflect an improved reading self-efficacy, this could not be adequately discerned from the results of the RSPS. Out of 8 participants, the responses of 4 indicated improved reading self-efficacy, 2 had mixed results, and 2 had responses that indicated a decline in their perceived, reader self-efficacy. The participants in Experiment II showed a higher degree of reader self-efficacy than those in Experiment I. They also received more reading instruction in their EBD self-contained classroom. The feedback that they received from instructors/others may have improved their ability to assess their

own reading skills, and understanding of progress in improving their reading skills.

Qualitative and quantitative measures demonstrated that the treatment was a socially valid instructional method for the participants. A thorough analysis of the data collected during the conditions within an adapted multiple-probe single-subject research design with pre-tests and post-tests produced mixed results; however, every participant improved their oral reading fluency grade-level after receiving either 117 or 50 min of a VSM feedforward instructional procedure. As Dowrick et al. (2006) noted in regards to his findings, “The results of this study should encourage special educators and psychologists to adopt or adapt such strategies for literacy development.” (p.203). In addition, researchers should be encouraged to expand the investigation of VSM in academic areas, and with different populations of students with disabilities.

## **Appendix A**

### Protocol Checklists

Figure A1

<b>Protocol Checklist for Baseline Sessions</b>	
Date / / Time :	Session: # _____
Subject: #	Check if task was completed.
1. Students begins reading when prompted (e.g., teacher says <u>begin reading</u> ).	
3. Student reads passage.	
4. Student is prompted to stop reading the passage.	
5. Observer notes behavior or circumstances outside the parameters of the protocol.	
<b><u>Behavior Notes</u></b>	

Figure A2

<b>Protocol Checklist for Intervention Sessions</b>	
<b>Date</b> / / <b>Time</b> :	<b>Session:</b> # _____
<b>Subject #</b>	<b>Check if task was completed.</b>
<b>1. Teacher inserts DVD in CD/ DVD drive.</b>	
<b>2. Student puts on headphones.</b>	
<b>3. Student attends to VSM DVD.</b>	
<b>4. Student participates in intervention probe.</b>	
<b>5. Observer notes behavior or circumstances outside the parameters of the protocol.</b>	
<b><u>Behavior Notes</u></b>	

Figure A3

<b>Protocol Checklist for Maintenance Sessions</b>	
<b>Date</b> / / <b>Time</b> :	<b>Session:</b> # _____
<b>Subject:</b> #	<b>Check if task was completed.</b>
<b>1. Student opens book.</b>	
<b>2. Student begins reading when prompted (e.g., teacher says begin reading).</b>	
<b>3. Student reads passage from the student's social studies book.</b>	
<b>4. Student is prompted to stop reading the passage.</b>	
<b>5. Observer notes behavior or circumstances outside the parameters of the protocol.</b>	
<b>Behavior Notes:</b>	

Figure A4

<b>Protocol Checklist for Generalization Sessions</b>	
<b>Date</b> / / <b>Time</b> :	<b>Session: G#</b> _____
<b>Subject #1</b>	<b>Check if task was completed.</b>
<b>1. Student opens book</b>	
<b>2. Student begins reading when prompted (e.g., teacher says begin reading)</b>	
<b>3. Student reads passage from the student's social studies book.</b>	
<b>4. Student is prompted to stop reading the passage.</b>	
<b>5. Observer notes behavior or circumstances outside the parameters of the protocol.</b>	
<b><u>Behavior Notes</u></b>	

## Appendix B

### Parent Consent Form for Student Participation

## Consent to Participate in a Research Study

### Video Self-Modeling and Improving Reading Fluency

Wanda G. Chandler  
University of Kentucky  
237 J TEB  
Lexington, KY 40475

Dear Parent or Guardian:

Your child is being invited to take part in a research study to explore an instructional intervention that may improve her/his fluency in oral reading. Your child is being invited to take part in this research study because he/she is performing below grade level in reading. If your child volunteers to take part in this study, he/she will be one of about 3 - 5 middle school students to do so. I am a student at the University of Kentucky. I have also worked in the Madison County School System as a teacher. I am conducting an educational study that involves research. I am researching a teaching strategy to improve students' reading fluency, the number of correct words read in a given amount of time (e.g., correct words read per minute). Participation in the study will require a student to work toward improved reading fluency 1-6 weeks with a minimal amount of time (5-20 min) spent per school day.

Video self-modeling (VSM) is the teaching strategy to be studied. Students will be videotaped reading a passage that is more difficult than they are typically able to read. The researcher will read each sentence of a passage and ask the student to repeat it. A 1.5- to 2-min videotape will be created that is edited to show the student reading the difficult passage fluently. The student will observe this video each day. A reading fluency measure (1 min) will be administered to detect changes in the students' in reading fluency. A standardized assessment will also be administered.

There are no foreseeable risks or discomforts to the students as a result of the study. The researcher expects students to benefit from the research by improving their reading fluency and self-concept due to the improved reading fluency. The research will be a component of the students' instructional day.

Student records will be examined to determine their disability, special education history, standardized test scores, and Individualized Education Plan goals. This information will be used by this researcher alone, and all confidentiality of records identifying the subject will be maintained. Compliance with ***Health Insurance Portability and Accountability Act*** (HIPAA), and the ***Family Educational Rights and Privacy Act*** (FERPA) will be maintained.

Participation in the study is voluntary. Refusal to participate will involve no penalty to the student. The student may discontinue participation at any time.

If you have questions about this research study you may contact the researcher, Wanda G. Chandler, Ed. S., by phone: 859.779.4956, or email: [wanda.chandler@uky.edu](mailto:wanda.chandler@uky.edu). You may also contact Belva C. Collins, Ed.D., at 859-257-8591. Dr. Collins is the Co-chairperson of the researcher's doctoral committee. If you have any questions about your rights as a volunteer in this study you can contact the staff in the Office of Research Integrity at the University of Kentucky at 1-866-400-9428.

Please sign below and return if you agree to allow your student to participate in the VSM research study.

Sincerely,

Wanda G. Chandler  
wanda.chandler@uky.edu  
859-779-4956

---

\_\_\_\_\_  
Signature of parent or guardian

\_\_\_\_\_  
Date

\_\_\_\_\_  
Printed name of parent or guardian

\_\_\_\_\_  
Date

\_\_\_\_\_  
Printed name of student participant

\_\_\_\_\_  
Date

## Appendix C

### Student Assent Form for Participation

Figure C. Student Assent Form

Nonmedical IRB Assent Form

IRB Approval 11-0277
THIS FORM VALID 4/4/11 - 4/02/12

**ASSENT FORM**

Video Self-Modeling and Improving Reading Fluency

You are invited to be in a research study being done by Wanda Chandler from the University of Kentucky. You are invited because I think I can help you to read more fluently.

If you agree to be in the study, you will be asked to make a short video which will be edited to show you reading very well. You will be asked to watch the video each day when it's your turn to participate in the study. After watching the video, I will test your reading fluency by having you read a short reading passage.

Your family will know that you are in the study. If anyone else is given information about you, they will not know your name. A number or initials will be used instead of your name.

If you agree to participate in the study you are granting permission for me to access grades, test scores and other information from your school records such as your disability, special education history, standardized test scores, and Individualized Education Plan goals.

If something makes you feel bad while you are in the study, please tell Mr. Doram or me. If you decide at any time you do not want to finish the study, you may stop whenever you want.

You can ask me or Mr. Doram questions any time about anything in this study. You can also ask your parents any questions you might have about this study.

Signing this paper means that you have read this or had it read to you, and that you want to be in the study. If you do not want to be in the study, do not sign the paper. Being in the study is up to you, and no one will be mad if you do not sign this paper or even if you change your mind later. You agree that you have been told about this study and why it is being done and what to do.

\_\_\_\_\_  
Signature of Person Agreeing to be in the Study

\_\_\_\_\_  
Date Signed

Form D: Nonmedical Research Assent Document  
520

University of Kentucky  
Revised 5/21/07

Appendix D  
Sample of CBMs

Figure D1. *easyCBM Student Copy*

<p><b>Student Copy</b></p> <p>Molly's birthday is coming up this Tuesday. She will turn eleven. Her parents have asked her to write a list of all the presents she wants. She is having a party, and lots of people will be coming. Her grandparents are coming from California. Her best friend will be there. Her neighbor is coming and so are her cousins. Her mom said about twenty people will be coming. This means her wish list can be long!</p> <p>Molly knows that she probably can't put everything she wants on the list. So, she doesn't include a white pony or trip to New Zealand. She also knows that she should be as specific as she can so she does not get a gross brown pen if she really wants a blue or yellow one. Her little brother tries to get Molly to add a new bike for him. She knows his birthday is just around the corner so she does not. Molly thinks and thinks about what to put on her list. Then, all of a sudden, she knows! She writes it very carefully. She uses her best handwriting. Then, she folds the paper in half. She gives it to her mother. Her mother is surprised it did not take Molly longer. She unfolds the paper and a huge smile appears on her face. She reads, "Magic tricks to make everyone's dreams come true." Molly's mom hugs her. She is proud and tells her that she is sweet for thinking of others on her own birthday.</p> <p>© 2006 University of Oregon</p>	<p><b>Form 3-7</b></p>
---	------------------------

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Figure D2. *easyCBM Assessor Copy*

<b>Assessor Copy</b>	<b>Form 3-7</b>
Student Name: _____ Date: _____	
<p>1. Place the Student Copy in front of the student. Point to the names on the Student Copy as you read them:                      "This is a story about <b>Molly</b>. I want you to read this story to me. You'll have 1 minute to read as much as you can. When I say "begin," start reading aloud at the top of the page. Do your best reading. If you have trouble with a word, I'll tell it to you. Do you have any questions? Begin."</p> <p>2. Start the timer.                      3. While the student is reading, mark errors with a slash (/).                      4. At 1 minute, mark the last word read with a bracket (]).                      5. When the student gets to a logical stopping place, say "Stop."</p>	
<p><u>Molly's</u> birthday is coming up this Tuesday. She will turn eleven. Her parents have asked her to write a list of all the presents she wants. She is having a party, and lots of people will be coming. Her grandparents are coming from California. Her best friend will be there. Her neighbor is coming and so are her cousins. Her mom said about twenty people will be coming. This means her wish list can be long!</p> <p>Molly knows that she probably can't put everything she wants on the list. So, she doesn't include a white pony or trip to New Zealand. She also knows that she should be as specific as she can so she does not get a gross brown pen if she really wants a blue or yellow one. Her little brother tries to get Molly to add a new bike for him. She knows his birthday is just around the corner so she does not. Molly thinks and thinks about what to put on her list. Then, all of a sudden, she knows! She writes it very carefully. She uses her best handwriting. Then, she folds the paper in half. She gives it to her mother. Her mother is surprised it did not take Molly longer. She unfolds the paper and a huge smile appears on her face. She reads, "Magic tricks to make everyone's dreams come true." Molly's mom hugs her. She is proud and tells her that she is sweet for thinking of others on her own birthday.</p>	<p>12 28 42 56 70 76 88 103 120 136 152 168 183 198 211 226 239 253</p>
<p>Total Words Read: _____ - # of Errors: _____ = CWPM: _____</p>	
<p>© 2006 University of Oregon</p>	

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## Appendix E

### Suggestions for Sharing Procedures for Video Self-Modeling (VSM) in Teacher Preparation Courses

## **Suggestions for Sharing Procedures for Video Self-Modeling (VSM) in Teacher Preparation Courses**

Successful implementation of a VSM intervention does require a particular skill set. This skill set can be taught, and culminate with each teacher candidate creating a VSM movie in approximately 3 hrs.

- 1) Understanding of VSM as an instructional strategy
  - a. Student develops an understanding of VSM (purpose and application)
    - i. Lecture on the topic (<http://www.creating-futures.org>)
    - ii. Provide examples
      1. My examples:
        - a. David–bowling
        - b. Jon–reduce time to initiate task
        - c. Brett–replacement behaviors for spitting, etc.  
when angered
        - d. Timmy–staying calm when others are upset
      2. Other examples:
        - a. Creating Futures:  
<http://www.creating-futures.org/literacy/ace/casestudy/topics/topic01.php>
        - b. Video Futures Project:  
<http://www.uaa.alaska.edu/centerforhumandevl>

opment/videofutures/upload/Video-Futures-  
Project-2.pdf

- 2) Storyboard the target behavior.
  - a. Students may work in teams to identify a target behavior: reading fluency, adaptive behavior skill, etc.
  - b. Students use the storyboard handout to plan the scenes of their VSM video.
- 3) Candidates use video cameras to record their VSM movie.
  - a) See this article for step-by-step use of a “flip camera”: Bellini, S., McConnell, L. L. (2010). Strength-based educational programming for students with autism spectrum disorders: A case for video self-modeling. *Preventing School Failure, 54*(4), 220-227.
  - b) Check out cameras from technology centers and/or allow students to use their own.
- 4) Candidates use video editing software to create VSM movie.
  - a) Use the simplest software that is available.
  - b) Use online tutorials to provide step by step direction in learning to use the software (e.g. *Windows Movie Maker, iTunes*).
  - c) Candidates perform each step after it is demonstrated.
  - d) Candidates show VSM movies to their class during “VSM Movie Screening”.
  - e) Candidates implement VSM with a K-12 student.

### Reading Fluency Example

- 1) Title slide
- 2) Reading Passage (i.e., text, grade level)
  - a. easyCBM:  
<http://www.easycbm.com/>
- 3) Teacher reads word, phrase, or complete sentence to the student.
- 4) Student Repeats
- 5) Continue to end of passage.
- 6) Last Scene (Student Smiling)
- 7) “The End” and roll credits

### Adaptive Behavior Example

- 1) Title slide
- 2) Create scenes of the desired target behavior (e.g., Student waits to appropriately gain his/her teacher’s attention.)
- 3) Teacher is on the phone.
- 4) Student walks to teacher’s desk.
- 5) Student pauses.
- 6) Student thinks out-loud, “I’ll wait until she is finished”.
- 7) Teacher hangs-up phone
- 8) Teacher praises student for waiting and asks about his/her question.
- 9) “The End” and roll credits

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Graduate Certificate 2010 University of Kentucky, Lexington, Kentucky.

Special Education: Distance Learning

Graduate Certificate 1997 University of Kentucky, Lexington, Kentucky.

Special Education: Director of Special Education

Ed. S. 1995 University of Kentucky, Lexington, Kentucky.

Special Education: Instructional Technology

M.S. Ed. 1991 University of Kentucky; Lexington, Kentucky.

Special Education: Learning and Behavior

Disorders

Moderate and Severe Disabilities (2007)

B.S. Ed. 1984 Western Kentucky University, Bowling Green,  
Kentucky.

1-8 Elementary Education

K-12 Exceptional Child Education

### HONORS and AWARDS

1985-1991 Awarded the WHAS Grant for Master's Program

1991 Kentucky Special Olympics Coach of the Year

1997 Kentucky Vocational Special Needs Teacher of the Year  
2004-2007 Awarded the John Edwin Partington and Gwendolyn Gray  
Partington Scholarship  
2011 Awarded the Blackhurst Student Research Fund Graduate  
Fellowship

### PROFESSIONAL EXPERIENCE

2007-2011 Instructor, University of Kentucky, Lexington, Kentucky  
2007-Present Special Education Teacher, Madison County School  
District, Richmond Kentucky  
2006 Instructor, Midway College, Midway, Kentucky  
2005-2006 Researcher and Proposal Writer Collaborative Center for  
Literacy Development, University of Kentucky, Lexington,  
Kentucky  
2005 Instructor, University of Kentucky, Lexington, Kentucky  
2004-2005 Transition and Instructional Technology Consultant,  
Central Kentucky Special Education Cooperative,  
Lexington, Kentucky  
2004-2005 University Practicum Supervisor, University of Kentucky,  
Richmond, Kentucky  
2004 University Practicum Supervisor, Eastern Kentucky  
University, Richmond, Kentucky  
2003-2004 Teaching Assistant, Instructor, University of Kentucky,

Lexington, Kentucky

2003-2004      Instructor, University of Kentucky, Lexington, Kentucky

2002-2003      Editor and Writer Kentucky Dropout Prevention Project,  
Interdisciplinary Human Development Institute, University  
of Kentucky, Lexington, Kentucky

2002              Photographer and Writer, University of Kentucky Access  
Map, Interdisciplinary Human Development Institute,  
University of Kentucky, Lexington, Kentucky

2001-2002      Instructor, University of Kentucky, Lexington, Kentucky

2000-2001      Behavior Management Specialist; Franklin County Public  
Schools, Frankfort, Kentucky

1997-2000      Learning Disabilities Curriculum Resource Specialist,  
Fayette County Public Schools, Lexington, Kentucky

1984-1997      Special Education Teacher, Anderson County High School,  
Lawrenceburg, Kentucky

PUBLICATIONS

Chandler, W. (1990). *Anderson county transitional training program manual*.

Lawrenceburg, Kentucky, Anderson County Public Schools

Chandler, W., Stevens, K. B., & Schuster, J. W. (1993). Teaching job skills to  
adolescents with moderate and mild retardation using a constant time delay  
instructional procedure. *Education and Training in Mental Retardation*, 28,  
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Chandler, W. (2005). *Collaboration observation instrument*. Frankfort, KY:  
Kentucky Department of Education.

Chandler, W. (2012). *Video self-modeling and improving oral reading fluency*.  
Manuscript in preparation.

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