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The Effectiveness of Self-Regulated Strategy Development for School-Age Children with Hearing Loss

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THE EFFECTIVENESS OF SELF-REGULATED STRATEGY DEVELOPMENT FOR
SCHOOL-AGE CHILDREN WITH HEARING LOSS

by

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ABSTRACT

Purpose: The two-fold purpose of this feasibility study was to determine if (a) self-regulated strategy development intervention would improve the writing skills of children with hearing loss and (b) if self-regulated strategy development intervention would improve the reading comprehension skills of children with hearing loss.

Method: One eleven year-old child with bilateral sensorineural hearing loss participated in this single-subject, multiple probe across behaviors design treatment study which examined the effectiveness of using writing intervention to improve reading comprehension in children with hearing loss. The participant completed three seven-week writing interventions focused on narratives, opinion essays, and persuasive essays. Intervention was delivered one-on-one for 60 minutes one day per week.

Results: Comparison of pre- and post-test measures of writing and reading comprehension indicated that the writing intervention was effective for improving narrative and opinion essay writing performance and reading comprehension for the participant.

Conclusions: Self-regulated strategy development writing intervention can be an effective intervention strategy to improve writing, as well as reading comprehension, skills in children with hearing loss.

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LIST OF ABBREVIATIONS

ES	Effect Size
SLP.....	Speech-language pathologist
SRSD.....	Self-Regulated Strategy Development

CHAPTER 1

INTRODUCTION

The poor literacy skills of students in the United States have been well documented. As a result of difficulties with reading and writing, students in the U.S. do not possess the skills that are necessary for success in school, post-secondary education, or the increasingly literate job market (Hebert, Graham, Rigby-Wills, & Ganson, 2014; National Center for Educational Statistics, 2010). According to the National Assessment of Educational Progress (NAEP; National Center for Educational Statistics, 2010), 62% of high school seniors do not possess “proficient” reading skills. Proficient skills are the skills necessary to perform appropriately for one’s grade level (Hebert et al., 2014). Additionally, 40% of U.S. high school graduates do not possess the literacy skills that employers require (Graham & Hebert, 2010; National Governors Association, 2005). Poor literacy is not a problem that solely affects individual students or families. These nationwide deficits in reading and writing cost universities, employers, and the country as a whole billions of dollars per year to remediate (Graham & Hebert, 2010).

Although the aforementioned trends in poor literacy are ominous enough on their own, when hearing loss is a contributing factor, reading and writing outcomes become even more alarming. Children with hearing loss perform significantly worse on measures of literacy than their normal-hearing peers (e.g. Qi & Mitchell, 2012; Moeller, Tomblin, Yoshinaga-Itano, Connor, & Jerger, 2007; Geers & Hayes, 2011). Despite drastic improvements in amplification technology over the past few decades, students with

hearing loss continue to stagnate in regard to reading and writing abilities. A third grade reading level has been reported as the median performance level for 18 year-olds with hearing loss (Qi & Mitchell, 2012). Few children, even among those who receive cochlear implants before the age of two, have experienced literacy skills that are consistent with their hearing peers (Geers & Hayes, 2011). The combination of receiving education in a country where the majority of students with normal hearing do not achieve proficient literacy skills and the additional difficulties that hearing loss entails results in detrimental reading and writing outcomes for students with hearing loss in the U.S. today.

Even children who use cochlear implants or those who have only mild sensorineural hearing loss experience difficulty succeeding academically (Bess, Dodd-Murphy, & Parker, 1998; Geers & Hayes, 2011). Geers & Hayes (2011) found that written expression and phonological processing were the most problematic areas of literacy for high school students with cochlear implants who were implanted as young children. Among children who were implanted with cochlear implants at a young age, only 47-66% of them performed within the average range (Geers & Hayes, 2011). Furthermore, thirty-seven percent of children with hearing loss will fail at least one grade (Bess et al., 1998). The current body of evidence supports that children with hearing loss require immediate intervention in the areas of reading and writing in order to be able to succeed in an increasingly literacy-focused world.

Limited research has been done regarding the effectiveness of writing intervention to aid in reading comprehension for children with hearing loss. However, one study did examine the effects of storybook reading and joint writing between mothers with typical hearing and their children with hearing loss. Aram, Most, and Mayafit (2006) studied the

joint literacy interactions of 30 kindergarten children with hearing loss who had amplification devices. As part of a larger study, the researchers asked mothers to assist their children in completing a writing task wherein children were instructed to write novel pairs of semantically related nouns (Aram et al., 2006). Aram et al. (2006) found that the mother-mediated writing task was a predictor of alphabet skills in these kindergarten children. Children with hearing loss can benefit from receiving similar types of literacy instruction as their hearing peers. However, children with hearing loss may need more direct instruction than their hearing peers (Aram et al., 2006). Although this study targeted pre-literacy skills rather than reading comprehension, the principle that writing can improve reading for children with hearing loss remains consistent. If writing nouns can help young children with hearing loss to improve their alphabet knowledge, it is worthwhile to investigate whether or not the SRSD strategy can improve the reading comprehension of older children with hearing loss.

One type of literacy intervention that has been successful for children with normal hearing is the use of writing as a means to improve reading skills (Graham & Hebert, 2010). In a meta-analysis, Graham & Hebert (2010) found that 93% of the studies that they reviewed yielded positive outcomes for writing-to-read intervention styles. Additionally, Hebert et al. (2014) discovered that students as young as fourth grade could benefit from writing-to-read interventions when reading comprehension was measured by a multiple-choice exam that required the students to make inferences. If writing to read allows children with normal hearing to improve their overall literacy skills, it is reasonable to attempt to use these same evidence-based intervention strategies for children with hearing loss. In this study, a Self-Regulated Strategy Development (SRSD)

intervention was used with one child with hearing loss to determine the effectiveness of this intervention method. The participant received intensive therapy with the SRSD intervention style in order to determine if SRSD is helpful in remediating the poor literacy outcomes for children with hearing loss.

SRSD has been documented to be an effective intervention for children with writing difficulties (Harris, Graham, Mason, & Sadler, 2002). “SRSD is designed to help students become fluent, independent, self-regulated, goal-oriented learners” (Harris et al., 2002, p. 110). In order to achieve this, the program follows a specific format. First, students are taught that writing is a process which includes: planning to write, writing, and proofreading one’s own work. Next, scaffolding and support from instructors is utilized to assist students in learning how to self-correct during the writing process. Lastly, students engage in activities that are meant to increase their confidence surrounding their abilities as writers (Harris et al., 2002). Although SRSD focuses on the core areas of self-instruction, goal setting, self-monitoring, and self-reinforcement, it is worthwhile to note that the program can be modified to suit the needs and skills of individual students (Harris et al., 2002).

In 2003, Graham and Harris conducted a meta-analysis on the effectiveness of SRSD intervention across 19 different studies. Graham and Harris (2003) examined studies that ranged in publication date from 1985 to 2003, and included both single-subject and group studies. SRSD was found to be an effective writing intervention tool for students with learning disabilities, students with below-average writing abilities, and students with average writing abilities (Graham & Harris, 2003). Additionally, the positive effects of SRSD intervention were maintained for students of various ages and

initial writing abilities over time (Graham & Harris, 2003). Writing quality, for example, was improved through the use of SRSD intervention (effect size [ES] = 1.47). Essay length (ES = 2.07), writing elements (ES = 1.87), and story grammar (ES = 3.52) all improved significantly with SRSD intervention as well (Graham & Harris, 2003). Maintenance of these effects were also strong; effect sizes ranged from 0.74 (quality) to 1.60 (writing elements). Considering that SRSD has been proven to be an effective writing intervention tool for children with normal hearing across multiple decades and dozens of studies, it is reasonable to explore the effectiveness of SRSD for children with hearing loss.

Although writing-to-read intervention styles have been studied with children with normal hearing, no studies have investigated the efficacy of writing-to-read interventions with children with hearing loss. The purpose of this study was to determine if (a) SRSD intervention would improve the writing skills of children with hearing loss and (b) if SRSD intervention would improve the reading comprehension skills of children with hearing loss. Therefore, our hypotheses were two-fold. First, we hypothesized that participation in SRSD intervention would lead to increased performance on measures of reading comprehension for our participant with hearing loss. Second, we predicted that the participant's writing skills would improve as a result of completing the SRSD intervention.

CHAPTER 2

METHOD

The research protocol for this study was approved by the Institutional Review Board at the University of South Carolina.

The participant was an eleven-year-old African-American girl with profound, bilateral, sensorineural hearing loss. For the purposes of this paper, the participant will be called “Madison.” Madison has two cochlear implants; she was implanted with her right cochlear implant at age 2;6 and her left cochlear implant at age 6;7. Per parent report, Madison is a monolingual English speaker. Pre-testing revealed that Madison performed in the lower end of the average range on a variety of language and literacy measures (see Table 3.1 in the Results section).

The following standardized tests were administered during pre-testing: the Test of Written Spelling-Fifth Edition (TWS-5; Larsen, Hammill, & Moats, 2013), the Clinical Evaluation of Language Fundamentals-Fifth Edition (CELF-5; Wiig, Semel, & Secord, 2013), the Test of Silent Contextual Reading Fluency-Second Edition (TOSCRF-2; Hammill, Wiederholt & Allen, 2014), the Test of Silent Word Reading Fluency-Second Edition (TOSWRF-2; Mather, Hammill, Allen & Roberts, 2014), the Test of Written Language-Fourth Edition (TOWL-4; Hammill & Larsen, 2009), and the Woodcock Reading Mastery Test-Third Edition (WRMT-III; Woodcock, 2011). All measures had adequate reliability (>.80) reported in test manuals. Pre-test scores can be found in Table 3.1 of the Results section.

Written prompts were utilized to establish baseline writing skills, monitor progress, and measure maintenance of writing skills over time. Prompts were designed to elicit either narrative, opinion essay, or persuasive essay writing. Examples of the written prompts that were used can be found in Appendix A. During progress monitoring, the author provided the participant a sheet of paper with a prompt typed or written at the top of the page. Next, the author read the prompt aloud and instructed the participant that five minutes would be provided to complete the writing task. The participant wrote until the five minutes were complete.

The author developed three different categories of writing prompts to elicit either a narrative, opinion essay, or persuasive essay from the participant. For narrative prompts, the author included some narrative details (i.e. “Buddy is a black and white puppy that likes to play.”) and then encouraged the participant to write a story (i.e. “Tell me a story about Buddy.”). Opinion essay prompts were worded as questions to encourage the participant to provide her opinion on a given topic. These question prompts began with the word “should” and were written in an effort to relate to the age and interests of the participant. For example, one opinion essay prompt was, “Should children tell their parents the truth?” In these opinion essays, the participant was meant to simply state her opinion on various topics. Persuasive essay prompts differed from opinion essay prompts in wording, in an effort to evoke a higher level of persuasive writing from the participant. Persuasive essay prompts began with the word “convince” as a reminder to the participant that the purpose of the essay was to influence the mind of the person reading the essay. For example, one persuasive essay prompt was, “Convince me why

girls should be allowed to play the same sports as boys.” Again, emphasis was placed on including themes that were relevant to the age and interest of the participant.

Rubrics were used to score the progress monitoring written prompts. Rubrics were created by the author and thesis project director. An example of a graded rubric can be found in Appendix B. Rubrics were specific to each of the three writing styles, and a variety of components were assessed on a scale in which the participant could receive 0, 1, 2, or 3 points for each category. For the narrative rubric, points were awarded for inclusion of WWW criteria (i.e. who, what, when, where etc.), use of sophisticated adjectives (also called “million dollar words”), and grammar. For the opinion essay rubric, points were awarded for inclusion of TREE criteria (i.e. topic sentence, reasons, explanation, and ending), word choice, grammar, and organization of the essay. For the persuasive essay rubric, points were awarded for inclusion of STOP + DARE criteria (i.e. topic sentence, supporting ideas, rejection of opposing arguments, and conclusion), linking words, grammar, and organization of the essay.

Two raters utilized the grading rubrics to score each of the written prompts. The order of the written prompts was randomized, and all dates were removed from prompts in an effort to eliminate scoring bias. Interrater reliability was assessed by comparing rubric scores from each of the raters for one third of the written prompts in each of the narrative, opinion essay, and persuasive essay sections. Scores were considered to be in agreement if one rater’s score on the rubric fell within 2 points of the other rater’s rubric score. Interrater reliability was high. For narratives, interrater reliability was 80%; opinion essay interrater reliability was 100%; persuasive interrater reliability was 80%.

The average interrater reliability for this study was 86%. Only one essay did not meet the criterion for agreement; the raters differed by 3 points on that essay.

The following standardized tests were used during post-testing: the Test of Written Spelling-Fifth Edition (TWS-5, Larsen, Hammill, & Moats, 2013), the Clinical Evaluation of Language Fundamentals-Fifth Edition (CELF-5; Wiig, Semel, & Secord, 2013), the Test of Silent Contextual Reading Fluency-Second Edition (TOSCRF-2; Hammill, Wiederholt & Allen, 2014), the Test of Silent Word Reading Fluency-Second Edition (TOSWRF-2; Mather, Hammill, Allen & Roberts, 2014), the Test of Written Language-Fourth Edition (TOWL-4; Hammill & Larsen, 2009), and the Woodcock Reading Mastery Test-Third Edition (WRMT-III; Woodcock, 2011). Results of post-testing can be found in Table 3.1 in the Results section.

Three seven-week lessons were derived from Harris, Graham, Mason, and Friedlander (2008). The first seven weeks of the one-on-one intervention centered on instruction regarding the preparation, organization, and execution of writing narratives. Over the course of seven weeks, the author followed detailed lesson plans created by Harris et al. (2008). There were seven lessons in total, and each lesson was completed in a 60 minute session, once per week. These lessons focused on the mnemonic POW + WWW. POW stands for, “pick my idea, organize notes, write and say more.” WWW stands for answering the following questions in each story, “Who is the main character?”, “When does the story take place?”, “Where does the story take place?”, “What does the main character want to do?”, “What happens then”, “How does the story end?”, and “How does the main character feel?”

The participant was explicitly taught that writing is a process, and that planning to write occurs before the act of writing. The lessons began with the author modeling desired writing behaviors and the participant's identification of story parts in stories written by others. Next, the author and participant utilized graphic organizers and mnemonic devices to write narratives collaboratively. Gradually, scaffolding and the use of graphic organizers were reduced at each subsequent session, and the participant began completing writing exercises independently at the close of the seven-week session. The participant was also provided with five minutes of grammar instruction during the first seven weeks of the intervention, because it was noted at baseline that the participant produced multiple grammatical errors while writing baseline prompts. These were addressed each week near the beginning of the session. Topics of instruction included subject-verb agreement, irregular plurals, and more.

The second seven weeks of instruction focused on the composition of opinion essays. The author explicitly taught the participant what an opinion entails, and that this style of writing can be used to share ideas with readers. Similar to the narrative section, the author utilized lesson plans created by Harris et al. (2008) for instruction regarding opinion essays. Of note, five lesson plans were provided for the opinion essay chapter. Harris et al. (2008) stated that lessons four and five could be repeated if the student would benefit from additional instruction. Therefore, the participant completed lessons four and five twice. This resulted in seven total sessions of opinion essay instruction. Each lesson was again conducted by the author during one-hour weekly sessions.

Opinion essays were taught utilizing the mnemonic device of POW + TREE. POW again stood for "Pick my idea", "Organize notes" and "Write and say more." The

inclusion of TREE added the following meaning: “Topic sentence”, “Reasons”, “Explanations” and “Ending.” Explicit modeling was utilized by the author at the onset of the opinion essay segment. Early sessions entailed the author and participant identifying necessary components of opinion essays written by others, and use of the graphic organizers and mnemonic devices by the author while the participant observed. As the sessions progressed, the participant and author began composing opinion essays together. Gradually, use of graphic organizers, mnemonics, and assistance from the author was reduced, and the participant planned, organized, and wrote opinion essays independently.

The final seven-week segment consisted of instruction focused on the composition of persuasive essays. Again, the author facilitated one-on-one hour-long sessions with the participant utilizing materials created by Hebert et al. (2008). Similar to the opinion essay section, five lessons were present in the persuasive essay instructional segment. The fourth and fifth lessons were each conducted twice, resulting in seven total lessons centered on persuasive essay instruction. Persuasive essay instruction added the idea of STOP + DARE to the participant’s writing repertoire. STOP stands for “Suspend judgment, Take a side, Organize notes, and Plan as you write.” DARE stands for “Develop a topic sentence, Arguments, Reject opposing arguments, End with a conclusion.” The same type of instruction was utilized by the author in this final section. At the onset of the seven weeks, baseline performance of persuasive essays was measured via written prompts wherein the participant was provided with a persuasive essay prompt and five minutes to write. Examples of writing prompts can be seen in Appendix A. Next, the participant and author worked together to identify necessary components of persuasive essays in essays written by others. After that step was complete, the author

modeled desired writing behaviors for persuasive essays. As sessions progressed, the author and participant wrote essays together. During the last two sessions, the participant planned, organized, and wrote persuasive essays independently. Cues were provided by the author only when the participant asked for help or demonstrated difficulty completing the writing task. Materials used for this final segment can be found in Appendix C.

Although persuasive essay instruction followed a similar trajectory to that of narrative and opinion essay instruction, the participant repeatedly reported that this type of essay construction was the most challenging during the intervention. More cueing and assistance from the author was required for completion of persuasive essays than during the narrative and opinion essay sections. It is also worth noting that there was roughly a two month break between the conclusion of the second section and the onset of the third section. Due to holidays and breaks from school, there were 10 weeks between the second and third sections. In an effort to counteract possible regression in writing skills, the author assigned 10 essay prompts for the participant to complete during the break. However, only four opinion essay-writing assignments were completed in total during the 10 week break.

Throughout the 21 weeks of intervention, the author assigned weekly homework assignments in an effort to solidify understanding of the material and to facilitate generalization of planning and writing strategies. Homework assignments consisted of studying various mnemonic devices, creating outlines and notes to demonstrate the planning stage of the writing process, and completing additional written prompts with unlimited time and the ability to proofread and correct mistakes. The participant completed homework assignments inconsistently. Per parent report, the participant often

completed assignments quickly the night before intervention sessions. Of note, these homework assignments were not a part of the Harris et al. (2008) curriculum. Instead, assignments were intended for additional practice of SRSD strategies in the home environment.

The study consisted of four components: pre-testing, three-part SRSD intervention, progress monitoring, and post-testing. To begin, the participant completed pre-testing to determine baseline performance on a variety of language and literacy measures. Next, the single-subject, multiple probe across behaviors SRSD intervention was initiated and progress was monitored via written probes. Lastly, post-testing was conducted in order to compare the participant's performance before and after the intervention.

Procedural fidelity checklists were created by the author in accordance with the recommended sequence of events described by Hebert et al. (2008). Sessions were recorded via video. Three sessions from each of the three sections were chosen for treatment fidelity; therefore, nine total sessions were viewed via video to measure treatment fidelity. Undergraduate and graduate students who were blind to the research question measured treatment fidelity by watching the videos of the sessions and completing procedural fidelity checklists. An example of a procedural fidelity checklist can be found in Appendix D. Procedural fidelity was found to be an average of 95.8% across the nine randomly chosen sessions.

This study aimed to determine if use of SRSD writing strategies would be effective in improving reading comprehension and writing performance in children with hearing loss. Writing performance was analyzed to see if SRSD intervention improved

writing performance across time. Additionally, reading comprehension was assessed before and after the intervention was delivered in order to see if the SRSD intervention yielded increased results in reading comprehension for the participant. Results of writing performance were graphed in order to visually analyze both sets of data, consistent with single-subject, multiple probe across behaviors design.

The first of the three intervention conditions focused on assisting Madison with preparation and execution of writing narratives via explicit instruction in planning to write, organizing notes, and necessary components of a story. Progress was monitored at 15 points over the course of the study and, as can be seen from Figure 3.1 (please see below in the Results section), Madison made continued progress over the course of the seven week intervention as measured by a scoring rubric. A total of 27 points were possible for each narrative progress monitoring prompt. At baseline, Madison scored an average of 8 on the grading rubric for narratives. Seven weeks into the narrative intervention, Madison's score was 11, suggesting that inclusion of necessary story components had improved. Progress also was assessed using six different probes after the narrative intervention had ended. Madison's scores after intervention ended ranged from 7 to 13, with an average score post-intervention of 10. This suggests maintenance of improved narrative component writing.

The second of the three intervention conditions focused on assisting Madison with topic sentence construction, statement of reasons for an opinion, explanation of stated opinions, and construction of an ending sentence. Progress was monitored at 12 points over the course of the study. Figure 3.1 (please find below in the Results section) displays that Madison made continued progress over the course of the seven week intervention as

measured by a scoring rubric. At baseline, Madison scored a 5 on the grading rubric for opinion essays. A total of 24 points were possible for each narrative progress monitoring prompt. Seven weeks into the opinion essay intervention, her score was 16, suggesting that construction of opinion essay elements had improved. Progress also was assessed at five different points after the opinion essay intervention had ended. Madison's scores ranged from 6 to 14 after the intervention ended, with an average score of 10.4 on the graded rubric. Although this average score decreased from the time of the intervention, it was still markedly above the baseline score for this type of essay. This suggests moderate maintenance of improved opinion essay element writing.

The last of the three intervention conditions focused on assisting Madison with preparation and execution of writing persuasive essays via explicit instruction in construction of topic sentences, formation of supporting ideas, rejection of opposing arguments, and finalizing essays with a conclusion. Progress was monitored at 13 points during the course of the study and as can be seen from Figure 3.1 (please find below in the Results section), Madison made mixed progress over the course of the seven-week intervention. At baseline, Madison scored an average of 8 on the grading rubric for persuasive essays. A total of 24 points were possible for each narrative progress monitoring prompt. During the first week of the persuasive essay instruction, her score was 15, suggesting that construction of persuasive essays had improved. Four weeks into the persuasive essay intervention, her score was 12, suggesting that construction of persuasive essays had diminished slightly. Interestingly, at week seven of the persuasive essay intervention Madison's score on the grading rubric was 8. This decrease in scores suggests that Madison was still struggling with the concepts of persuasive essay

construction despite the intervention. Progress also was monitored after the persuasive essay intervention had ended. Madison earned an average score of 8 on the graded rubric during maintenance sessions, which was similar to the baseline. Madison's performance during the persuasive essay intervention did not improve consistently, and results were not maintained over time, evidenced by average ending scores that were equal to average baseline scores. Of note, this type of essay was reportedly the most challenging for Madison, and is the highest level of writing that was used during the entire 21-week intervention.

CHAPTER 3

RESULTS

Table 3.1 displays pre- and post-test scores for the participant. Madison demonstrated gains from pre- to post-test on all standardized measures. Gains in performance ranged from 1 to 19 standard score points. The largest gains in performance from pre- to post-test were observed on spontaneous writing (TOWL-4), silent word reading fluency (TOSWRF-2), and silent contextual reading fluency (TOSCRF-2).

Table 3.1 Pre- and Post-Test Scores

Test	Pre-Test Standard Score	Pre-Test Percentile	Post-Test Standard Score	Post-Test Percentile	Gains (in SS)
TWS-5	90	26	97	42	+7
CELF-5 (CLS)	94	34	100	50	+6
TOSCRF-2	92	30	102	55	+10
TOSWRF-2	94	35	108	70	+14
TOWL-4 (Spontaneous Writing)	88	21	107	68	+19
WRMT-III (Total Reading)	81	10	82	12	+1
WRMT-III (Reading Comprehension)	80	9	85	16	+5

The first purpose of this study was to determine if SRSD intervention is an effective clinical tool for improving writing performance in children with hearing loss. Results suggested that SRSD can result in improved writing performance for children

with hearing loss. Figure 3.1 displays data for baseline performance, writing progress during intervention, and maintenance of writing abilities over time for the participant.

As seen in Figure 3.1.1, visual analysis of the data for the participant revealed that writing performance did improve across the intervention for narrative and opinion essays, and that the benefits of the intervention lasted for those two writing styles across time, even after intervention for that skill was discontinued. Notably, however, consistent improvement and maintenance were not found for the persuasive essay section of the intervention. Figure 3.1 displays baseline, intervention, and maintenance data for the participant.

In addition to improvement with written progress monitoring prompts, Madison also displayed improvement of writing performance as assessed by standardized measures. Table 3.1 displays that prior the intervention, Madison earned a standard score of 88 and a percentile rank of 21 on the TOWL-4 spontaneous writing subtest; this placed her in the “low average” category for her age in spontaneous writing. After the intervention, Madison earned a standard score of 107 and a percentile rank of 68 on the TOWL-4 spontaneous writing subtest; this placed her in the “average” range for her age in spontaneous writing.

With regard to spelling performance, Table 3.1 displays that prior the intervention, Madison earned a standard score of 90 and a percentile rank of 26 on the TWS-5; this placed her in the lower end of the average range for her age in spelling. After the intervention, Madison earned a standard score of 97 and a percentile rank of 42 on the TWS-5; while this still placed Madison in the “average” range for her age in

spelling, this increase in scores suggests that improvement was made in spelling during the intervention.

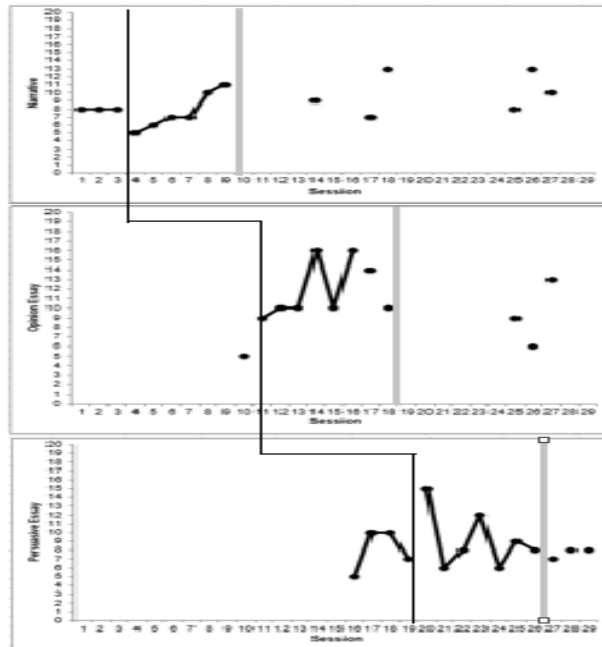


Figure 3.1 Progress Monitoring for Written Prompts.

The second purpose of this study was to determine if SRSD intervention is an effective clinical tool for improving reading comprehension for children with hearing loss. In order to assess this study aim, a reading comprehension measure was given to the participant before and after the intervention took place. Table 3.1 displays that prior the intervention, Madison earned a standard score of 80 and a percentile rank of 9 on the WRMT-III reading comprehension subtest; this placed her in the “below average” category for her age in reading comprehension. After the intervention, Madison earned a standard score of 85 and a percentile rank of 16 on the WRMT-III reading

comprehension subtest; this placed her in the low end of the average range for her age in reading comprehension. Reading comprehension was also assessed via the TOSCRF-2. Table 3.1 displays that prior the intervention, Madison earned a standard score of 92 and a percentile rank of 30 on the TOSCRF-2; this placed her in the “average” range for her age in contextual reading comprehension. After the intervention, Madison earned a standard score of 102 and a percentile rank of 55 on the TOSCRF-2; while this still placed Madison in the “average” range for her age in contextual reading comprehension, this increase in scores suggests that improvement in reading comprehension took place during the intervention.

CHAPTER 4

DISCUSSION

This investigation was the first study that investigated the effectiveness of SRSD writing intervention for children with hearing loss. Because this type of intervention has been shown to be effective for school-age children with typical hearing, we aimed to determine if similar benefits could be achieved for children with hearing loss. Thus, the purpose of this study was to determine if SRSD intervention would improve (a) the writing skills of children with hearing loss, and (b) the reading comprehension skills of children with hearing loss. The a priori hypotheses were two-fold. First, we predicted that the participant's writing skills would improve as a result of completing the SRSD intervention. Second, we hypothesized that participation in SRSD intervention would lead to increased performance on measures of reading comprehension for our participant with hearing loss. These hypotheses were both supported by the data. The participant with hearing loss showed marked improvement in the writing skills necessary for narrative and opinion essay instruction after completion of the 21 week SRSD intervention, as well as general writing and reading comprehension skills on standardized assessments. However, it is important to note that consistent improvement was not made in the area of persuasive essay construction.

The first important finding of this study is that SRSD writing intervention can improve writing performance for children with hearing loss. The participant benefited from the explicit instruction provided within the SRSD framework, demonstrated by

improvement over baseline performance for narrative and opinion essays, and the ability to maintain these improved writing skills after the intervention ended. This finding was also demonstrated by improvement on standardized tests that measure general writing abilities. However, it is important to note that the same benefits were not seen as a result of the persuasive essay intervention. Persuasive essay construction was the most advanced form of writing used during this 21 week intervention, and was reportedly the most challenging conceptually for the participant to grasp. It is suspected that more intervention sessions, and perhaps a more in-depth intervention program would be necessary in order for Madison to improve persuasive essay writing skills consistently.

The next important finding of this study was that writing intervention can be an effective strategy to improve reading comprehension in children with hearing loss. The intervention used in this study did not target reading comprehension at all, yet the participant's reading comprehension scores improved from below average to in the average range over the course of the study. Speech-language pathologists, teachers, and other professionals who work with children with hearing loss can and should utilize this strategy in an effort to improve the reading comprehension outcomes of these children.

Although core language skills and word-level literacy were not explicitly targeted during this intervention, improvements in both areas were seen. For example, the participant's Core Language Score on the CELF-5 increased 6 standard score points (can be seen in Table 1) over the course of the intervention. Similarly, word-level literacy improved during the intervention, evidenced by an increase in 14 standard score points on the TOSWRF-2 (can be seen in Table 1). Though neither spoken language nor word-level literacy were targets of this intervention, there was a fairly substantial jump in

performance in each of these areas as a result of the intervention. Speech-language pathologists and teachers may see similar increases in overall language and word-level literacy performance as a result of using this intervention style.

Lastly, it is worth noting that this intervention is simple to administer and cost effective. Each lesson used in this study was derived from Harris et al. (2008), and included detailed, step-by-step lesson plans that were simple to follow. The instructor for each session was a trained second-year graduate student in speech-language pathology. Also, at the time this study was written, the book by Harris et al. (2008) could be purchased for less than \$40. Although this study was completed with one participant, these lessons can be used small groups or even an entire classroom of students at one time. It also would be possible to provide one seven-week intervention if time constraints were a factor.

With any study, limitations should be considered when interpreting findings. This study included only one participant, and utilized a single-subject, multiple probe across behaviors design format. Therefore, findings should be generalized only to children who are similar to the participant. The participant did not present with any other developmental delays or deficits. Application of these findings to other populations is not advised without supported evidence from other research findings. Future research should evaluate the effectiveness of this intervention approach with a variety of children with hearing loss.

To the knowledge of the researchers, this study was the first to analyze the effectiveness of SRSD writing intervention to improve writing and reading comprehension in a child with hearing loss. The aim of this study was to construct an

evidence-based reading comprehension intervention for children with hearing loss. The findings of this study indicate that SRSD writing intervention can be an effective way to improve reading comprehension and writing skills focused on narrative and opinion essay construction in children with hearing loss. In conclusion, SRSD intervention is effective as a means to improve literacy outcomes for children with hearing loss. Future research in this area is necessary to analyze the effects of SRSD in groups of children with hearing loss and children with hearing loss across various age groups.

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APPENDIX A

PROGRESS MONITORING WRITTEN PROMPTS

Writing Style	Prompt
Narrative	Tyler’s mom is teaching him how to cook. Today his mom is teaching him something new. Write a story about what Tyler is doing today.
Narrative	Zoe is a cat with a long tail. Her fur is orange with white feet. Write a story about Zoe.
Narrative	Kevin and Matthew are best friends. They are in the same class and live next door to each other. Write a story about Kevin and Matthew.
Narrative	Billy is a turtle who lives in Blue Pond. He has a hard shell and a long neck. Write a story about Billy.
Narrative	Ryan saw a sign at school that said “Pizza party tonight at 7 pm”. Write a story about what happens at the pizza party.
Narrative	Charlie and Stella are monkeys and live in the zoo. Stella is very tall and Charlie is very short. Write a story about Charlie and Stella.
Narrative	Sam has an old cat liked to take naps in the sun. Sam’s family just got a new little brown puppy. Write a story about the old cat and the little brown puppy.
Narrative	Addison and her family are going to the beach today. Write a story about what happens at the beach.
Narrative	When Jordan got to school this morning she saw a big bunch of balloons. Write a story about what happens at school today.
Narrative	Hannah was taking a walk and found some bright red magic beans. Write a story about what happened next.
Narrative	John has big sister Mary-Anne. She is very tall and likes run and read books. Write a story about what Mary-Anne does on the weekends.
Narrative	Lena and Holly love to go to the beach and swim in the ocean. Write a story about Holly and Lena.
Narrative	Danny and Colleen just got a new puppy named Jack. Jack loves to play fetch and chew on Colleen’s shoes. Write a story about Danny, Colleen, and Jack.
Narrative	Buddy is a black and white puppy. He loves to play Frisbee and do tricks. Write a story about Buddy.
Narrative	Annie went to Girl Scout Camp for two weeks with her two best friends, Bianca and Charlotte. Write a story about what the girls did at camp.
Narrative	Alexis loves to climb trees. Her dad built her a tree house in the backyard. Write a story about Alexis.
Narrative	You woke up yesterday morning and discovered that you have the super power that you always wanted. Describe your new super power, and explain why you have always wanted it.
Opinion	Do you think Netflix is better than watching regular TV?
Opinion	Should all children get an allowance?

Opinion	Do you think students should be allowed to wear Halloween costumes at school?
Opinion	Is Halloween better than Christmas?
Opinion	Should teachers let students use calculators on math tests?
Opinion	Should children be required to wear uniforms at school?
Opinion	Should girls be allowed to play on any sports team they want?
Opinion	Should children tell their parents the truth?
Opinion	Should kids be able to use their iPads at school?
Opinion	Should children be allowed to vote for the President?
Opinion	Should people have to obey the speed limit?
Persuasive	Convince me why children should be allowed to choose their own bed time.
Persuasive	Convince me if it is better to have siblings or to be an only child.
Persuasive	Convince me why you should receive presents for Christmas this year.
Persuasive	Convince me why children should not have to do homework on Christmas Day.
Persuasive	Convince me why children should have their own cell phones.
Persuasive	Convince me why people should eat dessert after dinner,
Persuasive	Convince me why people should buy Girl Scout cookies.
Persuasive	Would you rather go on a road trip or on an airplane for vacation? Convince me why in your answer.
Persuasive	What is your favorite flavor of ice cream? Convince me why it is the best.
Persuasive	Do you like going to summer camp? Convince me why or why not you think summer camp is fun.
Persuasive	Should children have to do homework? Convince me why or why not.
Persuasive	What is your favorite thing to do over summer vacation? Convince me why it is the best thing to do during summer.
Persuasive	Convince me why you should/should not get candy and presents for Easter.
Persuasive	What is the best part of being in 5 th grade? Convince me why it is the best.

APPENDIX B

EXAMPLE OF GRADED RUBRIC (STOP + DARE CONDITION)

	0	1	2	3
Topic Sentence	does not have topic sentence	has a topic sentence but (a) not at beginning or (b) does not clearly state opinion	topic sentence is clear and located at beginning	topic sentence is clear, located at the beginning, and provides justification for opinion
Supporting Ideas	contains no supporting ideas to support topic sentence	contains (a) at least one irrelevant supporting idea or (b) less than three supporting ideas	contains at least three relevant supporting ideas and no irrelevant supporting ideas	contains more than three supporting ideas and no irrelevant supporting ideas
Rejection of Opposing Arguments	contains no rejections of opposing ideas	contains one rejection of opposing ideas	contains two rejections of opposing ideas	contains three or more rejections of opposing ideas
Conclusion	does not have a concluding sentence	concluding sentence was initiated, but not finished	has a concluding sentence that is (a) unclear, (b) irrelevant, or (c) not located at the end	has a clear, relevant conclusion located at the end
Linking Words	does not contain any linking words	contains one to two linking words	contains three to four linking words	contains more than five linking words
Grammar	contains no grammatical sentences	roughly half of the sentences are grammatical	roughly ¾ of the sentences are grammatical	contains all grammatical sentences
Organization/Flow	poor	adequate	good	excellent
Makes sense	essay does not make sense	essay is hard to follow and/or unrelated to prompt	essay is sometimes easy to follow and related to prompt	essay is always easy to follow and related to prompt
Subtotals				
		Overall Score	/24	

APPENDIX C

EXAMPLE OF GRAPHIC ORGANIZER (STOP + DARE CONDITION)



WRITING

STOP + DARE


STOP

Suspend Judgment

Take a Side

Organize Ideas

Plan More as You Write



- Did I list ideas for each side?
- Can I think of anything else? Try to write more.
- Another point I haven't considered yet is . . .
- Put a star next to ideas you want to use.
- Put an X next to arguments you want to dispute.
- Number your ideas in the order you will use them.

DARE

Develop Your Topic Sentence

Add Supporting Ideas

Reject Arguments for the Other Side

End with a Conclusion

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Florida Writing Strategies for All Students by L. Smith, S. Graham, L. Murray, & B. Holliman.
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APPENDIX D

EXAMPLE OF PROCEDURAL FIDELITY CHECKLIST (SESSION 2 OF POW + TREE)

SRSD with Hearing Loss
Rice Thesis

Child Code _____ Date _____ Session _____ Examiner _____

Procedural Fidelity Checklist

- | | | |
|--------------------------|--------------------------|---|
| Yes | No | |
| <input type="checkbox"/> | <input type="checkbox"/> | Examiner greets participant, and sets the context for learning. |
| <input type="checkbox"/> | <input type="checkbox"/> | Examiner has materials for Younger Students for Lesson 9 (2 nd session in POW+TREE) except for the transfer sheet. |
| <input type="checkbox"/> | <input type="checkbox"/> | Examiner monitors progress via written prompt (5 minutes). |
| <input type="checkbox"/> | <input type="checkbox"/> | Examiner sets context for learning by testing POW + TREE. |
| <input type="checkbox"/> | <input type="checkbox"/> | Examiner helps the participant find the essay parts. |
| <input type="checkbox"/> | <input type="checkbox"/> | Examiner and participant look at current writing behavior by viewing previously written essays. |
| <input type="checkbox"/> | <input type="checkbox"/> | Examiner helps participant graph current performance. |
| <input type="checkbox"/> | <input type="checkbox"/> | Examiner helps participant establish a goal. |
| <input type="checkbox"/> | <input type="checkbox"/> | Examiner announces test for next class. |
| <input type="checkbox"/> | <input type="checkbox"/> | Session length is 60 minutes or less. |

Record start/end times below:

Progress Monitoring	Tests POW + TREE	Finding Essay Parts	Current Writing Behavior, Graphing, and Establishing a Goal	Wrap-up