THE EFFECTS OF A MODIFIED VERSION OF SELF-REGULATED STRATEGY DEVELOPMENT AND SELF-TALK INTERNALIZATION STRATEGY ON WRITING AND SELF-TALK FOR ELEMENTARY STUDENTS WITH ATTENTIONAL DIFFICULTIES

By

Sara C. Lewandowski

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ABSTRACT

THE EFFECTS OF A MODIFIED VERSION OF SELF-REGULATED STRATEGY DEVELOPMENT AND SELF-TALK INTERNALIZATION STRATEGY ON WRITING AND SELF-TALK FOR ELEMENTARY STUDENTS WITH ATTENTIONAL DIFFICULTIES

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The study drew from the literature on writing process theories, cognitive psychology, best practices in writing instruction, and attentional difficulties like Attention-Deficit/Hyperactivity Disorder (ADHD) to inform the development, implementation and evaluation of a writing strategy for elementary students with attentional difficulties in an individual setting. Specifically, the study investigated the effects of a planning and drafting strategy using a modified version of the Self-Regulated Strategy Development model (SRSD; Graham & Harris, 1993) and a self-talk internalization strategy (STIS) on writing for elementary students with attentional difficulties. While it was anticipated that elementary students with attentional difficulties would increase the number of words written and correct word sequences and improve writing quality in both conditions, evidence suggested some positive effects for the SRSD-only condition. This study expanded on SRSD research by comparing the gains made in two experimental conditions (modified SRSD vs. modified SRSD and STIS) and in examining the effects of the intervention using progress-monitoring data.

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Chapter 1: Introduction

Imagine a society devoid of classical literature, historical references, theatre, film, and television. Imagine a community without freeway billboards, interstate signs, or other traffic signs that prevent drivers from crashing into one another. Imagine a grocery store where everything was packaged in brown containers, nameless and unappealing to the consumer, and the only way to differentiate between a box of cereal and a tin of peanuts is the shape of the container. Now imagine an elementary classroom missing any text written, typed, or scribbled on scratch paper. Students learn only through recitation and are never required to write an essay or the ABCs. Under these dire circumstances one can grimly imagine a barren world, lacking character and creating mass confusion. There is one part of the human experience that is missing in each of the previous scenarios: writing. The very act of writing is a form of artistic expression but it is also an essential skill that clearly permeates all aspects of Western society and yet it may be one of the most complex and difficult skills to teach, learn, and perform.

According to the Report of the National Commission on Writing in America's Schools and Colleges (2003), "of the three R's, writing is clearly the most neglected" skill taught in American schools from kindergarten through college (p. 3). The report suggests that limited writing instruction during the school years may have negative implications for the workplace. The report draws from a survey of 120 major American businesses to facilitate a discussion on the need to revolutionize educational practice. According to this survey, it was estimated that fixing writing deficiencies in the workplace placed a $3.1 billion burden on American corporations annually. In addition, about 30% of surveyed professionals did not meet state level writing expectations. The report concludes that this is evidence that a lack of effective writing instruction and practice during the school years can lead to costly consequences in adulthood.

In a later report, The National Commission on Writing for America's Families, Schools, and Colleges (2006) wrote about the practice of writing instruction in schools. While it was recognized that writing is a valued skill to express thoughts, ideas, and emotions as well as to impress cultural changes or sustain popular culture, it was also recognized that writing instruction does not get the attention it deserves in the classroom. For example, the report draws from the National Assessment of Educational Progress in 1998, which indicated that 97% of students reported spending less than three hours each week on writing assignments. In addition, although most of the students who participated in the NAEP in 1998 could demonstrate proficiency in basic writing skills, students had difficulty creating "precise, engaging, and coherent prose" (p. 16). According to the NAEP report in 2007, the percentage of eighth grade students performing at or above the Basic level increased from 85 percent in 2002 to 88 percent in 2007. The report stated that these percentages improved from 1998 (Salahu-Din, Persky, & Miller, 2008). In addition, the percentage of eighth grade students performing at or above the Proficient level remained steady from 2002 to 2007. While it is encouraging to see that more students were scoring at the Basic level, researchers and educators need to be mindful of the limited progress at the Proficient level.

Students also demonstrate minimal proficiency in writing on standardized assessments at the state level. According to the Michigan Department of Education, approximately 48% of third graders, 55% of fourth graders, and 42% of fifth graders scored at the basic or apprentice levels in writing, the two lowest of four levels and considered below proficiency, on the Michigan Educational Assessment Program (MEAP) in the fall of 2006. These scores indicate that upper elementary students in Michigan had difficulty demonstrating proficiency in writing with a clear and focused voice, developing ideas with detail and examples, organizing ideas, and mastering

writing conventions (e.g., grammar, punctuation, spelling). The scores on the writing portion of the MEAP may suggest a misalignment between classroom practices, student performance, and curriculum standards. Beyond the evidence provided by standardized assessments, other researchers have documented the prevalence of a specific learning disability in written expression in students. Luttinger and Gertner (2001) estimate that approximately 6% of the school-aged population has a disorder in written expression.

Evidence based on national data shows that writing is difficult for many students. However, writing may feel like an impossible task for one particular segment of the student population. Writing involves planning, production, and revision processes that are efficiently regulated by the working memory and metacognition (Graham & Harris, 1993). Students with attentional difficulties, including Attention-Deficit/Hyperactivity Disorder (ADHD), may have an underdeveloped ability to regulate these cognitive processes during the writing process, given a general difficulty with attentional focus and executive functioning (Barkley, 1997). For a more specific subset of the population of interest, ADHD is highly comorbid with Specific Learning Disability in written expression (Mayes & Calhoun, 2006). It is hypothesized that the combination of multiple processes involved in writing, the need for focused attention, and the ability to effectively self-regulate make it challenging for students with attentional difficulties to write. Within the last few decades, researchers have explored this area of education in an effort to define a theory of general writing processes, understand the cognitive deficits that affect students with attentional difficulties, and develop writing strategies and enhance writing instruction to ameliorate the difficulty that many elementary students with attentional difficulties face in the classroom.

Based on a review of the literature, an argument follows for the implementation of a planning and drafting strategy using a modified version of the Self-Regulated Strategy Development model (Graham & Harris, 1993) and a self-talk internalization strategy (STIS) to address written expression among students with attentional difficulties, including ADHD, in the elementary school setting. This study added to work by Reid and Lienemann (2006) who found an improvement in writing quality (i.e., measuring how many story components were included in the student's writing sample) and in the number of words written among students with ADHD following implementation of SRSD when the students were given a writing assignment. This study involved implementation of a planning and drafting strategy using the modified SRSD, with an added STIS component, and within an individual setting for students with attentional difficulties, including ADHD. It was anticipated that similar improvements in writing quality, productivity and fluency would be identified after completing an intervention that provided direct instruction in the writing process as well as direct instruction in using self-talk as a self-regulating strategy. It was also anticipated that students participating in the condition that combines the modified SRSD and STIS would improve more than the improvement expected within the modified SRSD-only condition. Beyond writing skills, it was expected that both conditions would improve students' ability to use self-talk and to self-regulate their behavior. However, it was also expected that the modified SRSD and STIS condition would improve students' ability in these areas more than the modified SRSD-only condition. This study contributed to the extant research by expanding the time spent in the direct instruction of self-talk, examining the value added by an individual instructional setting, and in examining the effects of the intervention using progress-monitoring data to provide a more reliable estimate of writing and self-talk growth.

Chapter 2 Literature Review

Theoretical Overview of Writing, Cognitive Processing, and Attention

The following review drew from literature on four major areas to construct a conceptual framework that guides the identification and investigation of intervention strategies in writing for students with attentional difficulties. The review began with studies on the best practices in writing intervention and assessment and then extended into writing skill development and writing process theories. Research in this area suggests that the writing process is a highly complex cognitive process controlled by executive functioning and self-regulatory skills. Next, the literature on cognitive processing and memory and how the writing process can challenge working memory capacity was reviewed. Furthermore, self-talk was discussed as a possible self-regulatory strategy that may help compensate for the limited working memory capacity and keep writers engaged with the writing process. Research suggests that students with attentional difficulties have limited cognitive processing and self-regulatory skills necessary to be a successful writer. Lastly, the study drew from research on writing interventions and self-talk training and proposes that students with attentional difficulties will benefit from an intervention that combines skill-building strategies in writing and self-talk.

Writing Intervention and Assessment

Writing researchers and theorists, such as Smith (1994), have suggested that writing requires students to engage in two roles: the writer as author and the writer as secretary. The writer as author is most concerned with writing with purpose, the formulation of language (planning, reviewing, revising, transcribing), and the written product (fluency, syntax, semantics, content, conventions). The writer as secretary is most concerned with mechanics and conventions of writing (spelling, punctuation, capitalization, letter formation). In addition to these roles,

writers must have adequate verbal skills, organized thought, the ability to present ideas using conventional rules, prior knowledge, and self-monitoring strategies (Gersten & Baker, 2001). Writing instruction may incorporate exercises that build any of the mentioned components of writing.

Some may believe that good writing cannot be taught or that writing skills develop naturally, two common myths about instruction (Graham & Harris, 1997). In actuality, there is evidence to indicate that students can learn how to write with a clear voice through explicit instruction (Gersten & Baker, 2001; Gambrell & Chasen, 1991; Fitzgerald & Teasley, 1986). Graham and Harris (1997) further suggest that best practices in explicit instruction should support the student's "development of knowledge, skill, will, and self-regulation" (p. 1). This may translate to practice in several ways. Research-based instructional practices include the provision of adequate time to practice planning, writing, editing, and revising on a daily basis (Graham & Harris, 1997), creating a positive and supportive learning environment (Graham & Harris, 1994), modeling the writing and thinking process (Graham & Harris, 1993), and giving continuous feedback to students (Fitzgerald & Teasley, 1986). Research also stresses the importance of giving students a choice in writing assignments or creating authentic writing assignments that allow students to feel like their writing has a purpose (Graham & Harris, 1997). This may motivate students to engage in writing activities and continue to practice their skills while feeling proud about their work at the same time. Furthermore, students benefit from learning self-regulating strategies during writing instruction (Graham & Harris, 1989a) such as self-monitoring (Moxley, Lutz, Ahlborn, Boley, & Armstrong, 1995).

The actual writing process is conceptualized as the culmination of a series of steps that utilizes requisite skills like using the writing process and following writing conventions and

mechanics (Olive, 2004). Semantically, the writer has to predetermine how to express thoughts in a meaningful way on paper. This means the writer must pull and organize information from long-term memory. Next, the writer engages in a translating process whereby the writer prepares to translate the organized thoughts into a verbal message. Thirdly, the writer must think about whether the verbal message follows syntactic and morphological rules of language. Lastly, the writer must use motor processing to write the verbal message on paper or type on a computer or handheld device.

The way writing achievement is measured and the nature of the writing assessment provides additional background on what are considered important aspects of writing. Writing assessments may focus on the skills students are expected to master in writing as well as the skills that are taught in the classroom. From there, interventions or changes in writing instruction may occur due to the information gathered from various writing assessments.

Writing may be assessed by comparing a student's written product with skills outlined in specified curriculum standards, measuring fluency, or assessing the quality of the composition (Minner, Prater, Sullavan, & Gwaltney, 1989). When looking at the specific curriculum standards, the assessment would compare the student's written product to the standards created by the local district or the state board of education. The evaluator will look to see if the product contains elements that are appropriate given the grade level of the student. This form of criterion-referenced assessment can help drive instructional decisions, given the link between assessment and curriculum standards.

Secondly, writing fluency is a measure of rate and accuracy (Shinn, 2002). In other words, writing fluency is a measure of how well a student can write quickly and accurately. The number of correct word sequences is an example of a fluency measure because it examines how

quickly a student can put words together while monitoring correct grammar, punctuation, capitalization, and spelling. The number of words written in a specified time frame is an indicator of productivity and could provide an indication of automaticity. Curriculum-based measures can be used to measure writing fluency and productivity, continuously monitor the student's skill level, and directly inform instruction. Typically, a curriculum-based measure will prompt a student to write a story and then measure the total words written, number of correct word sequences, and the number of words spelled correctly.

Lastly, a written product might be assessed for the quality of the composition. In this case, the evaluator will look to see how frequently the writer will use different sentence forms and functions. For instance, the evaluator will look for the number of fragmented, simple, compound, and complex sentences. The evaluator will also look for the number of declarative, interrogative, imperative, and exclamatory sentences. Products that include more compound and complex sentences expressed in a variety of sentence functions are typically considered more sophisticated (Minner et al., 1989). The quality of a written product is formally assessed through holistic scales, primary trait scales, and analytic scoring (Espin, Weissenburger, & Benson, 2004). Holistic scales would require an evaluation of the whole product, rather than focusing on specific components of writing. However, holistic scales require more than one evaluator in order to prevent evaluator bias in scoring. A second method is through primary trait scoring. This method compares the student's writing sample to a predetermined list of criteria or traits and then rates how closely the student's sample meets the specified criteria. A third method of assessment is called analytic scoring which rates the quality of the writing sample on each predetermined characteristic, factor, and element (e.g., ideas, usage, wording, organization).

Cognitive Processes in Writing

There are many steps needed in order to write and even more ways to assess a student's written product. Given that several cognitive processes are involved for each step in writing (e.g., planning, translation, production), it may be exceptionally challenging for some students to juggle each step. Developing a framework that explains the cognitive role in writing may help intervention planning and guide instructional methods for a particular writing step. The following is a review of literature on the working memory components and functions, cognitive processing and automaticity in working memory, how working memory is involved in the writing process, and studies that identify different writing processes that place a high demand on the working memory.

Working memory components and functions

Researchers have discussed the cognitive role in writing in several ways. In one approach, experts suggest that the student's ability to engage in a writing task is governed by the three major components of the working memory, including the central executive, the phonological loop, and the visuospatial sketchpad (Vanderberg & Swanson, 2007; Olive, 2004; Baddeley, 1986). The central executive is the overall controlling function of the working memory and regulates the other two independent components. The phonological loop briefly stores auditory information passively or actively through rehearsal of the information and is involved in translating, reading, and editing during a writing task (Kellogg, 1996). The visuospatial sketchpad temporarily stores visual information in relation to a spatial location and maintains the image using rehearsal and is involved in visualizing the organization of a writing task (Kellogg). Together the components interpret information from the environment in a way that allows the student to use the information to understand and reflect on the world, ultimately

leading to the production of written language (Vanderberg & Swanson, 2007; Hayes, 1996; Baddeley, 1986). Furthermore, the executive control, phonological loop, and visuospatial sketchpad work concurrently rather than sequentially (Kellogg). The same can be said for the processes of planning, translating, producing, and reviewing (Kellogg).

Another explanation of working memory was proposed by Atkinson and Shiffrin (1968) and is often cited in the cognitive processing literature. Atkinson and Shiffrin created the computer model of human memory to explain the structure and the processes involved. According to the model, "in the sense that the computer's method of processing a given batch of data depends on the operating program, so the way a stimulus input is processed depends on the particular control processes the subject brings into play" (p. 90). The model further hypothesizes that the sensory register, short-term store, and long-term store work together to process incoming information through the memory. Furthermore, each structure of the memory uses a set of control processes that make the system run efficiently. Control processes are "selected, constructed, and used at the option of the subject" and can vary with a given task (p. 90). Control processes include selective and directed attention, coding, rehearsal, search, grouping, chunking, organizing, and storage.

Processing and automaticity in working memory

Schneider and Shiffrin (1977) build on the previous work by suggesting that humans have control over the working memory processes that occur during learning. Strategies related to the working memory processes and general practice can make the learning process more efficient or automatic. Automatic processing refers to the automatic "activation of a learned sequence of elements in long-term memory," while controlled processing refers to the temporary and controlled activation of a sequence of elements (p. 1). Automatic attention responses are initiated

when the individual learns (through repeated experience) to attend to a specific set of circumstances, which then cause the individual to direct his or her attention to the target. Controlled processes require the individual to attend under his or her own control and require more cognitive resources (though challenged by limited capacity) and motivation because the process is not automatic. Schneider and Shiffrin (1977) see a greater benefit of the controlled process because the individual can attend to novel situations using the controlled process whereas the automatic process is learned through repeated association and tend to be rigid within the circumstances of the original learning. However, there may be benefits associated with automatic or controlled processes or a combination of the two in learning. It is with the study from Schneider and Shiffrin (1977) that the connection between memory and learning-related activities began to emerge in this sequence of research.

Working memory and writing

Glynn, Britton, Muth, and Dogan (1982) make a connection between the writing process and the cognitive demands on the memory system during writing. When the task is difficult, the content demands and structure demands of writing "simultaneously tax" the writer and create a mental block for the flow of ideas as it has been suggested by others (Bereiter, 1980; Flower & Hayes, 1980; Bruce, Collins, Rubin, & Gentner, 1978) (p. 557). The authors also consider the role of the processing capacity, or "the limited pool of energy, resources, or fuel, by which some cognitive operations or processes are mobilized and maintained" (Johnston & Heinz, 1978, p. 442). For the purpose of their study, the authors examined whether persuasive writing required more cognitive demand because the task is more challenging than reporting a summary of facts. The authors found that by relaxing the structural demands of the writing task (e.g., organizing arguments or complying with punctuation and spelling mechanics), the content of the persuasive

writing was of greater quality, thus illustrating how writing processes may simultaneously tax the writer.

Work by Lea and Levy (1999) found that tasks that require more demands on the working memory system lead to decreased writing quality and quantity. Furthermore, the demands on the working memory depend on the student's prior knowledge, skills, and the difficulty of the task (Olive, 2004). For example, having adequate knowledge about grammar can make the writing process easier for a student and allow the student to concentrate on other skills that require more attention.

Drawing from Schneider and Shiffrin (1977), writing fluency is of particular interest as an indication of how automatic the writing process is for an individual. The more automatic the process is the more cognitive resources are available for other processes (McCutchen, 1996). Fluent compositions are best generated when spelling and handwriting are automatic so that the writer "will have the most attentional resources to devote to the cognitive processing in composing – planning, translating, reviewing, and revising" (Berninger & Stage, 1996, pp. 13-14). In the early stages of writing development, not every skill is developed to a level of automaticity. A capacity theory of writing states that resource-intensive processing like spelling and handwriting can affect the storage capacity of the working memory and limit children in their writing, especially in the early elementary years (McCutchen, 1996).

A few studies have investigated whether one cognitive process places more burden on the working memory compared to other processes. Bourdin and Fayol (1994) conducted a study that illustrates this by hypothesizing that the limitations of the working memory (i.e., capacity and automaticity) and task demands impact writing. Specifically, it was hypothesized that production-related processes created greater strain but that this would change with age. The

study found that when children were asked to recall a series of words, it was more difficult to recall through writing compared to oral recall, with graphic and orthographic transcription difficulty as partial contributing factors to the difficulty of written recall. Adults did not differ in accuracy of recalled words in the oral or written conditions. The results of the study were best attributed to a greater concentration of lower-level cognitive tasks associated with writing in children (i.e., a lower level of automaticity in the use of grammar, spelling, and punctuation, as well as fine motor activity).

Other studies have shown that translating ideas into language could prove to be cognitively taxing for adults (Kellogg, 1987). Research with college-aged writers had found that even adults have difficulty translating ideas to language. The translating component of writing is a central part of the writing process at any age (McCutchen, 1996).

Levy and Ransdell (1995) investigated the relationship between time and effort for the following writing steps: planning, producing text, reviewing, and revising. The study examined whether any of the steps required more effort or was more difficult, as indicated by time spent on the step. In a study of undergraduate writers, the experimenters found a predictable sequence of cognitive processes in which the participant would engage (Levy & Ransdell, 1995). Initially the participant would spend most of the time in planning the composition. Within the first five minutes of the writing session, the majority of time transitioned to text generation and would remain as such for most of the writing session. Reviewing and revising only accounted for 2-10% of the participant's time, depending on the point in time of the writing session. Although the study does not clearly show whether more time spent on a certain process indicates greater difficulty and subsequently effort, it demonstrates that text production is the process that places

the highest time demand on the working memory. It suggests that the text production process may not be as automatic or fluent for some writers.

Executive functioning

Researchers have additionally attributed the individual's ability to carry out complex tasks to executive functioning skills, which is similar to the role of the central executive described in the working memory literature. Executive functioning has been defined as the individual's ability to consider temporal and functional aspects of a situation when attempting to problem-solve (Zelazo, Carter, Reznick, & Frye, 1997). Furthermore, the purpose of executive functioning is to guide the individual through four phases of problem-solving: creating a representation of the problem, planning a course of action, executing the plan according to specific social rules, and evaluating the plan. As it relates to writing, students must be able to guide their writing through similar phases from creating an understanding of the writing assignment to developing a clear outline of his/her ideas and finally evaluating the written product as a whole.

Metacognition has also been equated to executive functioning in the writing literature. Numerous researchers have defined metacognition as the ability to think about one's own thinking (Harris, Graham, Brindle, & Sandmel, 2009). In other words, metacognition involves self-awareness of thought in terms of the knowledge stored as well as how the individual is able to utilize the knowledge in effective ways. Hayes and Flower (1980) conceptualize the writing task as a collection of cognitive demands that work together under the writer's control in a goal-directed and effortful manner. Here metacognition plays the role of the circus ringleader by controlling each process during the writing task. In 1996, Hayes further explored the interaction between individual characteristics like motivation, social aspects, and physical aspects of the task

environment. Bereiter and Scardamalia (1987) proposed that writing is a recursive process whereby the writer develops a mental model of the task, analyzes a verbal message and sets goals, and then translates the internal message into a written message. This process requires the effortful use of metacognition as the writer manages cognitive processes while considering rhetorical, and pragmatic factors.

Self-regulation

Self-regulation is another area described in the cognitive psychology and education literature that may be essential to the writing process. Self-regulation can be considered related to the individual's ability to monitor processes that occur within the working memory, through the central executive, executive functioning skills, and metacognition. As it applies to learning, self-regulation is defined as the degree to which the student is "metacognitively, motivationally, and behaviorally active" in the learning process (Zimmerman, 1989, p. 329). In other words, self-regulation is present whenever the individual can use internal processes to strategically guide behavior within the environment (Bandura, 1986).

Bandura (1986) developed a triadic model of self-regulation that attributes self-perceptions, behaviors, and environmental factors to the development of self-regulation. The relationship between these factors may vary across time and situation and are further influenced by effort, performance outcomes, and changes in the environment. Self-regulation encompasses the individual's use of self-judgment (the systematic comparison of one's performance against a set of goals), self-reaction (the reaction that one may have after a given performance), and self-observation (the systematic monitoring of one's performance) within a problem-solving framework. The student may use a combination of these subprocesses to varying degrees in order to decide how to behave in a given situation. Self-regulated learners typically demonstrate high

self-efficacy, set goals, and use various problem-solving techniques that lead to knowledge or skill acquisition (Zimmerman, 1989).

Self-talk

Private speech, self-instruction, or self-talk, is a form of self-regulation derived from Vygotsky's research on the social cognitive theory of development (Ormrod, 2006) and may be a helpful self-regulating strategy during the writing process. In the early development of language, language and thought are considered by the child to be separate functions, whereby language is a mode of oral communication instead of a tool to organize thoughts. By age 2, children begin to think in words and express their thoughts as they speak; a sign that language has become intertwined with thought (Ormrod). According to Vygotsky (1978), language is a cultural tool that becomes internalized and regulates an individual's behavior, to "master (their) attention" and "control (their) own behavior" (p. 26, p. 28). As children learn to use language they are first imitating without understanding the meaning of it. Over time, the child will use language to consciously guide behavior. This is usually seen as talking out loud, whispering, or making lip movements as a child is working through a task. The self-talk is not social in nature; rather the child is talking through the task and guiding their behavior (Ormrod). Self-talk guides the child's behavior through a difficult task and mirrors the way adults may have previously provided guidance (Ormrod).

According to a literature review conducted by Berk (1992), research has supported Vygotsky's self-talk hypothesis on several levels. First of all, speech tends to move from an external to an internal form. Less audible utterances (e.g., whispers and lip movements) are negatively correlated with overt utterances, with this relationship strengthening with age. In other words, evidence of speech internalization greatly increases with age. Some research suggests that

the internalization process may be domain-specific and requires the individual to repeat the internalization process with each new and challenging task faced. Secondly, studies have indicated that self-talk tends to increase with task difficulty, though it is not known whether the self-talk is self-regulatory, an emotional release due to frustration, or a combination of the two. However, Berk (1992) admits that "we know little about the precise mechanisms through which private speech can redirect and transform children's cognitive skills and exactly what triggers its internalization" (p. 39). Further research is needed to explore the causal relationship between self-talk and task performance.

The internalization of language and self-talk are just a few components of Vygotsky's work. Vygotsky (1978) believed that learning occurred through the interaction between a child and an adult, tailored to the child's zone of proximal development. This was the notion that children are not capable of developing completely independent from the support of an adult. There are tasks a child can successfully achieve independently which are known as the level of actual development (Ormrod, 2006). The level of potential development is the upper limit of tasks that a child can successfully complete with the assistance of a teacher, an adult, or a more competent peer (Ormrod). On the other end of the spectrum, there are difficult tasks that are too demanding for the child. With these tasks, the teacher will take on more responsibility.

Closely related to the zone of proximal development is the notion of scaffolding. Scaffolding is the idea that an adult and a child collaborate to complete a task whereby the adult supports the child, directs thought, breaks down the task, and adjusts the task difficulty to the child's level (Wood, Bruner, & Ross, 1976 cited in Berk, 1992). An important part of the child's learning experience rests with the conversation between the teacher and the child. The dialogue should work towards developing "a common vocabulary and set of assumptions" about any

academic task, such as writing (Englert & Mariage, 1991, p. 330). The social interaction provides children an opportunity to "rehearse the language they are acquiring for talking about texts, *making that talk their own* as they use their new vocabulary to comment, reflect, and elaborate on texts" (Englert & Mariage, p. 338). Over time the child will take on more of the cognitive responsibility and the child will be able to internalize the speech used during the adult and child collaboration. Thus the conversation between the adult and the child can transition to a conversation the child would have with him/herself. Taken together, the social interactions between a teacher and a child can provide the child with many opportunities to learn self-regulating behavior, such as self-talk, as long as the tasks are within the child's zone of proximal development.

From a strictly educational standpoint, self-talk maintains several purposes (Graham, Harris, & Reid, 1992). Self-talk may help a student understand the nature of a task, monitor effectiveness of a strategy used to complete a task, focus and direct the learner's attention, control impulsivity, generate problem-solving solutions, aid memory, direct the learner through complex steps, and outline expectations for successful task completion. Radcliffe (1972) also states that talking aloud to problem-solve during a task can bring clarity to the problem, ideas, goals, steps, and relationships, increase accuracy, and help the student reorganize the problem into manageable steps. Lastly, self-talk demands executive control of the working memory and can be used to sustain attention, guide and plan, pace, and transition between tasks (Diaz, 1992).

Furthermore, Graham, Harris, and Reid (1992) have identified several forms of self-talk that include problem identification, focusing attention and planning, strategy, self-evaluation, error-correcting, coping, and self-reinforcement. Within these different forms, self-talk may be classified as task-approaching or task-specific (Graham et al., 1992). Task-approaching self-talk

is a general strategy that helps students become aware of their other metacognitive strategies that may be helpful in completing a task. For example, a student might think to themselves that a task is difficult to solve but once it is broken down into steps, it will be easier to handle. This type of self-talk can be generalized to a variety of tasks. Task-specific, on the other hand, rarely generalizes to multiple tasks and is comprised of detailed and specific phrases used to improve performance on a given task. For example, a student might say the mnemonic device "Please Excuse My Dear Aunt Sally" as a way to remember the mathematical order of operations to solve a math equation.

Measuring the prevalence of self-talk during academic or behavioral tasks has presented some challenging methodological issues (Diaz, 1992). In general, researchers must be able to differentiate between different types of self-talk, as well as to recognize the presence of internalized forms of self-talk. Though it is difficult to reliably measure the presence of self-talk, researchers have developed and studied one particular method of measuring self-talk. In 1986, Berk published several criteria used to categorize self-talk statements along three levels. Self-talk statements may be coded on any of the three levels or on more than one level. Level 1 self-talk is categorized as private speech that is not directed toward anyone, social speech directed to a listener, and uncodable utterances. Level 2 self-talk is categorized as task-irrelevant external speech, task-relevant external speech, and task-relevant internal speech (e.g., inaudible mutterings or lip and tongue movements). Level 3 self-talk is categorized as the external manifestation of internalized task-relevant self-talk. Level 3 is considered the most mature form of self-talk (Berk, 1986). In using this coding scheme, research has identified common trends in self-talk presence among elementary students. In one study conducted with first and third grade students, self-talk utterances were observed during independent math seatwork (Berk, 1986). The

researchers also examined the student's motor accompaniment to the task (e.g., tension-reducing behaviors, like fidgeting, or task-facilitating behaviors, like using a finger to follow along while reading), attention (e.g., focused, moderate, or diverted), and task performance. Results indicate that the grades did not differ in the frequency of total self-talk utterances but differed in the levels of self-talk. Older students tended to demonstrate more Level 3 self-talk while younger students demonstrated greater Level 1 and 2 utterances. In addition, the researchers found that older students tended to demonstrate more focused attention, which was also positively related to increasing Level 3 utterances. Though Berk cautions the reader in making causal connections between Level 3 self-talk and focused attention, she suggests that this study could provide initial evidence of Vygotsky's claim that self-talk brings action under control.

Bivens and Berk (1990) conducted a follow up longitudinal study to investigate this last hypothesis in greater detail. Elementary students were observed during independent math seatwork from first through third grades. Their hypothesis that children develop more internalized self-talk in tandem with greater self-control was confirmed. As Level 1 speech decreased, tension-reducing behaviors decreased across the three grades. As Level 2 speech decreased, task-facilitating movements decreased across the three grades. As Level 3 speech increased, focused attention to the task increased. Thus it appears that self-talk internalization is at least positively related to self-control though the causal mechanism has yet to be determined, especially for students with impairments or disabilities.

Though Vygotsky proposed that self-talk develops through overt speech, subtle overt utterances, and inaudible mutterings and lip movements, whether there is an overarching developmental path remains to be seen (Berk, 1992). In a study of children ages 5-17, Winsler and Naglieri (2003) analyzed the use of verbal strategies to problem-solve over time with age.

Consistent with Vygotsky's framework, the study found that the children's verbal strategies progressed from overt verbalizations, to partially covert, to covert verbalizations. As children aged, overt verbalizations decreased while covert verbalizations increased. This developmental trend was confirmed in the study conducted by Bivens and Berk (1990). Interestingly, younger children were less aware of their verbal strategy use compared to older children. Furthermore, children who reported an awareness of verbal strategy use performed better on a task than those who did not report the same awareness. Winsler and Naglieri suggested that an awareness of verbal strategies was necessary before the strategy proved to be of some use to the child.

In summary, the literature clearly states that the writing process places cognitive demand on the working memory. Mastery of each writing step, executive functioning skills, metacognition, and self-regulation can lead to automaticity and may alleviate demands on the working memory. However, the strength of the relationship between these cognitive processes and writing is not as clear especially with regards to the proportion of cognitive demand placed on the working memory with each writing process. Research also does not clearly specify which component or how these cognitive processes directly influence behaviors, such as writing (Berk, 1992). Though it is beyond the bounds of this study to investigate these limitations, future research should continue to bridge the connection between these cognitive processes and writing.

Population of Interest: Students with Attentional Difficulties

Writing has the potential to be more challenging for students with attentional difficulties, including Attention Deficit/Hyperactivity Disorder (ADHD). Students described as having attentional difficulties may have some of the same challenges and behaviors as students diagnosed with ADHD, however, these behaviors and symptoms may not be severe enough to

warrant a clinical diagnosis. Students with attentional difficulties that may or may not have a clinical diagnosis were the population of interest for this study.

Although the focus of the study is on general attentional difficulties, the conceptual framework draws from literature that studied ADHD. Research rarely focused on students with attentional difficulties without an ADHD diagnosis. This may be the case because students who only have attentional difficulties may not meet criteria for special education eligibility and research may focus on populations that clearly meet eligibility requirements. The conceptual framework draws on ADHD literature because these students will have similar academic and social-emotional profiles as the population of interest. The following will review common symptomology related to ADHD, cognitive processing limitations, and writing difficulties for students with attentional difficulties.

The extreme form of attentional difficulties, ADHD, is characterized by a persistent pattern of inattentive and/or hyperactive-impulsive behavior over the course of at least six months, with at least some impairment seen before seven years of age (American Psychiatric Association [APA], 2000). A comprehensive explanation of the disorder may be found in the Diagnostic Statistical Manual, Fourth Edition Text Revision; a manual of behavior disorders commonly used in the medical and mental health fields. The behaviors are typically maladaptive for the individual and must demonstrate impairment in two settings: academic, social, home, or occupational (APA). The individual's behaviors should not be the result of a Pervasive Developmental Disorder, Schizophrenia, or any other Psychotic Disorder or Mental Disorder (APA). Children with ADHD demonstrate a range of behaviors that typically include difficulty concentrating, following directions, organizing, staying on task, and transitioning, distractibility, fidgeting, and excessive movement (APA). Furthermore, children with ADHD typically

experience impaired academic achievement and it is estimated that 3-7% of school-aged children in the United States are diagnosed with ADHD (APA). According to Barkley (1988), "children with attention-deficit hyperactivity disorder (ADHD) are among the children most frequently referred to school psychologists for psychological intervention and evaluation" (cited in Ross, Poidevant, & Miner, 1995, p. 201).

Cognitive processes and attentional difficulties

Children with ADHD are characterized by poor cognitive strategies that monitor self-control and reflective problem solving and "do not use effective verbal mediation to govern their behavior in general" (Ross, Poidevant, & Miner, 1995, p. 202). This is reflected in a few assessments. Wechsler (1991) reported that children with ADHD show low scores on the Freedom from Distractibility and Processing Speed Scales on the Wechsler Intelligence Scales for Children, Third Edition. Campbell (1976, cited in Ross et al., 1995) states that low performance on perceptual-motor skill tests are due to attention deficits and impulse control issues.

It has been argued that children with ADHD may have neurologically-based deficits related to behavioral inhibition and executive functioning (Barkley, 1997). Behavioral inhibition refers to the ability to stop an ongoing response following a prepotent response, or a response that is expected given previous history in the reinforcement of that behavior (Alderson, Rapport, & Kofler, 2007). Deficits in executive function focus more on attention, working memory components, response organization, planning, and cognitive flexibility. A few studies have found selective and sustained attentional deficits (Kilic, Sener, Kockar, & Karakas, 2007), impairments in spatial and verbal storage of information in the working memory (Martinussen, Hayden,

Hogg-Johnson, & Tannock, 2005), as well as impairments in interference control, planning, cognitive flexibility, and phonetic fluency (Marzocchi et al., 2008).

Barkley (1997) presented a theory that suggested behavioral inhibition, sustained attention, and executive functioning can explain deficits associated with ADHD. He further proposed that limited self-regulation is responsible for ADHD symptoms. He argued that executive functions drive self-regulation and allow for self-directed actions, the use of self-directed speech, deferred gratification, goal-directed behavior, and the use of behavioral contingencies over time (Barkley, 1997). Studies that measure these factors have supported Barkley's theory and found that children with ADHD demonstrate deficits in control, inhibition, planning, and organization (Grodzinsky & Diamond, 1992; Korkman & Pesonen, 1994).

In specifically examining self-regulatory skills like self-instruction, a major focus of this study, research finds that children with ADHD tend to demonstrate atypical self-instruction development compared to typically developing students. Students with ADHD use more self-instruction utterances, but these decrease when medicated (Kopecky, Chang, Klorman, Thatcher, & Borgstedt, 2005), use more task-relevant external utterances (Berk & Potts, 1991), and are delayed in the internalization of private speech compared to typically developing students (Berk & Potts, 1991). One recent study by Berk and Potts examined external and internal forms of task-relevant and task-irrelevant utterances in students with Hyperactive/Impulsive or Combined forms of ADHD and typically developing students. The elementary age students completed the Object Assembly and Picture Arrangement subtests from the Wechsler Intelligence Scale for Children, Third Edition and the Continuous Performance Test-II (Connors, 2000). These subtests required the use of attention, concentration, and working memory skills. The students with ADHD demonstrated greater amounts of external task-relevant and task-irrelevant utterances

compared to typically developed students. Interestingly, the two groups did not differ on the accuracy of the tasks. The authors suggested that the typically developed students used fewer self-instruction utterances but performed similarly to the ADHD group as a result of using a more mature form of self-regulation. The authors hypothesized that the typically developed students may have used more internalized utterances to guide their task performance, but this was difficult to determine. Alternatively, the students with ADHD may have benefited from using the less mature form of self-regulation in order to perform as accurately as the typically developed students. Thus, it may be argued that self-instruction should be encouraged in the classroom until more mature forms of self-regulation develop.

Children with ADHD may have developed self-talk along with typically developed children but self-talk is not a naturally occurring and naturally effective strategy for children with ADHD to regulate their behavior. Berk (1992) writes "impulsive/hyperactive youngsters should follow the same trajectory of private speech development as their normal counterparts" but that "since a deficient attentional and/or motor control system acts as a tenacious obstacle to task success, it should prevent private speech from gaining efficient mastery over behavior and moving toward internalization" (p. 44). Whether training in the use of self-talk improves task performance will be discussed in later sections. Given that the research does not have a definitive developmental path for self-talk in students with ADHD, this is an area that should continue to be investigated for children with attentional difficulties and ADHD.

ADHD studies have found common higher-order thinking process deficits in working memory performance, motor inhibition, cognitive flexibility, and planning (Rommelse et al., 2007; Papadopoulous, Panayiotou, Spanoudis, & Natsopoulos, 2005). In addition there are higher-order cognitive processes built upon some lower-order processes, such as encoding,

searching, and decision and response organization. Deficits in higher-order processes may be due to deficits in lower-order processes. Lastly, research has documented ADHD patients with deficits in lower-order processes including encoding, perception, language, visuomotor integration, motor functioning, memory, temporal processing, word-reading, color-naming, and spatial recognition as discussed by Rommelse and colleagues.

Writing performance

There are several areas of cognitive processing within the writing literature that overlap with what is known about children with ADHD and most likely apply to children with general attentional difficulties. As one insightful ninth grader writes about his own experiences with ADHD and a writing disability:

> "I can't settle down physically, and extraneous thoughts fill my mind. I have multilevel thinking, and the foremost level ends up not being about what it's supposed to be. I think most people have distracting thoughts when they write, but they can push those thoughts away. With me, one distracting thought leads to another. For instance, while writing this article I suddenly told my mother to jot a note that I need to remember to buy deodorant. This was the end result of my being aware of the heat of the day and feeling sweaty. Then I thought about the reader of the article not caring about if I need deodorant, and that reminded me of a TV commercial where one candy tells the other "I don't care." So here I am thinking about getting up to get some candy when I'm supposed to be writing this article! On top of this I have short-term memory problems so I can't remember what I was going to say before my awareness of the heat of the day interrupted my thoughts. If you find this hard to follow, welcome to my world!" (Sheehan & Sheehan, 2000, p. 26).

It is very clear to the reader that, although Sheehan had good intentions to write an article, he had to overcome many distractions and interruptions in his thoughts in order to stay on task. Some

research has shown that ADHD can negatively impact text quality, spelling, and expressive and narrative writing quality (Re, Pedron, & Cornoldi, 2007). Additionally, students with ADHD tend to perform significantly lower than expected in writing compared to typically developing students (Barry, Lyman, & Klinger, 2002; Re, Caeran, & Cornoldi, 2008). Although training in using writing organization worksheets can improve written quality for students demonstrating ADHD symptoms, typically developing students still outperform students with ADHD symptoms in writing (Re, Caeran, & Cornoldi). Furthermore, research has also shown comorbidity of ADHD and a specific learning disability in written expression, with prevalence rates of 59-65% of clinically sampled children, ages 6-16, with ADHD (Mayes & Calhoun, 2006; Mayes, Calhoun, & Crowell, 2000).

Further research is needed to address the prevalence of difficulty with writing tasks that are more closely linked to classroom practice for students with attentional difficulties and in extreme cases, ADHD. Research in classroom practice is necessary given the lack of time already spent on writing in the classroom (College Entrance Examination Board, 2006) and the obvious need to help students with attentional difficulties that struggle to write within the classroom's time constraints. Lastly, research needs to explore the writing performance of students with attentional difficulties whom may not have an ADHD diagnosis. The literature tends to focus on extreme cases of attentional difficulties, but it is likely that students with moderate attentional difficulties also experience difficulty with writing. We would expect this given the relationship that attention likely has with other cognitive processes needed for writing, such as memory storage and retrieval, planning and organization of content, and self-regulation to sustain attention. Furthermore, studies should look to include multiple forms of data collection in order to reliably investigate the prevalence of attentional symptoms in the classroom, as this is

a reoccurring limitation to the studies conducted with students with ADHD (Re, Caeran, & Cornoldi, 2008; Re, Pedron, & Cornoldi, 2007; Reid & Lienemann, 2006). Attentional difficulties may range in severity, even for students with an ADHD diagnosis, and studies should look to multiple sources to obtain a reliable estimate of the deficit's impact on functioning.

Application of Writing Interventions and Self-Talk Training

From a theoretical perspective of writing instruction, cognitive processing, self-regulation, and attentional difficulties, the literature review now turns to practical applications of writing instruction and self-talk training. Literature on writing instruction will encompass approaches used to build writing product and process knowledge, best practices in techniques, and interventions that may benefit students with attentional difficulties. Then the review shifts to self-talk training and studies that used self-talk to change behaviors and to predict task performance, a description of self-talk within the classroom setting, and an exploration the use of self-talk with writing. Finally, this section ends with a review of studies supporting the implementation of two strategies for students with attentional difficulties: Self-Regulated Strategy Development (Graham & Harris, 1993) and a self-talk training strategy.

Writing interventions to develop skill

Research has been conducted on various writing interventions for struggling writers in general that, while not frequently studied specifically for students with attentional difficulties, hold promise as potentially effective interventions for this group. To begin, interventions are designed to address five common performance traits of struggling writers. First, instead of engaging in prewriting planning, struggling writers tend to draw from memory while they write with little attention to organization or elaboration (MacArthur & Graham, 1987). Second, when generating ideas, struggling writers tend to create shorter products with little detail (Graham,

Harris, MacArthur, & Schwartz, 1991). Third, struggling writers produce written products plagued with mechanical errors, interfering with the quality of the paper and demanding more attentional focus on mechanics rather than the writing steps (Graham, 1990). Furthermore, struggling writers tend to superficially revise their work and focus more on editing single words for spelling, punctuation mistakes, and neatness (Graham, 1997). Lastly, struggling writers do not demonstrate knowledge of a variety of writing genres and commonly leave out important components in their writing (Graham, 1990). With this in mind, writing instruction and intervention may be most beneficial to the student if there is a combination of skills instruction and a focus on the writing process, thus giving the student necessary mechanical skills, cultivating a sense of purpose to write, and hopefully improving student motivation (Bromley, 2003). As with all learners with unique needs, a variety of instructional techniques and interventions may be needed to address writing concerns for children who struggle with writing (Fink-Chorzempka, Graham, & Harris, 2005).

To meet the student's unique needs, interventions may range in their primary focus or approach. Some interventions may involve direct instruction of writing conventions (e.g., Howell & Nolet, 2000), some may use a process approach (Baker & Hubbard, 2002), and some may combine the two methods to create a balanced approach (Bromley, 2003; Graham & Harris, 2002). The process approach describes how writers develop their products through a cyclical process of planning, generating, editing, and revising, as the teacher would model these steps and verbalize their plan of action (Baker & Hubbard). The teacher would also provide frequent feedback to the student, incorporating the writer's strengths, missing features, and overall quality in order to build the student's understanding of the recursive writing process and provides a common language for the teacher and the student (Gersten & Baker, 2001).

Though it is true that young writers need to build an understanding of the writing process, literature also supports convention-based instruction with some researchers and practitioners espousing a balanced approach to instruction and intervention (i.e., conventions and process steps). Graham and Harris (2002) argue for effective writing instruction that draws on the student's "writing knowledge, skill, will, and self-regulation" (p. 593), encompassing the heart of the balanced approach. Furthermore, students should be given plenty of opportunities to write early on, within an individualized plan tailored to the student's needs and specific skills, and continued throughout their school years (Graham & Harris, 2002). Other components of the balanced approach include self-assessment, self-evaluation, collaborative writing, authentic activities, adequate models demonstrating different forms of writing, and direct instruction of mechanics (Bromley, 2003). Thus, the balanced approach aims to build "fluency, competence, and independence" (Bromley, 2003, p. 160).

One area in particular that is associated with struggling writers (e.g., including many students with attentional difficulties) is writing fluency. There are a few empirical studies that investigate interventions targeting fluency (e.g., Berninger & Sage, 1996). One intervention found that writing productivity, or fluency, increases with self-monitoring techniques (Moxley, Lutz, Ahlborn, Boley, & Armstrong, 1995). Students recorded the number of words written during a free-writing exercise and then graphed their performance against a predetermined goal. Moxley and colleagues (1995) emphasized the importance of practice as the basis for increasing fluency.

Some interventions may benefit students with ADHD. For example, Lougy, DeRuvo, and Rosenthal (2007) describe successful strategies and practical interventions used for early elementary students with ADHD to scaffold the writing process. Gersten and Baker (2001) found

that elementary students benefit from watching their teachers model how to translate ideas into writing while brainstorming. Gersten and Baker additionally suggest using prewriting activities and graphic organizers to create structure and organization, and to help students with ADHD to rely less on their immediate working memory. Lougy et al. (2007) encourage the use of flashcards to manipulate words into sentences thereby improving students' reading skills and visual memory skills. Lastly, students with ADHD may find that a word-processing program helps decrease anxiety and frustration with fine motor skills when creating a final draft (Lougy et al., 2007). These strategies may be particularly useful for students with ADHD given the focus on planning, organization, and the use of various tools to ease limited working memory capacity.

Although there has been extensive research on the best practices of writing instruction and important components necessary for good writing interventions (Graham & Perin, 2007), little empirical research seems to demonstrate very many well-established evidence-based interventions in the field of writing, according to the What Works Clearinghouse (2011). Well-established evidence-based interventions (EBI) are the hallmark of the current state of educational and psychological research and are characterized by at least two experimental and randomly controlled studies demonstrating intervention efficacy (Kratochwill & Shernoff, 2004). EBIs are advantageous in helping practitioners locate and implement scientifically-validated interventions in an attempt to provide the most effective and efficient support for struggling students, given the limited resources available in schools (Kratochwill & Shernoff).

Self-talk training

Given that successful writing requires control over the writing process and that some students may experience difficulty with self-regulation, self-regulatory training as it pertains to behaviors and academic tasks may improve functioning. A review of research in this area will

explore the effects of self-instruction training (i.e., self-talk) with typically developing students as well as with students with attentional difficulties.

The basic rationale for teaching students with special needs to use self-regulating strategies is to empower the students to independently self-regulate and direct their own behaviors without taking time away from instruction in core academic areas (Graham, Harris, & Reid, 1992). Self-talk training has been looked highly upon by school professionals as a non-intrusive way of modifying behavior and improving the student's self-control (Fish & Pervan, 1985). A review of empirical studies that investigated self-talk as part of self-management training found that self-talk training is beneficial for students as long as the training contains concrete, specific, and structured lessons for younger students and more conceptual models of self-talk for older students (Copeland, 1982). However, the review also found mixed results on the relationship between self-talk training and task performance with studies reporting nonsignificant, no difference, or positive correlations. Although prominent leaders in the literature provide theoretical support for the use of self-talk instruction, research has yet to provide solid empirical evidence to corroborate the theoretical support, especially for self-talk training within the writing process for children with attentional difficulties.

Self-talk training for behaviors. Self-talk in the form of external task-relevant verbalizations has been helpful for typically developed students during problem-solving tasks (Gagne & Smith, 1962). In a study of twenty-eight 9^{th} and 10^{th} grade boys with above-average intelligence, four conditions were compared to see whether making verbalizations of each move or stating a general principle at the end of a Tower of Hanoi test would improve task performance. Subjects were asked to complete two-, three-, four-, and five-disc problems moving one disc at a time from one pole to another in the least number of moves. Subjects that used

verbalizations for each move performed better than subjects that did not use verbalizations or just stated a general principle at the end of the task. Though it appears that verbalizing each move improves timing and accuracy of problem-solving, the authors did not provide a theoretical rationale for the effect of verbalizing the move does for the problem-solving process.

Self-talk training has been investigated as it relates to behavioral inhibition, indicating that self-talk training improves inhibition (Meichenbaum, 1975), modifies impulsivity (Bender, 1976), and increases on-task behavior (Bornstein & Quevillon, 1976) for impulsive, overactive, or students with attentional difficulties. To begin, Meichenbaum (1975) conducted a series of experiments to test for developmental changes in the use of self-talk to control behavior in young children. A small sample of kindergarten and first grade students tapped a telegraph key fast or slow, depending on the task's goal. The child would also say "faster" or "slower" either overtly or covertly. Results found that the kindergarten students were more likely to achieve their goal if they used overt verbalizations whereas first graders performed better under the covert condition as opposed to the overt verbalization condition. This experiment was replicated with "impulsive" children, as identified using the Matching Familiar Figures Test (Kagan, 1966), and similar results were found. In the second part of the experiment, the "impulsive" and "reflective" students were asked to squeeze a ball when the target stimulus would light up and not squeeze when the non-target stimulus would light up. Meichenbaum was interested in knowing whether saying "squeeze" or "don't squeeze" before the decided action would improve behavior control. Indeed, using the goal-oriented phrase before acting increased the latency response when the non-target stimulus lit up, though the reflective students performed more accurately than the impulsive students. However, it is not certain whether adding another step in the task (i.e., the

verbalization) naturally led to an increase in latency or if the statement is truly responsible for the controlled behavior.

Bender (1976) conducted a study that found self-talk training paired with strategy training led to fewer errors and increased response latency during the Matching Familiar Figures Test (Kagan, 1966) for seventy "impulsive" first grade students and fourteen non-impulsive first grade students. In the verbal self-talk and strategy instruction condition, instructors provided modeling, practice opportunities to use overt to covert utterances, and encouragement when the child was using the strategy effectively. The strategy instruction only condition provided general and specific task directions, an instruction to go slowly and carefully, and reinforcement from the instructor. The self-talk instruction only condition provided practice opportunities to use overt to covert utterances and instructor encouragement. A fourth control condition was also implemented. The purpose of the self-talk instruction was to increase response time to the task, an indication of decreased impulsivity. All of the treatment conditions increased response latency, though the self-talk and strategy instruction condition had shown significantly better outcomes than the other conditions. The self-talk only condition also increased latency more than the strategy only condition but this was not significant. While it appears that self-talk increases the impulsive child's task response time so that the child can think through the decision process, the experiment does not clarify whether this is the direct result of the self-talk instruction or if other variables like instructor modeling are causing the improvement. It is not clear whether the self-talk instruction is more regulating than verbalized directions from the instructor. Though it was not the focus of this study, it would be interesting to note how the self-talk instruction impacts performance speed and accuracy, or how an "impulsive" child could complete the task as quickly and as accurately as possible.

Thirdly, a self-instructional training package that included self-questions, self-reinforcement, rehearsal, and self-instructions increased on-task behaviors for three four-year-old boys identified as impulsive and highly disruptive in a multiple baseline single case design (Bornstein & Quevillon, 1976). The students participated in a two hour individual session with the experimenter to learn how to use self-instructions on problem-solving tasks. The experimenter would model self-talk by moving progressively from overt talk, to joint talk with the student, to whisper and lip movements, to experimenter and subject internal talk. Tasks varied in nature but were adapted from the Stanford-Binet, Wechsler Intelligence Scale for Children, and the McCarthy Scales of Children's Abilities. Upon program completion, direct observation of on-task (e.g., accepted task-related, silent, and attentive) and off-task behaviors were recorded in the general classroom. Results found that on-task behaviors increased in the general classroom with the program onset and continued 22.5 weeks after baseline. This study holds promise for young children with impulsive and disruptive behaviors, especially as each child presented with different symptoms related to attention deficit and positive results were still found. However the subjects in the study were only identified based on teacher referral instead of with standardized assessments, DSM criteria, or systematic observations. The use of self-talk in the classroom after the program is also unknown. As the authors state in their conclusion, it is not clear what component of the package was effective in transferring to the classroom. If the child did not produce an acceptable response during the instruction, the experimenter would reiterate the directions and model the appropriate response for the child and then ask the child to try again. The feedback from the experimenter could enhance the training and explain the results more than just the self-instruction component of the program.

Self-talk to predict task performance. While some studies have looked at the association between self-talk training and behaviors, other studies have examined whether the use of self-talk could predict task performance. In one longitudinal study of thirty-three students from first through third grade, the use of task-relevant forms of self-talk during first and second grade would better predict future math performance than the math test administered at first or second grade (Bivens & Berk, 1990). However, not every correlation reached significance. Another study used writing portfolio activities and classroom factors to explore how self-regulated learning develops in second and third grade students (Perry, 1998). The experimenter made a series of naturalistic observations to identify elements of classroom practice that indicated the presence of self-regulated learning and to see how these factors affected the student's perception of writing expectations and the writing process. Higher self-regulated learning was noted in classrooms that incorporated a high frequency of choice, opportunities to challenge skill development, evaluation criteria, high levels of teacher and peer support, and complex and meaningful activities. Students in classrooms rated highly for the presence of self-regulation reported feeling they had more control over the writing process compared to students from classrooms with lower self-regulation ratings. These students were also observed as engaged in more automatic, fluent, and recursive components of the writing process. While these observations are helpful in understanding what classroom factors are associated with self-regulation and the possible effect on writing, it is less clear whether self-regulation practices in the classroom lead to better writing or if better writers created the self-regulating environment. In addition, the study did not report the presence of specific forms of self-regulation like self-talk. It is possible that similar results would occur in a study that investigated the use of self-talk in a

classroom, given the relationship between self-talk and self-regulation. However, the similarity could only be hypothesized and warrants further research.

Despite some promising results, some studies have found a negative relationship between speech and task performance (Berk, 1992). If a student is facing a challenging task and fails the child may engage in self-talk because the child has yet to find an efficient and effective strategy to solve the problem. Over time the child may find more task success and an effective strategy, hence use less self-talk because the child is better able to regulate the problem solving process.

The presence of self-talk in the classroom. Patthey-Chavez and Clare (1996) conducted an interesting study on the influence of instructional conversation on transitional bilingual writers. The study follows five 4th grade students in a minority language classroom whereby the teacher uses instructional conversation to make connections between oral expression and written expression (in reading text and written composition). The elements of instructional conversation were adapted from Goldenberg (1992/1993) and focused on the activation of prior knowledge in relation to a theme drawn from the class' reading through teacher-led direct instruction, promoting more complex language and expression, eliciting statements from the students and encouraging the use of supporting evidence, using critical-thinking questions, positively responding to students, and encouraging dialogue that was continuously interconnected (Patthey-Chavez & Clare). The analysis of journals, essays, and stories found growth in writing fluency as a result of using instructional conversation (Patthey-Chavez & Clare).

A study by Chenoweth and Hayes (2001) examined undergraduate native English speakers learning how to speak French or German. The study investigated whether talking aloud in the new foreign language would increase writing fluency in the foreign language. When comparing proficiency levels in the second language, the study found that more words were

written in the second language essay when a participant had a higher proficiency level. The talk aloud protocol may have been the source for the increased experience, however, the study did not indicate what kind of talk aloud protocol was used. That is to say the talk aloud method may have been more social in nature and not necessarily what the participants were thinking to themselves or in a way that directed their behavior. Additionally, the use of self-talk was not explicitly taught to the participants, which is a focus of the current study.

Self-talk training and writing. Zoellner (1983; 1969) was one of the first researchers to think about the use of a talk-write strategy to improve writing fluency. He argued that students are sometimes more capable of talking in greater length and detail than they are of writing, but through the support of another peer, the writing task becomes easier. Talk-write was developed as a strategy in which two students are paired and work together to create a written product, and provide immediate feedback and reinforcement. Zoellner (1983; 1969) argued that the talk-write method helps to establish a community of learners, provide cooperative learning experiences, integrates different language skills, and forces the use of planning, monitoring, self-evaluation, and elaboration. Radcliffe (1972) further asserts the talk-write strategy in a theoretical model proposing the use of speech to improve writing. Radcliffe suggests that writing strategies should capitalize on the advantages of speech, one being social reinforcement. According to the theory, talking is a socially reinforcing act and when applied to the context of writing, the conversation between peers socially reinforces the act of writing.

The talk-write strategy involves two students working together to create a written product. One person is the writer while the other student asks questions to evoke more in-depth thinking without providing actual content. Once the process is complete, the two students switch roles. Each student acts as a model for the other student by asking follow-up questions as the

other student talks out loud. However, this method does not provide explicit instruction in the use of questions to promote in-depth thinking (except for one modeled demonstration by the classroom teacher), nor does it follow the same internalization process outlined by other researchers (see Patthey-Chavez & Clare, 1996). The strategy is also limited in the fact that talk-write stems from the assumption that students come to class with superior oral language skills compared to written language skills (Zoellner, 1969).

Even without explicit training, it appears that young children naturally use self-talk as a strategy when writing. One study focused on the relationship between overt self-talk and writing development in sixteen Kindergarten and first grade students (Schimmoeller, 1999). In observing the students during a writing task, self-talk utterances were more apparent during a task that was within the child's instructional level of writing. Self-talk was rarely seen in children working on very easy or challenging tasks. Though the study provides insightful implications for teachers and future research, it does not account for some of the study's limitations. The study did not manipulate the independent variable, being self-talk, or control for other imposing factors such as writing instruction. The results cannot clearly conclude a causal relationship between self-talk and writing development.

To summarize, self-talk is a form of self-regulation. Studies have examined the connection between the use of self-talk to problem solve, inhibit behaviors, and improve task performance. Studies have also considered the intersection between spoken and written language with the hope that spoken language could be used to enhance written language. As research moves towards applying self-talk to the writing process, studies have looked towards specific student populations to test whether the self-talk strategy is applicable for the specific population.

Self-talk training and academics with specific populations. Research suggests that children with impulsive behaviors have difficulty controlling behaviors, do not spontaneously use self-regulatory strategies, and do not understand the nature of the problem such that the child knows to find a strategy to use to regulate his/her behavior (Meichenbaum & Goodman, 1971). However when trained to use self-instruction strategies, in which children were trained to use overt vocalizations by an adult, followed by overt vocalizations by the child, and then child covert self-vocalizations to manage nonverbal behaviors, the explicit instruction led to the regulation of behavior (Meichenbaum & Goodman).

Furthermore, self-talk was investigated with elementary-age children diagnosed as having emotional disturbances and a specific learning disability in reading, math, and/or spelling (Swanson & Kozleski, 1985). Children with these challenges typically lack the necessary strategies to help them become successful students, such as knowing what strategy to use, how to handle mistakes, how to self-reinforce, and how to efficiently problem-solve through difficult and complicated tasks (Swanson & Kozleski, 1985). However, training these students in using self-talk (Meichenbaum and Goodman, 1971) improved academic performance, through the use of general strategy statements, such as self-reinforcing statements, and task specific statements, such as statements about the conventions of writing.

A few studies have considered the use of self-talk to improve self-control and academics. Barkley, Copeland, and Sivage (1980) conducted a within subjects reversal design (ABAB) with six hyperactive boys ages 7-10. The students were trained to use self-instruction and self-monitoring to improve on-task behavior, misbehavior, and activity level. Self-instruction involved a four-step process during independent academic work in which the student would listen, repeat the directions to themselves, describe the problem and talk it out in their own

words, and evaluate and praise their work. Students were also trained in using self-monitoring techniques in which they would mark on a chart whether they were on-task when signaled by a tape recorder. The results found that students improved on-task behavior and decreased classroom misbehavior but the intervention did not affect their activity level.

The use of self-talk to facilitate behavior control, general academics, and writing has been the topic of many studies since the 1970s, but few have specifically focused on mid-elementary students with attentional difficulties. This seems to be a natural and necessary next step in the literature.

Self-Regulated Strategy Development

One intervention, Self-regulated Strategy Development (SRSD; Graham & Harris, 1993) has been studied extensively over the last few decades and is considered one of the few evidence-based interventions available for struggling writers (Graham & Perin, 2007). Future research should build upon the literature and determine the effectiveness of this intervention for students with attentional difficulties, as it has not been extensively examined. Though SRSD was designed for struggling writers in the broadest sense, students with attentional difficulties may be encompassed in that group and often share many of the challenges identified for struggling writers.

Self-regulated Strategy Development (SRSD) is a model of direct and explicit instruction that teaches the writing process and uses various writing strategies for different types of writing. It was created to alleviate deficits in knowledge, skill, and self-regulation in all students. Based on the work of Meichenbaum (1977) in cognitive behavior modification, Vygotsky, Luria, and Sokolov in the area of verbal mediation, Brown, Campione, and Day (1981) in self-instruction strategies, and Deshler and Schumaker (1993) in the area of learning strategies, SRSD may be a

way to combine the advantages of direct instruction of text structure and the process approach of writing instruction to build a student's knowledge of writing and enhance the use of verbal mediation to guide behavior (Harris, Graham, & Mason, 2003; Graham & Harris, 1993). Combining the instructional focus on the written product or writing process, known as the balanced approach, provides the foundation for the SRSD intervention (Harris, Graham, & Mason, 2003).

Because SRSD was created as a way to address the cognitive, behavioral, and affective needs of the student (Harris, Graham, & Mason, 2003), the primary goals for students are to master the higher-level cognitive processes necessary for writing, become autonomous, reflective, and self-regulated writers, and develop positive attitudes about writing and becoming a writer (Graham & Harris, 1993). Additionally, SRSD is an explicit form of writing instruction situated within a larger writing curriculum that includes instruction in self-regulating strategies such as goal-setting, self-monitoring, self-instruction, and self-reinforcement (Graham, Harris, & Troia, 2000). Typical SRSD sessions run 20-60 minutes, for 8-12 sessions, and at least three times a week but could vary depending on the student's needs (Harris, Graham, & Mason, 2003).

The essential components of SRSD include direct instruction of the writing process, opportunities to maintain and generalize knowledge, and use of self-statements (Graham, Harris, & Troia, 2000). Maintenance was beyond the scope of the study due to time constraints and therefore is not addressed further. However, it is important to note that generalization and maintenance are two important components of the strategy instruction and SRSD process that have been extensively researched. Direct instruction aims to develop background knowledge about what it takes to be a good writer and teaches students how to use a specific mnemonic device. The direct instruction also works to provide adequate teacher modeling of the strategy,

student memorization of the mnemonic device, collaborative practice in using the mnemonic and independent practice. The students are also instructed in the use of goal-setting and self-monitoring of words written during practice and whether the students included all seven parts of the story.

The instruction and guided practice of using self-statements during the writing process to guide the student's behavior is another essential component of SRSD (Graham, Harris, & Troia, 2000; Graham, Harris, & MacArthur, 1993). These statements are designed to help the student identify the problem ("what do I need to do?"), plan ("first, I need to…"), self-evaluate ("does this make sense?"), self-reinforce ("what a great sentence!"), and cope ("I can do this").

Graham, Harris, and Troia (2000) also outline characteristics of SRSD essential for the success of the intervention. Beyond the explicit instruction in the writing strategy and self-regulation procedures, students and teachers should actively construct the learning experience through instruction tailored to the student's unique needs. Students should also work towards meeting specific goals in their own time, rather than progressing through set stages determined by a strict time frame. The strategy developers further emphasize the importance of consistent progress monitoring of the student's growth to ensure that the intervention is meeting the student's needs. Once students have mastered the writing strategy, the SRSD method can be used to introduce and support new writing strategies. Lastly, as the student is nearing mastery, the teacher needs to fade out the level of support so that the student can achieve on his or her own and feel efficacious.

Since the strategy's development in the mid 1980s, numerous studies have been conducted to measure the effectiveness of SRSD. Research has been conducted with many different writing strategies (e.g., planning, composing, revising), for different types of writing

(e.g. story writing, narrative writing, expository essays, and persuasive essays), with students from elementary through high school, and with struggling writers in the general education setting, students with learning disabilities, speech and language difficulties, Autism Spectrum Disorders, attentional difficulties, and typically developed students (Asaro-Saddler & Saddler, 2010; Danoff, Harris, & Graham, 1993; De La Paz, 1999; De La Paz, 2001; Graham & Harris, 1989b; Graham, Harris & Mason, 2005; Graham, Harris, & Troia, 2000; Graham & MacArthur, 1988; Graham, MacArthur, Schwartz & Page-Voth, 1992; Harris & Graham, 1985; Harris & Graham, 1999; Lienemann, Graham, Leader-Janssen & Reid, 2006; Saddler, 2006; Saddler & Asaro, 2007; Sexton, Harris & Graham, 1998). Over 30 empirical studies have found significant improvements in the quality, length, mechanics, and structure in students' writing over time and in different settings, with effect sizes ranging from 1.0 to 5.12 (Mason, Harris, & Graham, 2003; Graham, Harris, & MacArthur, 1993). These effects have maintained and generalized to other writing genres like expository and narrative writing for some students (Graham, Harris, & MacArthur; Harris & Graham, 1999; Lienemann et al.). Studies have also found a difference in the way students conceptualize writing (Graham, Harris, & MacArthur; Sexton et al.). When asked to comment about writing, students' concept of writing had shifted from a focus on mechanics before the intervention to a focus on the quality of their ideas, strategy use and writing effort after participating in SRSD. In terms of improving self-regulated behavior, SRSD has shown positive effects. Participating in SRSD has shown greater evidence of students consistently planning ahead, making notes, setting goals, and developing outlines prior to writing (Graham, Harris, & MacArthur; Saddler; Saddler & Asaro). Finally, interviews conducted with teachers and students have documented positive attitudes about the intervention (Graham &

Harris, 1998; Graham, Harris, & MacArthur), suggesting the intervention holds positive acceptability and social validity in the practice setting.

A segment of research studies on SRSD have involved component analyses in order to better understand if the self-regulating components of the intervention were associated with greater writing improvement beyond the writing strategy instruction. An early study conducted by Graham and Harris (1989) examined whether the explicit teaching of self-regulating procedures (self-monitoring, goal setting, and self-instruction) improved writing when added to the story grammar mnemonic. The entire fifth and sixth grade sample improved in their compositions, even when they were not explicitly taught the self-regulating procedures. However, Graham and Harris (1989) hypothesize that some self-regulating procedures could be implicit in the story grammar instruction, thus allowing for growth in both groups (full SRSD versus SRSD minus self-regulating explicit instruction).

A second study further broke down the SRSD components and examined the differences in growth among the components. Sawyer, Graham, and Harris (1992) looked at fifth and sixth grade students with learning problems in four groups: full SRSD, SRSD – goal setting and progress monitoring, SRSD – any component considered self-regulating (e.g., model self-instruction, modeling aloud, collaborative practice), and a control group. Students participated in small groups of 2-3 students that met three times a week for 20-50 minutes. The study was careful to incorporate treatment validity measures to help ensure treatment integrity. The small group instructor completed a checklist for each session, reported to the study investigators twice a week, and the study investigators would complete at least one direct observation of the lesson for each small group instructor. Ninety-five percent of the lesson plans were implemented as intended. Results found that the first two groups did not differ significantly in composition

quality but both groups wrote significantly better than the control group. Comparisons with the third SRSD group did not reach significance. The full SRSD group was the only group that demonstrated generalization to stories written in other settings. Thus it may be concluded that the strategy component of the SRSD intervention is effective in improving composition skills, however, self-regulation components may add more to the student's ability to generalize the writing strategy to other settings as indicated with the full SRSD group.

Although the study conducted by Sawyer and colleagues (1992) did not find significant differences between various self-regulating components of SRSD, other researchers continued to examine the self-regulating components of the SRSD model. Glaser and Brunstein (2007) looked to see whether self-regulation strategies would increase the effectiveness of a writing strategy for fourth grade students. A total sample of 113 fourth grade students participated in small group instruction (i.e., 4-6 students) in one of three conditions: SRSD (writing strategy + self-regulating strategies), writing strategy only, and didactic instruction only. The full SRSD model included pre-skill development to build prior knowledge of writing conventions, strategy instruction using explicit instruction and modeling, strategy retrieval using a mnemonic device, individual practice opportunities, and self-regulating strategies (e.g., self-monitoring, self-assessment, self-instruction, goal setting). The writing strategy only condition did not include the self-regulating strategies. The didactic instruction condition controlled for time spent in writing instruction and was implemented within the general education classroom. Students in the didactic instruction condition engaged in teacher-directed instruction in grammar, spelling, vocabulary, pre-writing and re-drafting exercises, and teacher administered tests of the skills taught in the class. Small groups would meet with trained instructors over four sessions for approximately 45 minutes each session. This study also considered treatment validity measures

and included training sessions and manuals for the SRSD and writing strategy only instructors, integrity checklists, weekly meetings, and inter-rater reliability procedures when scoring for composition quality. Results of the study found that students participating in the full SRSD model demonstrated more complete and qualitatively better products than the other two conditions, according to a story grammar scale (Harris & Graham, 1996), holistic scoring rubric, and story length. Unlike the previous component analysis studies, Glaser and Brunstein found significant group differences suggesting that self-regulating strategies add something unique to writing achievement beyond the writing strategy even after only four sessions. One limitation to the study was in the way that writing outcomes were measured. Writing prompts were taken from instructional materials used in the local school districts to teach writing to young students. However, the authors do not clarify an age range or discuss how the materials were developed. Therefore, it is difficult to make age or grade comparisons to estimate whether growth in writing achievement is typical for that particular grade. The authors only used pre/post and maintenance time points which may limit the ability to attribute the study results to the intervention.

One study tested the effects of two types of self-regulatory instruction programs as another way to consider how self-regulation adds to a writing strategy (Garcia-Sanchez & Fidalgo-Redondo, 2006). A total sample of 121 upper elementary students in fifth and sixth grades identified as having a learning disability or low writing achievement participated in one of three conditions: SRSD, social cognitive model of sequential skill acquisition (SCM), and control. The SCM intervention is closely related to SRSD but was based on Schunk and Zimmerman's work (Zito, Adkins, Gavins, Harris, & Graham, 2007). According to the SCM condition, students observe the instructor modeling coping and the writing process, emulate the instructor individually or with a peer while using graphic organizers and self-instruction

statements, and engage in self-control and self-regulating strategies (e.g., practicing the writing process and learning to adapt the writing process to focus on the outcome, rather than the process). Self-instructional statements in the SCM intervention were classified as forethought phrases, performance control phrases, and self-reflection phrases that incorporate self-evaluation, causal attribution, and self-reaction. There were four main differences in the two experimental conditions. First, SRSD contained fewer sessions that build prior knowledge on writing. Secondly, SRSD contained fewer sessions that featured cognitive modeling by the instructor. Furthermore, SRSD tended to incorporate examples of modeling the writing process while the SCM intervention additionally incorporated examples of coping modeling. Third, the SCM intervention balances the number of peer and individual practices while SRSD largely focuses on individual practice. Lastly, SRSD has specific strategies for planning and revising that are not included in the writing strategy of the SCM intervention. The control group consisted of standard instruction on the components and structure of the written product, independent work time, and teacher corrections. Despite the above differences, each condition met for 50 minutes, three times a week, for 25 total sessions. The results did not find significant differences in writing overall between SRSD and SCM but found that both conditions significantly improved structure, coherence, quality of writing, and time spent on writing and revising compared to the control group. There were a few significant group differences in self-efficacy measures related to writing. The SCM condition showed a significant increase in writing self-efficacy compared to the control group and while the SRSD group improved in self-efficacy, the difference between SRSD and control was not significant. It is possible that the experimental group differences on writing measures were not apparent because the two interventions had several self-regulatory techniques in common (e.g., self-instruction, focused attention, self-evaluating, self-

reinforcement). Although the instructors were trained before each session and blind to the purpose of the study the investigators did not utilize integrity checklists to monitor treatment validity. This would have been helpful to include in the study as it appears that each treatment condition consists of complex instructions in self-regulation and the writing process. Furthermore, while the outcome measure drew from curriculum content typically found in grades 4 and 5, the required essays were not from a standardized measure and were only administered as pre- and post-measures. It is not clear how students from other schools would score on the same assessments if the author tried to generalize the study to a greater population. Despite these limitations, the study demonstrates the importance of including self-regulatory strategies, explicit instruction, and teacher modeling in writing instruction, above and beyond standard instruction that focuses more on the written product.

Reid and Lienemann (2006) examined the effects of the SRSD intervention on writing with three students with ADHD in the third and fourth grades at a rural elementary school. The study utilized a multiple baseline across participants design with multiple baseline measures. Participants were identified as having problems in writing using the Story Construction subtest of the Test of Written Language, Third Edition (TOWL-3; Hammil & Larsen, 1996), and scoring below the 9^{th} percentile. The participants were also identified as having ADHD by parental verification of physician diagnosis. Picture story prompts were used to facilitate spontaneous writing which was then scored according to the number of words written and the number of story parts included during the baseline, intervention, and independent phases of the study. These measures were not timed. The authors also added a 7-point holistic scoring rubric to measure writing quality. The intervention followed the outlined lesson plans available at http://kc.vanderbilt.edu/casl/srsd.html, and the lessons were conducted one-on-one with the

participants. To enhance treatment fidelity, Reid and Lienemann (2006) used checklists for each lesson and a school psychologist observed 25% of the lessons using the same checklist. Treatment fidelity was high. Over the course of seven sessions, significant improvement was identified for each of the participants in all areas of measured outcomes (i.e., number of words written, holistic scoring, and number of story parts).

This study had a few limitations that are also apparent in other SRSD studies. First of all, the authors did not use multi-method and multi-informant identification criteria to measure the presence of attentional difficulties. This would be important to use in order to better understand the student's current level of functioning with regards to ADHD symptoms. Secondly, the study did not progress monitor student writing skills with a curriculum-based measure of written expression (WE-CBM). In fact, several other studies progress monitored with the stories written during the intervention, rather than administering a separate writing prompt. WE-CBMs are short, timed tests that measure a student's writing fluency, grammar and punctuation use, and spelling. The measures are sensitive to growth over time and can be used to monitor progress and tailor writing instruction in the classroom with ease (Powell-Smith & Shinn, 2004). Using the WE-CBM in the context of research allows the researcher to measure writing skills over the course of the intervention rather than using a pre/post measure. Additionally, WE-CBMs allow researchers to examine the extent to which a student can write quickly and accurately, or fluently. Lastly, the study does not devote much time to the direct instruction of the self-talk method. Self-talk (or self-statements) are first discussed with students during the third lesson plan, which is considerably less than the time devoted to writing process instruction. Furthermore, the teacher is instructed to briefly mention the use of self-talk to students and help them come up with a list of statements they could use during the intervention. Although the

teacher is also instructed to model the writing process, talk aloud, and encourage the child to use his or her own self-statements, the teacher spends little time engaging in direct instruction of self-talk. For one, self-talk is mentioned within lessons 3-6 whereas writing is the focus of all six lesson plans. Lesson three begins with self-talk as the focus of three out of fourteen lesson objectives. Within this lesson, students are introduced to self-talk briefly, generate 2-3 self-statements for their self-talk worksheet, and the instructor models the use of self-talk sentences when writing a story. However, the instructor does not explicitly explain how these sentences are used when writing. The student merely observes the teacher using these statements. Explicit instruction may be needed in order for theses students to benefit from the strategy, as demonstrated in many studies on self-talk instruction (Meichenbaum, 1975; Meichenbaum & Goodman, 1971; Gagne & Smith, 1962). Onward from Lesson 3, the instructor would only ask students to take out their self-talk worksheets, "refer students to their self-statements for creativity or thinking free" and "encourage them to use other self-statements of their choice while they write" during collaborative or independent writing activities. It may be argued that children with attentional difficulties would benefit from additional support in building self-regulating strategies, like self-talk, as much as they also need direct instruction in academics. These limitations will be explored in the current study.

Self-Regulated Strategy Development and Self-Talk Training

The literature describes the writing process as a complex and cognitively demanding task. Writing requires the use of multiple working memory processes. Many students, including students with attentional difficulties, have difficulty with the writing process. While some students are better able to navigate the writing process or find a strategy to help them through, some students do not know how to effectively manage the writing task. If students with

attentional difficulties were explicitly taught how to strengthen working memory processing and use strategies that mediate working memory deficits such as SRSD and self-talk training, would writing performance improve? Could these interventions also improve self-regulation?

Research from several areas suggested components of SRSD and self-talk training were associated with writing performance improvement. The most prominent component of SRSD is the use of the balanced approach to teach writing conventions and the writing process. Components of evidence-supported instructional practices for writing instruction are also embedded within the SRSD intervention. These practices include explicit instruction, modeling, guided and individual practice, and frequent instructor feedback. Through these instructional practices, the writer learns to organize thoughts, build knowledge of the conventional rules of writing, elicit prior knowledge, and improve self-monitoring; skills essential for successful writing (Gersten & Baker, 2001). In addition, SRSD scaffolds the student through sequential skill-building lessons and aims to work within the student's individual zone of proximal development. Individualized instruction that considers the student's strength and weakness may be more effective in improving academic performance, rather than a more strictly scripted intervention. The balanced approach to writing instruction may be more beneficial for students with attentional difficulties as these students lack the knowledge about text structure and the writing process (Harris, Graham, & Mason, 2003). When writing, these students may focus too much on grammar and spelling, neglecting to think about how their ideas are organized and descriptive or that writing requires multiple revised drafts. Such a strong focus on grammar and spelling may not be to any fault of their own, but may be due to a lack of mastered fluency in the conventions of writing and a greater emphasis on writing conventions in the classroom.

Research specific to SRSD has demonstrated the intervention's effectiveness. In addition to the volume of research supporting the intervention use, more research should be conducted in order to enhance the intervention validity. Currently, the majority of the research on SRSD was conducted by Karen Harris or Steve Graham. While the intervention founders conducted strong studies demonstrating its effectiveness, studies conducted by researchers outside of Harris and Graham that document the intervention's effect would strengthen the body of literature supporting SRSD. Documenting treatment efficacy or positive effects in practice and research composed by several different researchers, highlighting the fidelity of treatment implementation, and reporting treatment integrity are essential parts of the cornerstone of evidence-based practices (Kratochwill & Shernoff, 2004). Furthermore, few studies have looked at standardized measures as outcome measures of writing fluency and quality. Standardized measures can allow for the research to control for extraneous variables in measurement, such as allotted time given to complete a writing assignment. It also allows researchers to make age or grade comparisons between the study participants and a normalized sample. A lack of a standardized assessment or progress monitoring tools to measure writing outcomes separate from the story created during the intervention was a common limitation among the studies reviewed (e.g., Garcia-Sanchez & Fidalgo-Redondo, 2006; Glaser & Brunstein, 2007; Reid & Lienemann, 2006). Using standardized measures to document intervention effectiveness may enhance the intervention validity.

Beyond the SRSD literature, evidence exists to support the theoretical argument for the use of self-talk training. The demand placed upon the working memory results from the combination of the writing phases, the individual's prior knowledge, skill level, and the difficulty of the task (Olive, 2004). If the task is too demanding or not automatic, the task strains the

working memory efficiency (Bourdin & Fayol, 1994). To compensate for the task demand, we use cognitive strategies or self-regulating strategies to make the work easier and efficient.

Self-talk can be used to guide our behavior during a challenging task and make work more efficient (Diaz, 1992; Graham, Harris, & Reid, 1992; Radcliffe, 1972). Children naturally use self-talk to guide their way through a task that is within their zone of proximal development (Schimmoeller, 1999). However, if a student encounters a challenging task like writing the student will not naturally use self-talk to move through the process. The student would most likely need an expert (instructor) to guide him or her through the writing process but to also teach the student how to use strategies like self-talk in order to work independently. Self-talk training has met with success in previous studies. Meichenbaum and Goodman (1971) trained impulsive students to use self-talk to monitor their impulsive behaviors with success. Research also documents positive effects of self-talk training to improve problem-solving (Gagne & Smith, 1962), behavioral inhibition (Meichenbaum, 1975), impulsivity (Bender, 1976), and on-task behavior (Bornstein & Quevillon, 1976).

With regards to the population of interest, it is important for the study to examine whether combining a planning and drafting strategy that uses a modified version of the SRSD model and self-talk training interventions would improve writing performance and self-regulation for students with attentional difficulties. Research has documented cognitive deficits in several areas including working memory performance, motor inhibition, cognitive flexibility, and planning for this population (Rommelse et al., 2007; Papadopoulous, Panayiotou, Spanoudis, & Natsopoulos, 2005). Re, Pedron and Cornoldi (2007) found that symptoms associated with ADHD can negatively impact a student's text quality, spelling, and expressive and narrative writing.

In all studies conducted on SRSD, students learn to use the self-talk strategy during the third lesson. It is not until then that students are taught specific phrases and encouraged to create their own list of self-statements to use throughout the intervention. However, given that research seems to suggest that students with attentional difficulties may have underdeveloped use of self-talk to regulate their functioning during academic tasks (Berk, 1992) it appears that these students may require additional instruction and time to practice self-talk beyond what is described in Lessons 3-6. Thus, it would be important to investigate whether providing direct instruction and practice with self-talk in a more scaffolded manner would benefit students with attentional difficulties. The extended instruction on self-talk will be known as the Self-Talk Internalization Strategy (STIS) for the purpose of this study. A description of the strategy will be outlined in the next chapter.

Conceptual Framework

The conceptual framework for this study is based on a conglomeration of studies and best practices found in various parts of the literature, from cognitive and school psychology to literacy instruction and policy. There are several conclusions that each area of research has made. For one, research has shown that writing is a complicated, effortful, and demanding task. Teaching a student how to write is even more challenging, especially when the student has special needs. However, there are several interventions and instructional techniques that can improve a student's ability to plan, generate ideas, edit, revise, and self-regulate, though the majority of these interventions need further empirical support. Furthermore, research has demonstrated that students with attentional difficulties, including ADHD, commonly show limited behavioral disinhibition, issues with executive functioning control, and academic

difficulties. Specifically, few studies document writing difficulties in students with attentional difficulties. Additionally, some research suggests that self-talk may help children self-regulate during academic tasks (Diaz, 1992; Schimmoeller, 1999), an ability that may be underdeveloped in students with ADHD (Swanson & Kozleski, 1985). Last, research has clearly shown the effectiveness of the Self-Regulated Strategy Development (SRSD) intervention in improving writing outcomes for struggling writers.

What remains to be seen is whether a planning and drafting strategy using a modified version of the SRSD model, with a heavier focus on self-talk (known as STIS in the current study), improves writing for elementary students with attentional difficulties, above and beyond modified SRSD alone. Thus far, only one study has investigated the effects of SRSD on narrative writing for students with ADHD when working with the student individually (Reid & Lienemann, 2006). Finding positive effects for writing quality and fluency, similar to the Reid and Lienemann study, may help strengthen the argument for generalizability of the modified SRSD with STIS intervention as well as strengthen the empirical support needed to classify this intervention as evidence-based for students with attentional difficulties.

The current study will address limitations presented by Reid and Lienemann (2006). First of all, the authors did not use multi-method and multi-informant identification criteria for attention difficulties. Though the study is not limited to students with an ADHD diagnosis and focuses on students with attentional difficulties, it would be important to use multi-informant and multi-method procedures to better understand the student's current level of functioning with regards to attentional/ADHD symptoms. Secondly, the study did not investigate whether SRSD was effective for students with attentional difficulties that may not have an ADHD diagnosis. This would be an important investigation to consider given that schools work with limited

resources and need to provide the most effective and efficient services to struggling students. Without a special education classification, many students that struggle to achieve do not have access to additional support. It is possible that students with attentional difficulties, without any other eligibility status, need extra support in writing skill development. I suspect that given the positive effect that SRSD has had on writing skills for struggling writers and students with ADHD in separate studies, SRSD will lead to positive effects even for students with attentional difficulties. SRSD may be an effective intervention that general education teachers can provide for this population of students without special education eligibility.

Beyond the limitations presented by the authors, I have identified two additional limitations that were addressed in this study. For one, the study did not progress monitor student writing fluency throughout the intervention with a curriculum-based measure of written expression (WE-CBM). Using the WE-CBM in the context of research allows the researcher to systematically observe changes in writing fluency over the course of the intervention rather than using a pre/post measure and to gain a more reliable estimate of growth over time. Whereas the Reid and Lienemann (2006) study tallied the number of words written during an unspecified time pre- and post-intervention, the current study will use 3-minute WE-CBMs to consistently measure fluency as an outcome variable over the entire study. Additionally, the study does not devote as much time to the direct instruction of the self-talk method compared to instruction on the writing process. It may be argued that students with attentional difficulties require additional support in building self-regulating strategies, like self-talk, much like the need for direct instruction in academics. I suspect that providing students with more opportunities to observe self-talk and practice its use will improve the student's effective use of that strategy, more than using SRSD-only. Please refer to Appendix A for an illustration of the conceptual framework.

Research Questions and Hypotheses

The research questions will focus on students with attentional concerns participating in an intervention with two conditions that implements a planning and drafting writing strategy using the modified SRSD process of instruction in the first condition and then combines the independent stage of the modified SRSD process and self-talk instruction situated within a modified SRSD model of instruction (STIS) for the second condition. The two conditions are used to investigate the value of the STIS intervention when added to the modified SRSD intervention across participants. This study has four main research questions, with some questions subdivided to answer questions about specific components of the dependent variable. The major dependent variables of interest include writing fluency, narrative writing quality, self-talk, and self-regulation. Please refer to Appendix M for a detailed outline of the research questions, dependent variables, measures used, and planned data analysis.

Research Questions: Comparing modified SRSD-only Condition1 and modified SRSD + STIS Condition 2

1.) Does Condition 2 improve writing fluency for elementary students with attention difficulties more than Condition 1?

    1a.) Does Condition 2 improve total words written, an indicator of productivity, for elementary students with attentional difficulties more than Condition 1, as measured using a curriculum-based measure of written expression?

        Hypothesis: Condition 2 will improve total words written for elementary students with attentional difficulties more than Condition 1, as measured using a curriculum-based measure of written expression.

1b.) Does Condition 2 improve correct word sequences, an indicator of fluency, for elementary students with attentional difficulties more than Condition 1, as measured using a curriculum-based measure of written expression?

Hypothesis: Condition 2 will improve correct word sequences for elementary students with attentional difficulties more than the Condition 1, as measured using a curriculum-based measure of written expression.

2.) Does narrative writing quality improve for elementary students with attentional difficulties participating in Condition 2 more than Condition 1?

2a.) As measured using a curriculum-based measure of written expression?

Hypothesis: Condition 2 will improve writing quality for elementary students with attentional difficulties more than Condition 1, as measured using a curriculum-based measure of written expression.

2b.) As measured using a curriculum-based measure of written expression and scoring rubric (Harris & Graham, 1996)?

Hypothesis: Condition 2 will improve writing quality for elementary students with attentional difficulties more than Condition 1, as measured using a curriculum-based measure of written expression and scoring rubric (Harris & Graham, 1996).

2c.) As reported by the general education teacher using the Teacher Interview/Checklist of Written Expression?

Hypothesis: Condition 2 will improve writing quality for elementary students with attentional difficulties more than Condition 1, as reported by the general education teacher using the Teacher Interview/Checklist of Written Expression.

3.) Does the number of self-talk utterances (Berk, 1986) increase for elementary students with attentional difficulties after participating in Condition 2 than Condition 1?

3a.) As coded for Level 1 utterances?

Hypothesis: Condition 2 will increase the number of private speech utterances for elementary students with attentional difficulties more than Condition 1.

3b.) As coded for Level 2 utterances?

Hypothesis: Condition 2 will increase the number of task-relevant external speech utterances for elementary students with attentional difficulties more than Condition 1.

4.) Does executive functioning/self-regulation improve for elementary students with attentional difficulties participating in Condition 2 more than Condition 1, as measured using the Behavior Rating Inventory of Executive Function (BRIEF)?

Hypothesis: Condition 2 will improve executive functioning/self-regulation for elementary students with attentional difficulties more than Condition 1, as measured using the Behavior Rating Inventory of Executive Function (BRIEF).

Background Questions: Modified SRSD-only Condition 1

The following background questions are important to investigate in order to answer the main research questions. Writing fluency and productivity, writing quality, self-talk, and self-regulation will be measured within the first condition (SRSD-only).

1.) Does Condition 1 improve writing fluency for elementary students with attention issues?

1a.) Does Condition 1 improve total words written, an indicator of productivity, for elementary students with attentional difficulties, as measured using a curriculum-based measure of written expression?

Hypothesis: Condition 1 will improve total words written for elementary students with attentional difficulties.

1b.) Does Condition 1 improve correct word sequences, an indicator of fluency, for elementary students with attentional difficulties, as measured using a curriculum-based measure of written expression?

Hypothesis: Condition 1 will improve correct word sequences for elementary students with attentional difficulties.

2.) Does narrative writing quality improve for elementary students with attentional difficulties participating in Condition 1?

2a.) As measured using a curriculum-based measure of written expression?

Hypothesis: Condition 1 will improve writing quality for elementary students with attentional difficulties, as measured using a curriculum-based measure of written expression.

2b.) As measured using a curriculum-based measure of written expression and scoring rubric (Harris & Graham, 1996)?

Hypothesis: Condition 1 will improve writing quality for elementary students with attentional difficulties, as measured using a curriculum-based measure of written expression and scoring rubric (Harris & Graham, 1996).

2c.) As reported by the general education teacher using the Teacher Interview/Checklist of Written Expression?

Hypothesis: Condition 1 will improve writing quality for elementary students with attentional difficulties, as reported by the general education teacher using the Teacher Interview/Checklist of Written Expression.

3.) Does the number of self-talk utterances (Berk, 1986) increase for elementary students with attentional difficulties after participating in Condition 1?

3a.) As coded for Level 1 utterances?

Hypothesis: Condition 1 will increase the number of private speech utterances for elementary students with attentional difficulties.

3b.) As coded for Level 2 utterances?

Hypothesis: Condition 1 will increase the number of task-relevant external speech utterances for elementary students with attentional difficulties.

4.) Does executive functioning/self-regulation improve for elementary students with attentional difficulties participating in SRSD, as measured using the Behavior Rating Inventory of Executive Function (BRIEF)?

Hypothesis: Condition 1 will improve executive functioning/self-regulation for elementary students with attentional difficulties, as measured using the Behavior Rating Inventory of Executive Function (BRIEF).

Background Questions: Modified SRSD + STIS Condition 2

The following background questions are important to investigate in order to answer the main research questions. Writing fluency and productivity, writing quality, self-talk, and self-regulation will be measured within the second condition (modified SRSD + STIS).

5.) Does Condition 2 improve writing fluency for elementary students with attention issues?

5a.) Does Condition 2 improve total words written, an indicator of productivity, for elementary students with attentional difficulties, as measured using a curriculum-based measure of written expression?

Hypothesis: Condition 2 will improve total words written for elementary students with attentional difficulties, as measured using a curriculum-based measure of written expression.

5b.) Does Condition 2 improve correct word sequences, an indicator of fluency, for elementary students with attentional difficulties, as measured using a curriculum-based measure of written expression?

Hypothesis: Condition 2 will improve correct word sequences for elementary students with attentional difficulties, as measured using a curriculum-based measure of written expression.

6.) Does narrative writing quality improve for elementary students with attentional difficulties participating in Condition 2?

6a.) As measured using a curriculum-based measure of written expression?

Hypothesis: Condition 2 will improve writing quality for elementary students with attentional difficulties, as measured using a curriculum-based measure of written expression.

6b.) As measured using a curriculum-based measure of written expression and scoring rubric (Harris & Graham, 1996)?

Hypothesis: Condition 2 will improve writing quality for elementary students with attentional difficulties, as measured using a curriculum-based measure of written expression and scoring rubric (Harris & Graham, 1996).

6c.) As reported by the general education teacher using the Teacher Interview/Checklist of Written Expression?

Hypothesis: Condition 2 will improve writing quality for elementary students with attentional difficulties, as reported by the general education teacher using the Teacher Interview/Checklist of Written Expression.

7.) Does the number of self-talk utterances (Berk, 1986) increase for elementary students with attentional difficulties after participating in Condition 2?

7a.) As coded for Level 1 utterances?

Hypothesis: Condition 2 will increase the number of private speech utterances for elementary students with attentional difficulties.

7b.) As coded for Level 2 utterances?

Hypothesis: Condition 2 will increase the number of task-relevant external speech utterances for elementary students with attentional difficulties.

8.) Does executive functioning/self-regulation improve for elementary students with attentional difficulties participating in Condition 2, as measured using the Behavior Rating Inventory of Executive Function (BRIEF)?

Hypothesis: Condition 2 will improve for elementary students with attentional difficulties, as measured using the Behavior Rating Inventory of Executive Function (BRIEF).

Background Questions: Within Condition Phases

Data collected within each condition was recorded according to the phases within the condition. These phases coincided with the progression of the SRSD and the STIS interventions. Each condition contained four phases that were commonly found in the SRSD model of instruction: direct instruction in a particular strategy, modeling of the strategy's use, guided practice, and independent practice. Data collected to measure writing progress (i.e., productivity,

fluency and quality) and self-talk was analyzed to examine how these variables change with each phase. The previous background questions listed for the modified SRSD only and modified SRSD + STIS conditions were examined for each phase, with the exception of the Teacher Interview/Checklist and the BRIEF measure. The Teacher Interview and BRIEF was examined at three time points (i.e., baseline, end of Condition 1, and end of Condition 2). An example of the phases within each condition is provided in Appendix F. It was hypothesized that data collected for writing productivity and fluency, writing quality, and self-talk would demonstrate improvement with each subsequent phase of the condition. It was further hypothesized that the growth observed in the modified SRSD + STIS phases would be greater than within the modified SRSD-only phases.

Evidence in support of modified SRSD and modified SRSD + STIS

Several lines of theoretical and empirical evidence support the use of SRSD and self-talk training in improving writing fluency, writing quality, and self-regulation in elementary students with attentional difficulties. First, SRSD incorporates necessary components needed for successful writing, such as organization, instruction in conventional rules and processes, and self-regulatory strategies, and teaches students through the use of direct instruction, modeling, and individual practice (Gersten & Baker, 2001). Secondly, SRSD provides several opportunities for students to engage in explicit instruction with a teacher, an effective method to develop clear ideas (Fitzgerald & Teasley, 1986). Third, students need to learn and use strategies that make the writing process more efficient and less taxing for the working memory. SRSD and STIS are strategies that are designed to increase student knowledge of the writing process and conventions, increase skill level, and make the writing process more efficient and automatic. This could be achieved through the many opportunities the students have for explicit instruction

and guided practice in the use of writing mnemonics and self-talk strategies. Furthermore, self-regulation strategies, like self-talk, make work more efficient and help direct our behavior (Diaz, 1992; Graham, Harris, & Reid, 1992; Radcliffe, 1972). Lastly, SRSD and STIS are based on theoretical models of self-regulation, verbal mediation, cognitive behavioral modification, learning strategies, and evidence-supported writing instruction, which are empirically validated by over 30 empirical studies ranging in effect size from 1.0 to 5.12 for struggling writers, including students with ADHD (Mason, Harris, & Graham, 2003; Reid & Lienemann, 2006).

Evidence in support of greater improvement in modified SRSD + STIS

While evidence clearly supports the use of SRSD to improve writing and self-regulation, evidence also suggests that the added STIS intervention may lead to greater improvement in writing and self-regulation compared to the modified SRSD-only condition. Studies have shown that the self-regulation components of writing interventions make a difference in improving student performance compared to interventions that just used explicit writing instruction (Glaser & Brunstein, 2007; Sawyer, Graham, & Harris, 1992). The modified SRSD + STIS condition would provide more self-talk training in a systematic and scaffolded manner through the course of the intervention condition. Furthermore, studies have found positive effects of self-talk training, especially for children with attentional concerns (e.g., Bender, 1976; Bornstein & Quevillon, 1976; Meichenbaum, 1975; Gagne & Smith, 1962). Given the benefits of self-talk training, it stands to reason that more opportunities for explicit strategy instruction, modeling, guided practice, and feedback in the use of self-talk during the writing process would also lead to greater improvement in writing and self-regulation for the modified SRSD + STIS condition.

Chapter 3: Method

Participants

The population of interest in this study included elementary students with attentional difficulties, in grades 4-5, in Michigan. The sample for this study was drawn from the fourth and fifth grade classrooms from an elementary school of approximately 500 students located in the urban fringe of a mid-size city in mid-Michigan. The school was composed of students in kindergarten through fifth grade, with 81% Caucasian, 7% Asian, 7% Black, 4% Hispanic, and 23% eligible for free or reduced lunch. All students within each classroom were encouraged to participate, though participation was voluntary. All students received a parent consent form and a parent behavior rating scale. The study sample was selected from the pool of twelve students that returned the consent form and BASC-2 parent form, a behavior rating scale. Most of these students were in the fifth grade (n=10) and male (n=7). Attention Problems T-scores ranged 35 to 80 (3^{rd} to 99^{th} percentile). Hyperactivity T-scores ranged 39 to 83 (8^{th} to 99^{th} percentile).

Selection was based on three criteria: providing parental consent and student assent, having attentional difficulties according to parental report, and identified as scoring within the at-risk or clinically significant ranges on the Attention Problems or Hyperactivity scales of a parent reported or teacher reported behavior rating scale. The research investigator selected six students meeting the three criteria to participate and having the most severe attentional difficulties on the parent and teacher forms of the behavior rating scale (Table 1). Five students were in fifth grade and one was in fourth grade. Three students were male and three were female. Attention Problems T-scores ranged 56 to 80 (72^{nd} to 99^{th} percentile). Hyperactivity T-scores ranged 41 to 83 (12^{th} to 99^{th} percentile).

Table 1

Student Demographics

Student	Gender	Age	Grade	Race/ Ethnicity	BASC-2 Parent Report T-Score (Percentile) Attention Problems	BASC-2 Parent Report T-Score (Percentile) Hyper-activity	BASC-2 Teacher Report T-Score (Percentile) Attention Problems	BASC-2 Teacher Report T-Score (Percentile) Hyper-activity	Comparison of Baseline WE-CBM to AIMSweb Norms Percentile (TWW)	Comparison of Baseline WE-CBM to AIMSweb Norms Percentile (CWS)
1	Female	10	5	Bi-Racial	80 (99)	83 (99)	59 (78)	53 (73)	25-50th	10-25th
2	Male	11	5	Bi-Racial	72 (98)	80 (99)	59 (78)	53 (73)	25-50th	25-50th
3	Female	10	5	Caucasian	59 (79)	54 (72)	59 (78)	41 (12)	50-75th	10-25th
4	Male	9	4	Caucasian	56 (72)	61 (86)	64 (89)	69 (94)	50th	25-50th
5	Male	11	5	n/a	64 (89)	61 (86)	66 (92)	74 (96)	50-75th	25-50th
6	Female	10	5	Caucasian	72 (98)	61 (86)	46 (40)	42 (24)	> 90th	75-90th

Student 1 was a bi-racial female, age 10, in the fifth grade. Both biological parents have a high school diploma and she lives with her mother. Her mother reported that she did not receive support services at school. She had difficulty with attention but did not have an ADHD diagnosis. To gauge writing performance prior to the start of the intervention, students' average scores on the WE-CBM baseline measures were compared to 2009-2010 winter national aggregate norms provided by AIMSweb. For the fifth grade target scores, or the 50th percentile, for total words written (TWW) was 46 and 39 for correct word sequences (CWS). For the fourth grade, target scores for TWW were 40 and 32 for CWS. Student 1 scored in the 25-50th percentile for TWW and 10-25th percentile for CWS. These scores indicated that she may be able to produce written work but that it likely contains grammatical and spelling errors. Results of the Criterion-Referenced Written Language Skills Checklist show that Student 1 needed to work on using correct punctuation (e.g., period, comma, exclamation point, question mark, and quotation marks) and writing four different types of sentences (e.g., declarative, imperative, interrogative, and exclamatory). These two skills were highlighted during the intervention and monitored over time. Student 1 was a cooperative participant who appeared to develop a good rapport with the graduate student instructor. The student appeared to put forth good effort during the intervention.

Student 2 was a bi-racial male, age 11, in the fifth grade. He lives with his mother who has a high school diploma. His mother reported that he did not receive support services at school. The parent also reported that he had attention difficulties, had an ADHD diagnosis, and used medication to treat ADHD symptoms. According to baseline WE-CBMs, he scored in the 25-50th percentile on TWW and CWS. Writing performance on these measures indicated near

average performance compared to national norms. Results of the Criterion-Referenced Written Language Skills Checklist show that Student 2 did not consistently demonstrate correct punctuation or capitalization. These two skills were an additional focus of the intervention and monitored over time. Student 2 appeared to be a quiet student that did not readily look for help from the graduate student instructor.

Student 3 was a Caucasian female, age 10, in the fifth grade. Her mother completed a 4-year degree and her father completed a 2-year degree. She lives with both parents. Her parent reported that she visits the reading specialist at school and has difficulty focusing on a task for a long time but she did not have an ADHD diagnosis. Results of the baseline WE-CBMs show writing performance in the 50-75th percentile on TWW and 10-25th percentile on CWS. Her ability to produce written work was greater than her ability to attend to correct grammar, punctuation, or spelling. The Criterion-Referenced Written Language Skills Checklist results show that she had difficulty consistently demonstrating correct capitalization and punctuation. These areas were chose to be included in the intervention and monitored over time. Student 3 appeared to have developed good rapport with the graduate student instructor. She was talkative and enthusiastic about writing and working with the instructor.

Student 4 was a Caucasian male, age 9, in the fourth grade. His mother completed a 2-year degree and his father has a high school diploma. He lives with both parents. His parent reported that in the past he received support services at school but that he had not received any services at the time of the study. Student 4 has difficulty with attention but did not have an ADHD diagnosis. On the WE-CBM baseline measures he scored in the 50th percentile on TWW and 25-50th percentile on CWS. His ability to produce written work was greater than his ability

to attend to correct grammar, punctuation, or spelling. Results from the Criterion-Referenced Written Language Skills Checklist show that he had difficulty consistently demonstrating correct punctuation and capitalization. These areas were added to the intervention and monitored over time. Student 4 was a pleasant student who worked well with the graduate student instructor.

Student 5 was a male, age 11, in the fifth grade. Race/ethnicity and highest education degree earned by the parent were not known. He lives with his grandmother. His parent report stated that he currently received special education services in reading, writing, and math. It was discovered by the graduate student instructor about halfway through the study that Student 5 had been transitioned into the emotional impairment classroom for services. The parent also reported that Student 5 sometimes had difficulty with attention and that he did not have an ADHD diagnosis. Comparisons to national norms on the baseline WE-CBMs show he performed in the 50-75th percentile on TWW and 25-50th percentile on CWS. His ability to produce written work was greater than his ability to attend to correct grammar, punctuation, or spelling. The Criterion-Referenced Written Language Skills Checklist indicated that Student 5 had difficulty consistently demonstrating correct punctuation. This area was included in the intervention and monitored over time. Student 5 exhibited several behavioral challenges during the study. While he initially began to develop good working rapport with the graduate student instructor, he began to show signs of resistance by Session 7. Student 5 began to refuse to participate in the study. The primary investigator consulted with the instructor and decided to give Student 5 a reward of 10 minutes of outside play if he participated in the study. This reinforced his participation for the most part but he continued to resist in other ways. Sometimes he would become emotional (e.g., pouting, ignoring, raising his voice), unfocused, make somatic complaints, or oppositional (e.g., writing numbers instead of a story for the curriculum-based measure of written expression, or

WE-CBM). Student 5 refused to continue to participate in the study and ended his participation at Session 15.

Student 6 was a Caucasian female, age 10, in the fifth grade. Both parents completed a 4-year degree. She lives with both parents. Her parent reported that she did not participate in additional support services at school. Parents also reported that while she has attentional difficulties, she did not have an ADHD diagnosis. On the baseline WE-CBMs she performed above the national average, greater than the 90th percentile on TWW and in the 75-90th percentile on CWS. The Criterion-Referenced Written Language Skills Checklist indicated that she had difficulty consistently demonstrating correct punctuation. This was added to the intervention and monitored over time as an additional area of focus. Unfortunately, some data for this student were lost. Therefore, some comparisons with other students or between conditions were not possible.

Measures

The study used a variety of measures to collect information about the participants and to measure the effects of the SRSD and STIS intervention. Some measures collected information about the student as a way to select students while other measures provided a better understanding of the selected student's strengths and weaknesses that could have an effect on the student's academic performance. The Attention Problems and Hyperactivity subscales of the Behavior Assessment for Children, Second Edition (BASC-2; Reynolds & Kamphaus, 2004) were used to select students. Other measures were used to inform individualized writing instruction during the modified SRSD intervention, such as the Criterion-Referenced Written Language Skills Checklist. Finally, some measures were intended to examine the outcome variables. These included curriculum-based measures of written expression (WE-CBM) to

measure production, fluency and quality, the Scale for Scoring the Inclusion and Quality of the Parts of a Story (Harris & Graham, 1996) to measure narrative writing quality, and the Teacher Interview/Checklist for Written Expression adapted from Bradley-Johnson and Lesiak (1989) to measure writing quality. Self-talk was video recorded for each student in every session and then counted and coded according to Berk's model (1986). Self-regulation was measured using pre- and post-test administrations of the Behavior Rating Inventory of Executive Function (BRIEF; Gioia, Isquith, Guy, & Kenworthy, 2000).

Informative Measures

Behavior Assessment for Children, Second Edition. First, the Parent Form of the Behavior Assessment System for Children, Second Edition (BASC-2; Reynolds & Kamphaus, 2004) was used to confirm the presence of attentional difficulties with a T-Score greater than 60 on the Attentional Problems scale. Selection criteria for the study allowed for some students to score above the at-risk range on the Hyperactivity subscales. A follow up Teacher Form and the same subscales were used to measure the current level of functioning in the classroom. The BASC-2 is a rating scale used across informants and settings to indicate a child's level of social and emotional functioning, behavioral issues, adjustment, and school issues. The BASC-2 is frequently used to diagnose or classify emotional and behavioral disorders in children ages 2 through 21 (Reynolds & Kamphaus, 2004). The manual indicates high reliability coefficients and provides evidence of adequate validity. Internal consistency reliability was reported as .90 (Attention Problems) and .91 (Hyperactivity) on the Teacher Rating Scale. Internal consistency reliability was also reported as .80 (Attention Problems) and .70 (Hyperactivity) on the Parent Rating Scale.

Measures to Inform Instruction

Criterion-Referenced Written Language Skills Checklist. The Criterion-Referenced Written Language Skills Checklist was intended to gain a detailed description of writing skills that a student has mastered or was still building (Appendix E). These skills range from having a purpose, to knowing the writing process, to demonstrating product knowledge, and demonstrating writing strategies. Teachers typically check "Yes" or "No" for each component to indicate level of skill mastery. The checklist was part of the intervention design, though not an original component of SRSD, and was used to tailor the writing instruction during the intervention phase for each participant. Two areas that had a "No" checked were directly taught, modeled by the instructor, and practiced throughout the modified SRSD intervention. For example, one student may have had a "No" checked for "simple sentences." Tailored instruction would have provided direct instruction in constructing a simple sentence and then incorporated this instruction into a self-talk statement to remind the student of the strategy for future use. Then the instructor would have modeled how to use simple sentences and the self-talk statement during guided practice. The instructor would have provided reminders in how to construct simple sentences during guided and independent practice. This checklist was only meant to identify specific skill deficits and was not used in data analysis for pre- and post-intervention assessments. It was necessary to gather information on specific writing skills for each participant given the limited prior knowledge that the graduate student instructor had about each student's skill level. Typically, this intervention is conducted within the classroom setting and individualized by the classroom teacher based on the teacher's knowledge of the student. Graduate student instructors did not have this advantage and needed additional information in order to individualize the intervention, similar to the classroom teacher implementation. The

information gleaned from this survey was interpreted prior to the start of the intervention and incorporated into intervention lesson plans.

Outcome Measures

Curriculum-based measure of written expression. Writing was operationally defined to include writing fluency and productivity, as measured by a series of probes known as curriculum-based measures in written expression, and writing quality, as measured by the number of story components present in a written product. The curriculum-based measures administered as indicators of fluency, productivity, and quality were scored by a graduate student and the primary investigator. Multiple raters were used to provide a more reliable estimate of the participant's writing performance. One WE-CBM probe was administered at the end of each session, for a total of eight probes across Condition 1 and Condition 2. Probes were selected prior to the start of the study using a random number generator to choose 16 probes for the condition sessions and 6 probes for the baseline condition from a list of 31 possible story starters provided by AIMSweb. Probes were assigned to a baseline or intervention session so that participants completed the same probe.

Writing productivity was operationalized as the total number of words written (TWW) in three minutes using a curriculum-based measure of written expression (WE-CBM). Writing fluency was operationalized as the total number of correct word sequences (CWS) written in three minutes on a WE-CBM. Both total words written and correct word sequences were used as a way to gain perspective on a student's ability to produce any amount of written work and then to assess how accurately and quickly the student could write while monitoring the use of correct grammar, punctuation, and spelling. Researchers define writing fluency as an indicator of speed and accuracy (Shinn, 2002), an indicator of skill mastery (Howell & Nolet, 2000), and a

predictor of writing performance on criterion-based standardized assessments (Gansle, Noell, VanDerHeyden, Naquin, & Slider, 2002). While total words written does not account for accuracy or quality, it was important to include in this study as an indicator of writing performance as students with attentional difficulties may have difficulty producing written work (Barry et al., 2002; Re et al., 2008; Reid et al., 2006).

Curriculum-based measures are brief measures of academic skills that are typical for a particular grade and can be used to measure progress over time, to evaluate intervention effectiveness, or to compare to a normative sample (Powell-Smith & Shinn, 2004). Students were given one minute to think about a story starter sentence and three minutes to write a story that connects to the story starter. The student's response was scored to determine total words written (TWW) and correct word sequences (CWS). Directions for scoring the CBM along these indicators are described in the online administration manual (http://www.aimsweb.com/measures-2/written-expression-cbm/). Recently, the National Center on Student Progress Monitoring (2006) reviewed the reliability and validity for WE-CBMs and reported adequate reliability and alternate form reliability, and suggested that the measure is sensitive to growth over time. A report by the Research Institute on Progress Monitoring (2005) examined the reliability of the WE-CBM in a study conducted with third, fifth, and seventh grade students. The results of the investigation suggest moderate alternate-form reliability based on Fall/Spring administrations (Words Written = .74/.68, Words Spelled Correctly = .75/.72, Correct Word Sequences = .77/.77). At this time, a few studies have demonstrated validity evidence. Espin, Weissenburger, and Benson (2004) reported high correlations with the Test of Written Language (TOWL; Hammill & Larsen, 1978), Word Usage subtest of the Stanford Achievement Test (Madden, Gardner, Rudman, Karlsen & Merwin, 1978), and the

Developmental Sentence Scoring System (Lee & Canter, 1971). The curriculum-based measure was chosen for this study because it is used to continuously monitor student skill level during each phase of the intervention (Espin et al., 2004).

Story components. Writing quality was operationalized as the number of story parts included in the WE-CBM. This method of measuring narrative writing quality stems from the SRSD intervention. In the interventions, students write one narrative writing sample for each lesson and then count the number of story parts written (out of a possible seven parts). Participants should aim to include all seven parts in their story products. For the purpose of this study, information on the number of story parts included in a story written from the curriculum-based measure of written expression (WE-CBM) administered as a progress monitoring tool was used to measure story parts. This story parts measure is not an original measure of a WE-CBM but the story parts measure has been used in many studies with stories written during intervention, including Reid and Lienemann (2006), to examine the SRSD effects on narrative writing skills. Although it may not have been possible to write a story that included all seven parts in a three-minute probe, analysis examined whether an increase in story parts occurred over the course of the study.

Scale for Scoring the Inclusion and Quality of the Parts of a Story. Narrative writing quality was also measured using a scoring rubric developed by Harris and Graham (1996). This measure was used to score the stories written from the WE-CBM. The Scale for Scoring the Inclusion and Quality of the Parts of a Story (Appendix B) can be used to score narrative writing products based on the presence of a main character, a story location, description of the time period, set of events, character goals, character actions to achieve their goals, a story ending, and the characters' emotional reactions to the story events. These categories coincide with the

mnemonic for the seven narrative story parts taught during the modified SRSD intervention. Categories are scored on a scale from 0 to 2, with "0" representing a missing category and "2" representing complex, elaborate, descriptive, and well-defined categories. The scale may be reproduced for classroom use and has been used in other studies examining SRSD (Glaser & Brunstein, 2007). Although it may not have been possible to write a story that would receive perfect scores across the categories in a three-minute WE-CBM probe, analysis examined whether an increase in scores occurred over the course of the study.

Teacher Interview/Checklist for Written Expression. The Teacher Interview/Checklist for Written Expression is a basic checklist for teachers to use when conducting a survey-level assessment of the student's writing skills (Appendix C). The checklist was adapted from Bradley-Johnson and Lesiak (1989). The checklist includes written expression components that range from grammatical features to vocabulary and the writing process. Teachers rated how well the student used a particular skill in their writing (Limited, Beginning, Basic, Proficiency) and how important it was for the student to use that skill in their writing (Not Expected = 1 to Always Expected = 4). A comparison of the teacher's responses for the pre- and post-intervention administrations of the checklist provided a means of evaluating whether the intervention effects generalized to the general education classroom in the area of written quality. The checklist was administered at three time points: Baseline, end of Condition 1 and end of Condition 2.

Self-talk. Self-talk utterances were captured using audio- and video-tape recordings of the intervention sessions. Utterances from the entire intervention session throughout the study were coded according to the model presented by Berk (1986) and used in subsequent empirical studies of self-talk (Corkum, Humphries, Mullane, & Theriault, 2008; Berk, 1992; Berk & Potts, 1991;

Bivens & Berk, 1990). Self-talk utterances were coded along two levels. Level 1 self-talk consists of private speech that is not directed towards anyone in particular, social speech that is directed towards another individual in the room, and uncodable utterances. The same statement may be coded along Level 2, consisting of task-irrelevant speech (TI), task-relevant external speech (TRE), and task-relevant internal speech (TRI). Task-relevant external speech generally appears as an utterance that clearly relates to the task but does not address another individual in the room. Task-relevant internal speech generally appears as slightly inaudible mutterings, whispers, or lip and tongue movements and appears clearly related to the task but does not address another individual in the room. Self-talk utterances were recorded, coded according to level and type, and counted in terms of total utterances and percentage of total utterances for each subcategory and for each Level (e.g., private speech count/percent of total Level 1, social speech count/percent of total Level 1, uncodable count/percent of total Level 1, and total Level 1 count). The study particularly focused on the instances of private speech and task-relevant external speech, with additional consideration of the ratio of internal to external. Due to the nature of the recording, not all task-relevant or irrelevant internal utterances may have been recorded. Refer to Appendix D for an example of how utterances were reported.

Self-regulation/executive functioning. The Behavior Rating Inventory of Executive Function, Teacher Form (BRIEF; Gioia, Isquith, Guy, & Kenworthy, 2000) was used as a pre- and post-intervention measure of executive functioning and self-regulation. The BRIEF Teacher Form was given at three time points: Baseline, end of Condition 1 and end of Condition 2. The parent and teacher rating scale is a tool that school psychologists use to assess individuals ages 5-18 with possible developmental or neuropsychological concerns. The BRIEF is an 86-item rating scale standardized from a sample of 1,419 parents and 720 teachers from rural, urban, and

suburban settings with demographics representative of the 1999 U.S. Census data. The BRIEF collects information about the student's level of difficulty with everyday tasks that require higher- order cognitive skills such as organization, planning, self-monitoring, and behavior/emotion regulation. Teachers or parents are asked to rate each task considering the degree to which the child is having a problem (1 = never, 2 = sometimes, 3 = often). Scores on the Behavior Regulation Index provide a measure of Inhibition, Shift, Emotional Control, and Initiation. The Metacognition Index provides a measure of Working Memory, Planning and Organization, Organization of Materials, and Monitoring. Results are reported using T-scores, percentile ranks, and 90% confidence intervals. The authors report adequate internal consistency (alphas = .80-.98), test-retest reliability at 2 weeks for the parent normative sample, 3 weeks for the parent clinical sample, and 3.5 weeks for the teacher normative sample in the mid-to upper .80s, and moderate correlation between the parent and teacher forms (.32-.34). The authors also report evidence establishing convergent validity with other measures of learning, impulsivity, and inattention, including the Behavior Assessment System for Children, Teacher and Parent Rating Scales (Reynolds & Kamphaus, 1992), Child Behavior Checklist, Teacher Report Form (Achenbach, 1991), Conners Rating Scale (Conners, 1989), and ADHD-Rating Scale IV (DuPaul, Power, Anastopoulos, & Reid, 1998). Studies have reported good clinical utility for using the BRIEF to distinguish children with ADHD symptoms from a nonclinical population (McCandless & O'Laughlin, 2007; Sullivan, & Riccio, 2007). The purpose of the BRIEF for this study was to examine whether either condition would improve self-regulation and executive functioning, as measured using the BRIEF Teacher Form.

Procedures

Pre-intervention activities.

Prior to the start of the intervention, teacher and parent consent were obtained by sending consent forms home to all students in the fourth and fifth grade of the elementary school. The teacher providing consent played an integral part of the research study and obtaining formal consent was one way to help increase the teacher's level of commitment to the study. The teacher was in frequent communication with the research investigator and graduate student instructor (e.g., student attendance or intervention scheduling), requiring time and energy spent away from other activities. Parental consent was necessary given the age of the studied population. The consent form explained to parents that the purpose of the study was to investigate interventions for students with attentional difficulties and parents only needed to fill out information about the student if the parents wanted their student to participate. The consent form explained to the parents that an additional selection process was used to identify students for the intervention and that the consent form only made the student potentially eligible to participate in the study. When requesting consent, parents were asked to complete the parent form of the BASC-2. A Teacher Form of the BASC-2 was given to the classroom teacher for every student that returned parental consent.

Participants were selected in three ways from the pool of students with consent and a completed parent and teacher behavior rating scale form. First, students needed to provide parental consent. Next, parents needed to indicate whether their student experienced attentional difficulties, especially during academic work. Parents were asked to indicate whether their child had an ADHD diagnosis and if the child used medication to treat their symptoms. Providing information about a diagnosis and medication use was voluntary, however important to record to gain a better sense of the conditions in which the child functioned well and to possibly explain extraneous variables influencing the outcomes of the study. Finally, students needed to score at

least within the at-risk (T-Score > 60) or clinically significant (T-Score > 70) ranges for Attentional Problems on the Teacher Form whether or not the student scored in that range on the Parent Form because the focus of this study was performance in the school environment. It was possible that a participant would have elevated scores on the Hyperactivity subscales of the Teacher Form and the Parent Form of the BASC-2.

Six students meeting these criteria were selected. All students participated in the modified SRSD and self-talk training (STIS). Students were randomly assigned and worked individually with a graduate student instructor. Two graduate instructors were assigned to work with two students separately and two graduate instructors worked with one student. Graduate instructors were selected from a pool of volunteers in the school psychology program at Michigan State University. Four students volunteered to work with the participants and a fifth student was available to coordinate supplies among the four instructors. All graduate students were female. Three of the graduate instructors were education specialist students and the fourth was a doctoral student. Training to the graduate students was provided on three occasions. The first session was a four-hour training session designed to introduce the graduate students to the study, to provide information on writing development and the modified SRSD model, and to train the graduate students to administer the WE-CBM. The second session, an hour in duration, was designed to review the previous training and to discuss the logistics of the study implementation. The third session, an hour in duration, was a combination of the two previous trainings that was provided for one of the graduate students that joined the study later in the process and was not available for the two previous sessions.

Once consent was obtained, pre-intervention assessments were conducted to measure writing skills. The story written for the Baseline administration of the WE-CBM was scored for

writing quality using the number of story parts included and scores obtained from the Scale for Scoring the Inclusion and Quality of the Parts of a Story (Harris & Graham, 1996). The classroom teacher provided the additional source of writing quality information through the Teacher Interview/Checklist for Written Expression. The classroom teacher completed a second survey, the Criterion-Referenced Written Language Skills Checklist, during the Baseline condition. This survey provided additional information about a participant's unique writing skills and helped tailor individual instruction during the intervention condition. Refer to the measure description for an explanation on individualizing lesson plans. All pre-intervention activities occurred during the first week of the baseline period. Students and the graduate instructor met twice a week to complete the WE-CBMs.

Intervention activities.

A multiple baseline across subjects form of single-case research design was utilized to study the effects of a planning and drafting strategy using a modified version of the SRSD model and self-talk instruction situated within a modified SRSD model of instruction (STIS) on writing and self-talk. The design systematically staggered the starting point across students, to identify potential effects of the modified SRSD with STIS intervention (Condition 2) and to examine the added value of STIS to the modified SRSD (Condition 1) (Kazdin, 1982). A multiple baseline design was selected for various reasons. First it was selected in order to examine the potential changes in writing and self-talk for students receiving an individually-administered intervention in the school setting. Secondly, the independent variables of writing and self-talk cannot be reversed after exposure to the changes in the educational setting (i.e. Conditions 1 and 2). Thus other single-case designs like condition reversals or a return to baseline were not options considered. Thirdly, this type of design can allow researchers to examine changes in the

independent variable observed once the conditions are implemented while attempting to control for extraneous variables like time, classroom instruction, and natural maturation (Kennedy, 2005). Researchers look at the changes in the independent variable within and between participants in order to determine a functional relationship between the dependent and independent variables. One major objective for this design is to replicate results across multiple participants (Kennedy, 2005).

Administration of the intervention was time-based, meaning that all participants proceeded through the intervention at the same time intervals. While it has been suggested that the progression of the intervention be criterion-based, meaning that participants achieve particular objectives prior to progressing further in the intervention (Graham et al., 2000), the study was bound by the availability of the teachers and the students. Students were not available to leave the classroom more than twice a week and the intervention could not continue past the end of the school year.

The purpose of the intervention was to supplement writing instruction and was not meant to replace the writing instruction students received in the classroom. Thus, intervention instruction did not occur during regular writing instruction. Instead, students were pulled from the classroom during a convenient and regularly scheduled time period during the school day. Intervention sessions took place in a quiet setting at the school with minimal distractions or interruptions (e.g., empty classroom, school psychologist's office, or a conference room). Times were designated by the classroom teacher and typically occurred in the morning for four students and in the afternoon for two students. Some students were pulled during independent work and some were pulled from a specials classroom (e.g. computer class, art class, gym class).

Baseline data were collected using at least two WE-CBMs for student 1 and 2, four WE-CBMs for student 3 and 4, and six WE-CBMs for student 5 and 6. Throughout the study, students were grouped in pairs so that two students were at the same point in the study at all times. Although the students were grouped in pairs, the student participated in an individually-administered intervention.

Following the Baseline condition, modified SRSD (Condition 1) was implemented for 30-45 minutes over 8 sessions, meeting twice a week, using six pre-designed lessons for each individual. Condition 1 lasted 4 weeks. Two days were rescheduled within the month time frame due to a snow day and teacher professional development day. The modified SRSD + STIS condition (Condition 2) followed for 8 additional lessons implemented for 30-45 minutes, meeting twice a week. Condition 2 lasted 6 weeks with two weeks off due to a university break and the school district's spring break. Within each condition, the student and instructor progressed through 4 phases: Instruction, Model, Guided Practice, and Independent Practice. These phases were identical in nature for Condition 1 and Condition 2, though the instructional focus was on planning and drafting a story in the first condition and self-talk in the second condition. Instruction phases used teacher-directed explicit instruction in order to introduce and explain the strategy. In the model phases, the instructor modeled the use of the strategy. During guided practice phases the instructor led the discussion and modeled the use of the strategy while students began to help the instructor write a story using the strategy. Independent practice phases focused on the student writing a story and independently using the strategies with instructor prompting when needed. Students met with their graduate student instructor two times a week for the intervention. Appendix F refers to the study's time schedule.

Modified SRSD component. SRSD, as it is discussed in the research literature, is a series of lessons intended to teach the writing process, how to use a particular writing strategy for a writing genre, and how to use task-appropriate verbalizations when writing and are designed to build from the previous lesson (Graham, Harris, & Troia, 2000). SRSD can be thought of broadly as an instructional model that encompasses several writing strategies (e.g. planning, drafting, and revising) and teaches students to write for various genres (e.g., expository, narrative, persuasive). It also focuses on generalizing and maintaining students' skills over time and in differing learning environments (e.g., transferring from one genre to another, from classroom to classroom, and generalizing skills to future SRSD-related mnemonics). This study only focused on a strategy for planning and drafting stories and did not incorporate maintenance, other writing strategies, or other writing genres. Therefore, SRSD as it is mentioned in this study refers to a modified version of the larger instructional process.

Each condition contained eight lessons. In the first two Condition 1 sessions, the instructor develops background knowledge through discussion and explicit instruction of the planning and drafting strategy for stories. The instruction consists of a mnemonic phrase, Pick a topic, Organize my notes, Write and say more (POW) and the seven story components (Who are the characters, Where does it take place, When does it take place, What does the main character do, What happens next, How does the character feel, How does the story end – WWW, What = 2, How = 2).Then the instructor and the student look at two story examples and practice identifying the seven story parts. Next the instructor introduces the idea of transfer, in which students are encouraged to think about how they could use the writing mnemonic in their classroom. Students were expected to return the following session and report on the ways they used the writing mnemonic. Transfer was discussed at the beginning and end of the rest of the

sessions. At the end of every session the instructor and the student work through a Writing Process Checklist (see Appendix G), a checklist of items that the student and the instructor need to make sure they do in the course of the session. Items include student preparedness, attentiveness to instruction, planning actions, using the mnemonic, organizing information for writing, engaging in the writing process, revising work, and asking for help.

In addition to reviewing the background knowledge on the mnemonic planning and drafting strategy introduced in the first session the second session focuses on developing writing goals (to include all story parts and write as many words as possible) and the significance of good writing (to share fun stories with others). Students worked with the instructor in each following session and filled out a goal attainment worksheet (Appendix I). The goal attainment worksheet was meant to provide instructor feedback on the stories created during the intervention as well as to help the students understand accountability and achieving short-term goals. The student and the instructor work through a previous writing sample (i.e. the WE-CBM from the first session) and discuss whether the story has the seven story parts, counted the number of words written, and record this information in the goal attainment worksheet.

The third session provided opportunities for the instructor to model the strategy for the students while using task-related verbalizations. Instructors used statements that define the problem (What do I need to do?), plan (First, I need to…), self-evaluate (Does this make sense?), self-reinforce (What a great sentence), and cope (I can do this). While these were statements meant to help students self-regulate in the original version of SRSD, the statements were not explicitly taught as self-talk nor were instructors encouraging students to use these statements until Condition 2. The student listened as the instructor wrote a story using the writing mnemonic, careful to point out when the instructor was including a story part. The instructor

uses an organizational worksheet to outline the seven story parts. Students used a copy of the organizational worksheet in following sessions as they organized their ideas (Appendix H Figure 13).

By the fourth session, the students work to memorize the strategy. Students are encouraged to write down the mnemonic on paper and work from their notes to write a story collaboratively with the instructor. As the student wrote the story the instructor would provide encouragement to use the mnemonic and refer to the writer's notes.

The fifth and sixth sessions were filled with opportunities to practice the strategy with the student taking the lead in constructing a story. Students were weaned off the graphic organizer and encouraged to design their own notes from scratch to promote memorization and use of the writing mnemonic. The instructor used prompts to remind the student to refer to the writing strategy when necessary.

The seventh and eighth sessions encouraged independent practice and created strategies using story starters selected by the student. Refer to Appendix H for an example of a lesson plan and the accompanying worksheets.

Self-Talk Internalization Strategy component. The introduction of self-instruction statements in the typical SRSD Lesson 3 were stretched out and taught across mini-lessons as the self-talk internalization strategy (STIS) component of the intervention following Condition 1. References to the direct instruction of self-talk in Condition 1 were removed from the lesson plans. Appendix J provides a brief outline of how self-talk statements are taught in prior implementations of the SRSD intervention. The STIS intervention served as a way to expand and add to the self-talk but within a separate condition. The STIS was also tailored to individual students based on modeled statements provided by the instructor and an opportunity for the

student to create their own statements to use during the intervention (Appendix K). Although the STIS lessons were designed to mirror the scaffolding used in the modified SRSD intervention for writing, the STIS lessons were not repeating Condition 1 lessons. The STIS lessons used the instructional foundation of Condition 1 lessons to frame the self-talk strategy. Thus the focus of the instruction, modeling, and practice was on the use of the participant's self-talk statement, rather than writing. Like Condition 1, the second Condition had eight sessions.

Session 1 (Mini-Lesson 1: Instruction) began by introducing the concept of self-talk, discussing examples of self-talk in everyday life and in school, and discussing the role of self-talk in writing. Once students have an understanding of the concept, the instructor led a discussion of possible self-talk statements that the participants would use during writing. These statements were written on a poster board and posted during each session. The instructor facilitated possible statements that other "good writers" have used in the past (see Appendix K). Participants selected a sample of their own self-talk statements to record on individual worksheets and use during each session. The lesson ended with repeated practice of using the self-talk statements. This last step was meant to help normalize the process and help the participants feel at ease in using the statements. Students then wrote a story independently like in the 7^{th} and 8^{th} sessions of Condition 1. Instructors encouraged students to use their self-talk statements and the writing strategy when necessary. Writing a story independently occurred in each session in Condition 2 following the instruction that focused on self-talk statements. Students continued to use the goal attainment worksheet, graphed the number of story parts written, and completed the Writing Process Checklist. Students and instructors also discussed Transfer at the beginning and end of the lessons just as in Condition 1. Session 2 was a repeat of Session 1.

Session 3 (Mini-Lesson 2: Model) was similar to Condition 1 session 2 and required the participants to read through and discuss a pre-written story, pretending that the participant was the author of the story. The instructor led students in practicing to use their self-talk statements as if the participant was the author of the story and using the self-talk. For example, dialogue in the mini-lesson may have look like this:

> INSTRUCTOR: (*reading the story*): Last weekend I went to the lake with my family. It was a lot of fun.
>
> INSTRUCTOR (*to participants*): If we were the authors of this story, what kinds of things might we say to ourselves to help us be better writers?
>
> PARTICIPANT: I need to write more here.
>
> INSTRUCTOR: Right! What else might be helpful if we want to paint a picture for the reader?
>
> PARTICIPANT: I need to use million-dollar words.
>
> INSTRUCTOR: That's right. Remember that the things we say to ourselves while we write help us to remember to be better writers and make our stories fun for others to read. Saying "I need to use million-dollar words" reminds us to think about colorful words, or adjectives.

The lesson moved towards practicing their self-talk statements within the context of writing a story. The instructor followed the writing process taught in Condition 1 Lesson 1 and 2, while modeling how to include self-talk statements. The students observed the instructor through the

process. The instructor encouraged the participants to try the writing process using their self-statement worksheets. Session 4 was a repeat of Session 3.

During Session 5 (Mini-Lesson 3: Guided Practice), taught similar to Condition 1 Session 5, the instructor continued to model self-talk statements during the writing process. The students were encouraged to use their own self-talk statements during guided practice. Session 6 was a repeat of Session 5.

Finally, Session 7 (Mini-Lesson 4: Independent Practice) was taught similar to Condition 1 Session 7 and 8 and encouraged the students to say their self-talk statements to themselves, during independent writing practice. For an example of a lesson plan for STIS see Appendix H. Appendix F provides an outline of the intervention schedule.

At the end of each lesson for each condition, students wrote a story and graphed the number of story parts included in the story. Students were trained to graph and set individual writing goals during lesson 2 (see Appendix I). These stories were different from the WE-CBMs that were also completed at the end of the lesson. Only the WE-CBM was used to monitor writing fluency and quality progress over the course of the study because these measures were completed without instructor support.

Post-intervention activities.

Following the 8th Condition 1 session, the teacher completed the Teacher Interview/Checklist for Written Expression and the Behavior Rating Inventory of Executive Function (BRIEF) for all participants. Following the 16th session, the teacher completed the Teacher Interview and BRIEF again.

Intervention participants received strategy recommendations to further build writing skills beyond the intervention and a writing journal. The teacher was given general writing strategies to use with the students at the end of the study.

Intervention integrity.

The intervention was video recorded and observed by the primary investigator in order to monitor intervention fidelity. An intervention integrity checklist was used to evaluate the extent to which the intervention components listed were present in the implementation. This form was completed three times for each participant across the study, for a total of 18 intervention integrity checks (i.e., 3 checks per student for 6 students). Intervention sessions were randomly chosen. Integrity was 100% for Students 1-4 and 95% for Student 5. Information for Student 6 was not available since this student did not provide consent for video/audio recording.

In addition, the graduate student instructor completed an intervention integrity checklist for each intervention session. Appendix L provides an example of an intervention integrity checklist. The sessions were implemented with 100% integrity for Student 1, 99% for Students 2 and 3, 95% for Student 4, and 83% for Student 5. A lower integrity percentage for Student 5 may be due to the student's resistance to the intervention toward the end of the study. Information for Student 6 was not available.

Inter-rater reliability.

A graduate student in school psychology completed inter-rater reliability checks of the WE-CBM results. The primary investigator trained the graduate student for an hour in how to score Total Words Written and Correct Word Sequences as well as in how to use the Scale for Scoring the Inclusion and Quality of the Parts of a Story (Harris & Graham, 1996). At the completion of the training, the graduate student received 20% of the total WE-CBM protocols,

without student information or intervention session information and in random order. Reliability was calculated by dividing agreements by agreements plus disagreements, multiplied by 100. The average inter-rater reliability was 97% for Total Words Written (range 80-100%), 90% for Correct Word Sequences (range 70-100%), and 62% for the Scale for Scoring the Inclusion and Quality of the Parts of a Story (range 14-100%). Inter-rater reliability was not calculated for self-talk utterances.

Chapter 4: Results

In a single-case research design, data are evaluated using visual inspection procedures, experimental analysis, and therapeutic criteria (Kazdin, 1982). In other words, the researcher examines whether behavior change occurred in the participant, if the change is attributed to the intervention, and whether the change was of clinical significance. Appendix M provides an outline of the data analysis.

The purpose of the study was to examine the value added of the self-talk intervention (STIS) situated within a modified SRSD instructional model by measuring the potential changes in writing fluency and productivity and writing quality of students with attentional difficulties as the intervention progressed from Baseline, to the planning and drafting strategy taught using the modified SRSD model of instruction (Condition 1), to the combination of independent writing stages of the modified SRSD model and the self-talk instruction (Condition 2). Thus, with regards to the research question, the data were analyzed to identify differences in writing fluency and productivity as measured by the WE-CBM, writing quality as measured by the presence of story components in the intervention stories according to the number of story parts and the Scale for Scoring the Inclusion and Quality of the Parts of a Story (Harris & Graham, 1996), and writing quality as measured by the Teacher Interview/Checklist for Written Expression. Within-series and between-series comparisons were employed to examine whether results replicated across participants and in support of the research hypotheses. A within-series comparison compares data for one participant from two conditions to identify changes due to a change in the intervention. A between-series comparison compares data from two or more participants at the same time points, with data spanning across two conditions for one participant and data

contained in only one condition for the other participants. This type of comparison attempts to control for other extraneous variables due to events in real time.

Conducting between-series comparisons to control for extraneous variables was more complicated. Since Condition 1 and Condition 2 have within condition phases, it was not appropriate to conduct between-series comparisons across participants engaged in different phases. It could not allow for a comparison to identify the difference between an effect due to the differing intervention phases or to extraneous variables. Therefore, the only between-series comparisons to make were between Baseline and Condition 1: Phase 1 of one participant and just Baseline of another at the same time point, between Condition 1: Phase 4 and Condition 2: Phase 1 of one participant and just Condition 1: Phase 4 of another at the same time point, and between Baselines of more than one participant at the same time point. Baselines were compared between students to check for stability across students during the Baseline.

Data analysis for these comparisons included visual inspection procedures to measure the behavior change. These techniques were used to validate a statistical change in writing productivity, fluency and quality on WE-CBMs as measured by the Total Words Written (TWW) and Correct Word Sequences (CWS), number of story parts, and narrative writing quality as measured by the Scale for Scoring the Inclusion and Quality of the Parts of a Story (Harris & Graham, 1996). Visual inspection examined the trend, level and mean from Baseline through intervention conditions and checked for replication across participants. A split-middle technique examined the best-fit lines, or trends, of the WE-CBM data that measured the rate of change in Baseline and intervention conditions (Kazdin, 1982). For examples of students' writing across the conditions, refer to Appendix N.

The percentage of nonoverlapping data points (PND) was calculated in order to indirectly describe the intervention effect size (Scruggs, Mastropieri, & Casto, 1987). The data points in the intervention condition that exceed the highest point during Baseline were totaled and divided by the total number of intervention condition data points for a percentage of nonoverlapping data. Scruggs, Mastropieri, Cook, and Escobar (1986) suggest the effect of the intervention can be categorized as highly effective (PND > 90), moderately effective (70 < PND < 90), questionably effective (50 < PND < 70), or ineffective (PND < 50).

In addition to visual inspection procedures, therapeutic criteria were examined to determine social validity (Kazdin, 1982). One form of examining social validity was in using the Teacher Interview/Checklist for Written Expression. The areas identified by the teacher as a writing skill deficit were compared between the Baseline, end of Condition 1 and end of Condition 2 time points.

With regard to the self-talk and self-regulation variables, several analyses were conducted. First, self-talk utterances were coded and counted according to Berk's model (1986). Because self-talk utterances were measured throughout the study, analysis included a visual inspection of the Baseline and intervention as well as the calculation of the percentage of nonoverlapping data points. Similar to the writing data analyses, self-talk was analyzed using the within-series and between-series comparisons previously discussed. The administration of the BRIEF at the Baseline, end of Condition 1 and end of Condition 2 were analyzed for improvement in self-regulation using visual inspection and the Reliability of Change Index (RCI). The Reliability of Change Index is an indicator of change significance for pre- and post-test measures in single-subject design studies and is calculated by dividing the difference between pre- and post-test scores by the standard error of measurement (Jacobson & Truax,

1991). RCI was calculated for each student between Time 1 and Time 2 as well as between Time 2 and Time 3. Significant change was indicated if RCI was greater than 1.96.

Results are presented to answer the research questions using within-series comparisons for an individual student, during Baseline, Condition1, and Condition 2. Then results are presented to answer the research questions using between-series comparisons across two or more students at the same time point.

In relation to the research hypotheses, the following results were anticipated for Condition 1 and Condition 2 for Total Words Written (Research Question 1), Correct Word Sequences (Research Question 1), writing quality (Research Question 2; Harris & Graham, 1996), and self-talk utterances (Research Question 3):

Within-series comparison (Baseline): Trends

(a) Trend lines would be flat.

Within-series comparison (Condition 1): Trends, PND, and Mean

(b) Trend lines in the condition would be positive,

(c) Trend lines in the condition would be steeper than Baseline,

(d) PND would be greater than 50% in the condition (as compared to Baseline), and

(e) Means of the condition would be greater than Baseline.

Within-series comparison (Condition 2): Trends, PND, and Mean

(f) Trend lines in SRSD+STIS condition would be positive,

(g) Trend lines in SRSD+STIS condition would be steeper than Condition 1,

(h) PND would be greater than 50% (as compared to Condition 1), and

(i) SRSD+STIS means would be greater than Condition 1.

Between-series comparison (Condition 1 and Condition 2)

(j) Condition 1 Phase 1 resulted in positive and steeper trends for one student compared to Baseline trends of another student in a different pair observed at the same time point.

(k) Condition 2 Phase 1 resulted in positive and steeper trends for one student compared to Condition 1 Phase 4 of another student in a different pair observed at the same time point.

In relation to the research hypotheses, the following results were anticipated for the number of story parts (Research Question 2):

Within-series comparison (Baseline): Trends

(a) Trend lines would be flat.

Within-series comparison (Condition 1)

(b) Participants would increase the number of story parts up to all seven necessary parts of a narrative story on a WE-CBM as compared to Baseline.

Within-series comparison (Condition 2)

(c) Participants would either improve to a score of 7 or maintain a score of seven in Condition 2, as written on a WE-CBM.

Between-series comparison (Condition 1 and Condition 2)

(d) Condition 1 Phase 1 resulted in a positive and steeper trend for one student as compared to the Baseline trend for another student in a different pair observed at the same time point.

(e) Condition 2 Phase 1 resulted in a positive and steeper trend for one student as compared to the Condition 1 Phase 4 trend for another student in a different pair observed at the same time point.

In relation to the research hypotheses, the following results were anticipated for the teacher interview/checklist for written expression (Research Question 2):

(a) Classroom teachers at the end of each condition would report fewer writing problem areas compared to the Baseline.

(b) Classroom teachers would report fewer writing problem areas after Condition 2 as compared to Condition 1.

In relation to the research hypotheses, the following results were anticipated for the BRIEF measure of self-regulation (Research Question 4):

(a) Participants will improve scores on the BRIEF after each condition.

(b) Greater improvement would be apparent after Condition 2.

Writing Productivity: Total Words Written (Research Question 1)

Figure 1 illustrates students' writing productivity (Total Words Written or TWW) across Baseline, Condition 1 and Condition 2 on curriculum-based measures of written expression. Tables 2-7 compare Baseline and intervention mean, trend, level, and the percentage of nonoverlapping data points for Students 1-6. The following results were examined by analyzing TWW across conditions and students.

Baseline Results: Trends

Baseline trends were negative and steep for Student 1 (-9.00), positive and steep for Student 2 (7) and Student 4 (6.20), positive but nearly flat for Student 3 (0.70), negative but small for Student 5 (-0.40), and negative and moderate for Student 6 (-2.91). In summary, Baseline trends were not flat for 5 out of 6 students. Given the lack of stability during Baseline, comparisons to the conditions may reflect other possible extraneous variables that could be impacting individual performance.

Effectiveness of Condition 1 on TWW: Comparison of Trends, Means, and PND

Trends. Observed trends in Condition 1 were positive and small for Students 1, 4, and 5 ranging from 0.79 to 1.98, and positive and nearly flat for Students 3 and 6 (0.21 and 0.29 respectively). Trend magnitudes were greater in Condition 1 than in Baseline for Student 5.

Means. TWW means increased in Condition 1 compared to Baseline for Students 1-4. Student 1 increased from 40.5 to 42.5 TWW. Student 2 increased from 40.5 to 45.88 TWW. Student 3 increased from 47.25 to 57.5 TWW. Student 4 increased from 40 to 48.75 TWW. Students 5 and 6 decreased means in Condition1 following Baseline. Student 5 decreased from 54.33 to 50.38 TWW. Student 6 decreased from 72 to 66.5 TWW.

PND. Results for the PND in Condition 1 compared to Baseline suggested that Condition 1 was highly effective for Student 3 (75%), moderately effective for Students 1-2 and 4 (63%), and ineffective for Students 5-6 (0%).

Summary. Collectively, the pattern of results suggest that Students 1-4 improved TWW more in Condition 1 compared to Baseline. Data suggests that the intervention may not have been effective for Students 5-6.

Effectiveness of Condition 2 on TWW: Comparison of Trends, Means, and PND

Trends. Observed trends in Condition 2 were negative and small for Students 1, 3, and 5 ranging from -1.30 to -1.70, negative and moderate for Student 4 (-2.77) and for Student 2 (-2.39), and positive and steep for Student 6 (7.07). Trend magnitude was smaller in Condition 2 for Students 1 and 5, but larger in Condition 2 for Students 2, 3, 4 and 6.

Means. The TWW means in Condition 2 increased for Student 1 from 42.5 to 44.63 TWW and Student 6 from 66.5 to 75 TWW Means decreased for Students 3-5. Student 3 decreased from 57.5 to 55.75 TWW. Student 4 decreased from 48.75 to 47.88 TWW. Student 5

decreased from 50.38 to 35.6 TWW. Means nearly remained the same for Student 2 from 45.88 to 45.38 TWW.

PND. The results of the PND in Condition 2 compared to Condition 1 indicate that the intervention was ineffective for all students ranging from 0% to 33%.

Summary. The collective results suggest that the students did not improve TWW following Condition 2.

Between-Series Comparisons of TWW

In comparing intervention effects between students, comparisons were made between pairs to look for variability between students at the same time points (e.g., Student 1 & Student 2), between pairs at Baseline and Condition 1 Phase 1 (e.g., Student 1 & 2 and Student 3 & 4), and between pairs at Condition 1 Phase 4 and Condition 2 Phase 1.

Comparing within pairs. Comparisons were made within pairs to examine variability within a pair of students participating in the intervention at the same time point. The comparison within pairs of students that progressed through the intervention at the same time served as a foundation for the between-series comparisons explained in the next section and the remaining between-series comparisons for other variables. Variability within a pair of students participating in the same intervention stage at the same time may explain why replication of the expected results across students during the between-series comparison did not occur.

Students 1 & 2 shared positive and effective gains in Condition 1. Neither student demonstrated positive and effective gains in Condition 2. Students 3 & 4 similarly performed positively and effectively in Condition 1. Both students' results demonstrated ineffective performance in Condition 2. Condition 1 and 2 was overall ineffective for Students 5 & 6 but there were some differences in the means and trends between the students.

Comparing Baseline and Condition 1 between pairs. Student 1 demonstrated a moderate positive trend compared to the corresponding Baseline data points for Student 3 & 4. Student 2 demonstrated a negative trend that was steeper than Student 3 but not Student 4 at Baseline. When comparing Phase 1 results for Student 3 & 4 to the corresponding Baseline data points for Student 5 & 6 a similar pattern emerged. Student 4 demonstrated a moderate positive trend compared to the Baseline data for Student 5 & 6. Student 3 demonstrated a negative trend that was steeper than Students 5 & 6 at Baseline. In summary, a moderate positive trend, a possible indication of positive intervention effect, was replicated when comparing two sets of paired students between Baseline and Condition 1 phases.

Comparing Condition 1 and Condition 2 between pairs. The first comparison of Student 1 & 2 at Condition 2 Phase 1 to Student 3 & 4 at Condition 1 Phase 4 found similar negative trends across students, except Student 3. All students had a negative trend when comparing Student 3 & 4 at Condition 2 Phase 1 to Student 5 & 6 at Condition 1 Phase 4. Negative trends observed and replicated across student pairs seem to indicate that a positive and steep increase in TWW did not occur after Condition 2.

Comparison to national norms. Average Baseline and Condition WE-CBM scores were compared to the 2009-2010 winter national average of 40 TWW for fourth grade and 46 TWW for fifth grade. Tables 2-7 show how far above or below the national average the student performed. At Baseline Students 1 and 2 were performing below the national average. Student 4 performed at the national average. Students 3, 5, and 6 performed above the national average. During Condition 1 Students 1 and 2 improved scores toward the national average but were still below the target score of 46. Students 3 and 4 greatly improved by 8-11 points and performed above the national average. Students 5 and 6 performed above the national average but not as

high as during Baseline. During Condition 2 Student 1 continued to improve toward the national average but was still performing slightly below the target score. Student 2 maintained performance from Condition 1. Student 3 and Student 4 performed above the national average but not as high as in Condition 1. Student 5 performed lower than the national average, a decline from Condition 1 and Baseline. Student 6 performed above the national average and higher than Condition 1 and Baseline.

Summary

The study sought to examine whether Total Words Written (TWW), an indicator of productivity, on a curriculum-based measure of written expression (WE-CBM) increased across two conditions, above observed performance during Baseline. I expected to find positive intervention effects on trends, means, and PND replicated across students. One analysis involved the comparison of Condition 1 effects to Baseline at the individual level. Three students had positive trends, higher means, and moderate to highly effective PND results. Five students had positive trends in Condition 1 but only Student 5 had a steeper and positive trend compared to Baseline. Four students had a higher mean in Condition 1 and moderate to highly effective PND results. A second analysis was conducted within a pair of students. Typically, a pair of students did not exhibit similar results, with the exception of Students 1-4 demonstrating moderately to highly effective PND results. A third analysis occurred between students at different stages in the study. Two students had steeper and positive trends at Condition 1 compared to students during Baseline at the same time points. In comparison to national norms, Students 1-4 made some sort of improvement between Baseline and Condition 1, with Students 3 and 4 improving above the national average. Students 5 and 6 began the intervention already performing above the national average and Condition 1 maintained above average scores even though scores decreased from

Baseline. In sum, it appears that Total Words Written increased over Baseline following Condition 1 for half of the students.

Condition 2 effects differed compared to Condition 1. Only one student had a positive and steeper trend during Condition 2 compared to Condition 1. Other students had negative trends and three of these students had greater trends in magnitude compared to Condition 1. At the individual level, two students had higher means in Condition 2 compared to Condition 1. In examining the percentage of nonoverlapping data results, students typically did not write more words in Condition 2 above Condition 1. When comparing students in one phase to students in another phase at the same time point, results show that two students had a higher mean in Condition 2 Phase 1 but did not have positive or steeper trends than students at Condition 1 Phase 4. In comparison to national norms, only Students 1 and 6 had shown improvements in Condition 2 with Student 6 continuing to perform above the national average. Students 3 and 4 continued to perform above the national average but not as high as in Condition 1. In sum, Condition 2 did not appear to be more effective at increasing Total Words Written compared to Condition 1.

Table 2

WE-CBM Total Words Written for Student 1

Phase	Mean	SD	Slope	Level	PND	Effectiveness	AIMSweb Norm Comparison
Baseline	40.50	6.36	-9.00	n/a	n/a	n/a	-5.50
Condition 1	42.50	8.59	1.98	-3	63%	moderate	-3.50
Phase 1	41.00	11.31	16.00	-3	50%	questionably	-5.00
Phase 2	38.00	11.31	16.00	-19	0%	ineffective	-8.00
Phase 3	40.00	7.07	10.00	-11	0%	ineffective	-6.00
Phase 4	51.00	2.83	-4.00	8	100%	highly	5.00
Condition 2	44.63	9.02	-1.70	2	13%	ineffective	-1.38
Phase 1	44.50	9.19	-13.00	2	0%	ineffective	-1.50
Phase 2	54.00	14.14	-20.00	26	50%	questionably	8.00
Phase 3	39.00	1.41	-2.00	-4	0%	ineffective	-7.00
Phase 4	41.00	4.24	-6.00	6	50%	questionably	-5.00

Table 3

WE-CBM Total Words Written for Student 2

Phase	Mean	SD	Slope	Level	PND	Effectiveness	AIMSweb Norm Comparison
Baseline	40.50	4.95	7.00	n/a	n/a	n/a	-5.50
Condition 1	45.88	6.58	-0.51	-1	63%	moderate	-0.13
Phase 1	42.00	1.41	-2.00	-1	0%	ineffective	-4.00
Phase 2	53.00	0.00	0.00	12	100%	highly	7.00
Phase 3	46.00	1.41	-2.00	-6	0%	ineffective	0.00
Phase 4	42.50	12.02	-17.00	6	50%	questionably	-3.50
Condition 2	45.38	10.58	-2.39	19	13%	ineffective	-0.63
Phase 1	52.00	1.41	-2.00	19	50%	questionably	6.00
Phase 2	53.50	2.12	3.00	1	50%	questionably	7.50
Phase 3	38.00	1.41	2.00	-18	0%	ineffective	-8.00
Phase 4	38.00	18.38	26.00	-14	50%	questionably	-8.00

Table 4

WE-CBM Total Words Written for Student 3

Phase	Mean	SD	Slope	Level	PND	Effectiveness	AIMSweb Norm Comparison
Baseline	47.25	4.65	0.70	n/a	n/a	n/a	1.25
Condition 1	57.50	4.47	0.21	14	75%	highly	11.50
Phase 1	53.50	6.36	-9.00	14	50%	questionably	7.50
Phase 2	62.00	0.00	0.00	13	100%	highly	16.00
Phase 3	58.00	0.00	0.00	-4	0%	ineffective	12.00
Phase 4	56.50	4.95	7.00	-5	50%	questionably	10.50
Condition 2	55.75	7.21	-1.55	4	25%	ineffective	9.75
Phase 1	60.00	5.66	-8.00	4	50%	questionably	14.00
Phase 2	56.00	8.49	12.00	-6	0%	ineffective	10.00
Phase 3	59.00	7.07	-10.00	2	50%	questionably	13.00
Phase 4	48.00	5.66	8.00	-10	0%	ineffective	2.00

Table 5

WE-CBM Total Words Written for Student 4

Phase	Mean	SD	Slope	Level	PND	Effectiveness	AIMSweb Norm Comparison
Baseline	40.00	8.29	6.20	n/a	n/a	n/a	0.00
Condition 1	48.75	11.59	0.79	-17	63%	moderate	8.75
Phase 1	43.00	15.56	22.00	-17	50%	questionably	3.00
Phase 2	53.00	2.83	4.00	-3	50%	questionably	13.00
Phase 3	47.50	23.33	-33.00	9	50%	questionably	7.50
Phase 4	51.50	4.95	-7.00	24	0%	ineffective	11.50
Condition 2	47.88	9.13	-2.77	16	0%	ineffective	7.88
Phase 1	54.50	13.44	-19.00	16	50%	questionably	14.50
Phase 2	54.00	4.24	-6.00	12	0%	ineffective	14.00
Phase 3	43.00	0.00	0.00	-8	0%	ineffective	3.00
Phase 4	40.00	7.07	10.00	-8	50%	questionably	0.00

Table 6

WE-CBM Total Words Written for Student 5

Phase	Mean	SD	Slope	Level	PND	Effectiveness	AIMSweb Norm Comparison
Baseline	54.33	5.16	-0.40	n/a	n/a	n/a	8.33
Condition 1	50.38	10.08	1.56	7	0%	ineffective	4.38
Phase 1	47.00	8.49	-12.00	7	0%	ineffective	1.00
Phase 2	41.50	13.44	-19.00	10	0%	ineffective	-4.50
Phase 3	57.50	6.36	9.00	21	100%	highly	11.50
Phase 4	55.50	9.19	-13.00	0	0%	ineffective	9.50
Condition 2	35.60	13.13	-1.30	0	0%	ineffective	-10.40
Phase 1	42.50	9.19	-7.00	0	0%	ineffective	-3.50
Phase 2	25.50	16.26	23.00	-22	50%	questionably	-20.50
Phase 3	42.00	n/a	n/a	5	100%	highly	-4.00
Phase 4	-	-	-	-	-	-	

Table 7

WE-CBM Total Words Written for Student 6

Phase	Mean	SD	Slope	Level	PND	Effectiveness	AIMSweb Norm Comparison
Baseline	72.00	8.92	-2.91	n/a	n/a	n/a	26.00
Condition 1	66.50	11.35	0.29	-13	0%	ineffective	20.50
Phase 1	66.00	12.73	18.00	-13	0%	ineffective	20.00
Phase 2	69.00	19.80	-28.00	8	50%	questionably	23.00
Phase 3	61.00	15.56	22.00	-5	0%	ineffective	15.00
Phase 4	70.00	2.83	-4.00	0	0%	ineffective	24.00
Condition 2	75.00	13.75	7.07	4	33%	ineffective	29.00
Phase 1	67.50	6.36	-9.00	4	0%	ineffective	21.50
Phase 2	90.00	n/a	n/a	27	100%	highly	44.00
Phase 3	-	-	-	-	-	-	
Phase 4	-	-	-	-	-	-	

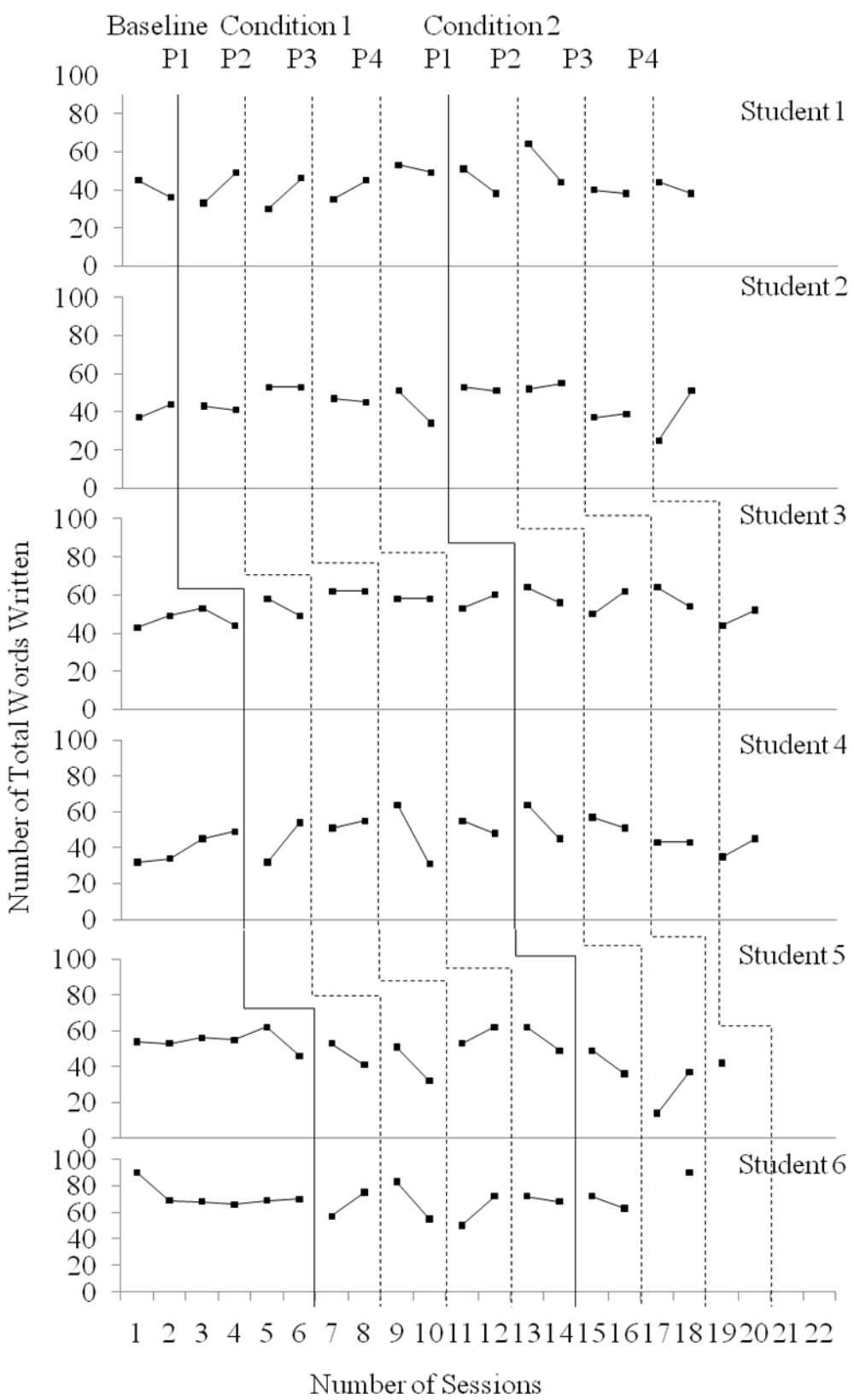


Figure 1. Total Words Written on Curriculum-Based Measure of Written Expression across Participants and Conditions

Writing Fluency: Correct Word Sequences (Research Question 1)

Figure 2 illustrates the Correct Word Sequences (CWS), an indicator of fluency, for each curriculum-based measure of written expression administered across the study for Students 1-6. The mean, trend, level, and percentage of nonoverlapping data are reported for each student in Tables 8-13.

Baseline Results: Trends

During Baseline, observed trends were positive and steep for Student 1 (8.0) and Student 2 (11.0), positive and moderate for Student 4 (2.60), positive and small for Student 5 (0.91) and Student 6 (1.43), and flat for Student 3 (0.00). Results show that students tended to increase the CWS during Baseline. Given the lack of stability during Baseline, comparisons to the conditions may reflect other possible extraneous variables that could be impacting individual performance.

Effectiveness of Condition 1 on CWS: Comparison of Trends, Means, and PND

Trends. Observed trends were positive and small for Student 1 (1.19), positive and nearly flat for Student 5 (0.46) and Student 6 (0.11), negative and small for Student 2 (-1.65) and Student 4 (-1.54), and negative and nearly flat for Student 3 (-0.24). Trend magnitudes were smaller in Condition 1 for Students 1-2 and 4-6.

Means. The mean CWS increased in Condition 1 above Baseline for Student 2, 3, and 4. Student 2 increased from 37.5 to 39.63 CWS. Student 3 increased from 25.5 to 27.5 CWS. Student 4 increased from 26 to 27.13 CWS. Means decreased for Students 1, 5 and 6. Student 1 decreased from 22 to 17.25 CWS. Student 5 decreased from 37 to 31.63 CWS. Student 6 decreased from 59.67 to 53.88 CWS.

PND. The PND results indicate that Condition 1 was ineffective for Students 1, 2, and 4-6 ranging 0-38%, and moderately effective for Student 3 (63%) compared to Baseline.

Summary. The collective results suggest that Student 3 improved CWS above Baseline following Condition 1. The intervention had minimal effect for the rest of the students.

Effectiveness of Condition 2 on CWS: Comparison of Trends, Means, and PND

Trends. Observed trends in Condition 2 show a negative and small trend for Student 1 (-0.55), Student 2 (-1.71), and Student 3 (-1.85), negative but moderate trend for Student 4 (-2.42) and Student 5 (-3.40), and a positive and steep trend for Student 6 (8.57). Trend magnitudes were larger than Condition 1 trends for Students 2-6.

Means. The mean CWS increased for Students 1, 3, and 6. Student 1 increased from 17.25 to 20.25 CWS. Student 3 increased from 27.5 to 30.63 CWS. Student 6 increased from 53.88 to 62.0 CWS. Mean CWS decreased for Students 2, 4, and 5. Student 2 decreased from 39.63 to 37.25 CWS. Student 4 decreased from 27.13 to 25.13 CWS. Student 5 decreased from 31.63 to 21 CWS.

PND. The PND results indicate that Condition 2 was ineffective at improving CWS above Condition 1 for all of the students (0-33%).

Summary. The collective results suggest that while some students demonstrated some positive improvements in Condition 2, overall CWS did not improve for all students above Condition 1.

Between-Series Comparisons of CWS

In comparing intervention effects between students, comparisons were made between pairs to look for variability between students at the same time points, between pairs at Baseline and Condition 1 Phase 1, and between pairs at Condition 1 Phase 4 and Condition 2 Phase 1.

Comparing within pairs. For Student 1 & 2 following Baseline, Condition 1 means and trends differed between the students. Condition 1 did not appear effective for both students as

evident by the low PND. In Condition 2, the means differed between students. Both students' data exhibited negative trends across most phases and overall. Condition 2 was not effective compared to Condition 1 as evident by the low PND for both students.

Students 3 & 4 shared an increased mean CWS following Baseline. The students differed in trends and PND data. In Condition 2, the students differed in means. Both students demonstrated negative trends and had ineffective PND results.

Students 5 & 6 demonstrated a decrease in mean CWS in Condition 1 following Baseline, and negative trends. Condition 1 appeared ineffective for the students given the PND results. In Condition 2, the mean differed between the students. Condition 2 was ineffective compared to Condition 1 for both students given the PND results.

Comparing Baseline and Condition 1 between pairs. Beginning with Students 1 & 2 (Condition 1 Phase 1) and Students 3 & 4 (Baseline), negative trends were noted in Phase 1 and in the corresponding data points in Baseline. Trends for Students 1 & 2 were steeper than trends for Students 3 & 4. A change in CWS from Baseline to Condition 1 in the negative direction indicates that the intervention was not effective in improving CWS. Next, Students 3 & 4 (Condition 1 Phase 1) were compared to Students 5 & 6 (Baseline). Trends in Phase 1 were nearly flat or positive while Baseline trends were negative or slightly increasing for corresponding data points. The intervention may have only been effective at improving CWS above Baseline for Student 4.

Comparing Condition 1 and Condition 2 between pairs. Students 1 & 2 (Condition 2 Phase 1) were compared to Students 3 & 4 (Condition 1 Phase 4). Student 1 and Student 3 had similar negative trends while Student 2 and Student 4 had similar positive trends. All trends appeared similar in magnitude. The comparison between Students 1 and 4 seem to demonstrate

the only potentially positive effect of Condition 2 following Condition 1. Students 3 & 4 (Condition 2 Phase 1) were compared to Students 5 & 6 (Condition 1 Phase 4). All students had negative trends of similar magnitude. CWS did not effectively improve following Condition 2.

Comparison to national norm. Average Baseline and Condition WE-CBM scores were compared to the 2009-2010 winter national average of 32 CWS for fourth grade and 39 CWS for fifth grade. Tables 8-13 show how far above or below the national average the student performed. At Baseline Students 1-5 performed below the national average and Student 6 performed above the national average. During Condition 1 Students 2, 3 and 4 improved their scores though Students 3 and 4 did not score above the national average. Students 1 and 5 declined and continued to perform below the national average. Student 6 continued to perform above the national average but not as high as during Baseline. During Condition 2 Students 1, 3 and 6 improved scores but only Student 6 performed above average. Students 2, 4, and 5 declined and scored below the national average.

Summary

The study sought to examine whether Correct Word Sequences (CWS), an indicator of fluency, on WE-CBMs increased across two conditions, above observed performance during Baseline. I expected to find positive intervention effects in trend, mean and PND replicated across students. One analysis involved the comparison of Condition 1 effects to Baseline at the individual level. Three students improved the mean CWS above Baseline. Two students demonstrated positive and steeper trends in Condition 1 Phase 1 compared to the last two data points of their own Baseline. Two students demonstrated moderate PND results. A second analysis was conducted within a pair of students. Pairs did not typically change CWS similarly except Students 1 and 2. A third analysis occurred between students at different stages in the

study. Three students had negative and steep trends during Condition 1 Phase 1 compared to students at Baseline. Only one student at Condition 1 Phase 1 demonstrated a positive and steep trend compared to one student at Baseline, indicating a possible intervention effect above Baseline. In comparison to national norms, just three students improved scores from Baseline but only one of these improved and scored above the national average. One student maintained above average scores but it was not as high as Baseline. In sum, evidence of intervention effectiveness to improve CWS above Baseline and across students was limited. Only Student 4 was able to demonstrate positive effects across mean, trend direction and magnitude, and PND. Some students exhibited positive results in fewer areas.

Condition 2 effects differed compared to Condition 1. At the individual level, three students demonstrated higher means in Condition 2 Phase 1 compared to Condition 1 Phase 4. Only Student 1 demonstrated a positive and steep trend in Condition 2 Phase 1. Two students demonstrated highly effective PND results. Next, students in one phase were compared to students in another phase at the same time point. Only one student at Condition 2 Phase 1 had a positive trend compared to one student at Condition 1 Phase 4. In comparison to national norms, just three students improved scores with only one scoring above average. Three students declined and scored below average. In sum, Condition 2 results were mixed. Students 2 and 4 show the most positive effects.

Table 8

WE-CBM Correct Word Sequences for Student 1

Phase	Mean	SD	Slope	Level	PND	Effectiveness	AIMSweb Norm Comparison
Baseline	22.00	5.66	8.00	n/a	n/a	n/a	-17
Condition 1	17.25	5.87	1.19	-6	0%	ineffective	-21.75
Phase 1	18.00	2.83	-4.00	-6	0%	ineffective	-21
Phase 2	11.50	0.71	-1.00	-4	0%	ineffective	-27.5
Phase 3	14.00	2.83	4.00	1	50%	questionably	-25
Phase 4	25.50	0.71	1.00	9	100%	highly	-13.5
Condition 2	20.25	6.82	-0.55	-8	25%	ineffective	-18.75
Phase 1	20.00	2.83	4.00	-8	0%	ineffective	-19
Phase 2	26.00	5.66	-8.00	8	50%	questionably	-13
Phase 3	13.50	3.54	5.00	-11	0%	ineffective	-25.5
Phase 4	21.50	10.61	-15.00	13	50%	questionably	-17.5

Table 9

WE-CBM Correct Word Sequences for Student 2

Phase	Mean	SD	Slope	Level	PND	Effectiveness	AIMSweb Norm Comparison
Baseline	37.50	7.78	11.00	n/a	n/a	n/a	-1.50
Condition 1	39.63	7.13	-1.65	-2	38%	ineffective	0.63
Phase 1	39.50	2.12	-3.00	-2	0%	ineffective	0.50
Phase 2	48.50	2.12	3.00	9	100%	highly	9.50
Phase 3	37.50	9.19	-13.00	-6	0%	ineffective	-1.50
Phase 4	33.00	2.83	-4.00	4	0%	ineffective	-6.00
Condition 2	37.25	9.25	-1.71	12	0%	ineffective	-1.75
Phase 1	40.00	4.24	-6.00	12	100%	highly	1.00
Phase 2	44.00	2.83	4.00	5	50%	questionably	5.00
Phase 3	36.50	0.71	1.00	-10	0%	ineffective	-2.50
Phase 4	28.50	17.68	25.00	-21	50%	questionably	-10.50

Table 10

WE-CBM Correct Word Sequences for Student 3

Phase	Mean	SD	Slope	Level	PND	Effectiveness	AIMSweb Norm Comparison
Baseline	25.50	1.73	0.00	n/a	n/a	n/a	-13.50
Condition 1	27.50	5.98	-0.24	5	63%	moderate	-11.50
Phase 1	27.50	2.12	-3.00	5	50%	questionably	-11.50
Phase 2	28.50	0.71	-1.00	3	0%	ineffective	-10.50
Phase 3	25.50	14.85	-21.00	8	50%	questionably	-13.50
Phase 4	28.50	3.54	5.00	11	0%	ineffective	-10.50
Condition 2	30.63	6.41	-1.85	3	25%	ineffective	-8.38
Phase 1	32.00	2.83	-4.00	3	50%	questionably	-7.00
Phase 2	39.00	1.41	2.00	8	100%	highly	0.00
Phase 3	28.00	4.24	-6.00	-9	0%	ineffective	-11.00
Phase 4	23.50	0.71	-1.00	-1	0%	ineffective	-15.50

Table 11

WE-CBM Correct Word Sequences for Student 4

Phase	Mean	SD	Slope	Level	PND	Effectiveness	AIMSweb Norm Comparison
Baseline	26.00	4.24	2.60	n/a	n/a	n/a	-6.00
Condition 1	27.13	11.43	-1.54	-4	38%	ineffective	-4.88
Phase 1	29.50	7.78	11.00	-4	50%	questionably	-2.50
Phase 2	30.50	9.19	13.00	-11	50%	questionably	-1.50
Phase 3	27.00	25.46	-36.00	8	50%	questionably	-5.00
Phase 4	21.50	4.95	-7.00	16	0%	ineffective	-10.50
Condition 2	25.13	9.78	-2.42	14	0%	ineffective	-6.88
Phase 1	30.00	2.83	-4.00	14	100%	highly	-2.00
Phase 2	30.50	19.09	-27.00	6	0%	ineffective	-1.50
Phase 3	19.50	9.19	-13.00	9	0%	ineffective	-12.50
Phase 4	20.50	0.71	-1.00	8	0%	ineffective	-11.50

Table 12

WE-CBM Correct Word Sequences for Student 5

Phase	Mean	SD	Slope	Level	PND	Effectiveness	AIMSweb Norm Comparison
Baseline	37.00	10.43	0.91	n/a	n/a	n/a	-2.00
Condition 1	31.63	6.93	0.46	0	0%	ineffective	-7.38
Phase 1	29.50	0.71	-1.00	0	0%	ineffective	-9.50
Phase 2	28.00	14.14	-20.00	9	0%	ineffective	-11.00
Phase 3	36.00	2.83	-4.00	20	0%	ineffective	-3.00
Phase 4	33.00	7.07	-10.00	4	0%	ineffective	-6.00
Condition 2	21.00	11.05	-3.40	7	0%	ineffective	-18.00
Phase 1	29.00	8.49	-12.00	7	0%	ineffective	-10.00
Phase 2	15.00	14.14	20.00	-18	0%	ineffective	-24.00
Phase 3	17.00	n/a	n/a	-8	0%	ineffective	-22.00
Phase 4	-	-	-	-	-	-	

Table 13

WE-CBM Correct Word Sequences for Student 6

Phase	Mean	SD	Slope	Level	PND	Effectiveness	AIMSweb Norm Comparison
Baseline	59.67	7.76	1.43	n/a	n/a	n/a	20.67
Condition 1	53.88	9.58	0.11	-26	0%	ineffective	14.88
Phase 1	53.50	14.85	21.00	-26	0%	ineffective	14.50
Phase 2	57.00	12.73	-18.00	2	50%	questionably	18.00
Phase 3	50.00	14.14	20.00	-8	0%	ineffective	11.00
Phase 4	55.00	2.83	-4.00	-3	0%	ineffective	16.00
Condition 2	62.00	13.86	8.57	1	33%	ineffective	23.00
Phase 1	54.00	0.00	0.00	1	0%	ineffective	15.00
Phase 2	78.00	n/a	n/a	24	100%	highly	39.00
Phase 3	-	-	-	-	-	-	
Phase 4	-	-	-	-	-	-	

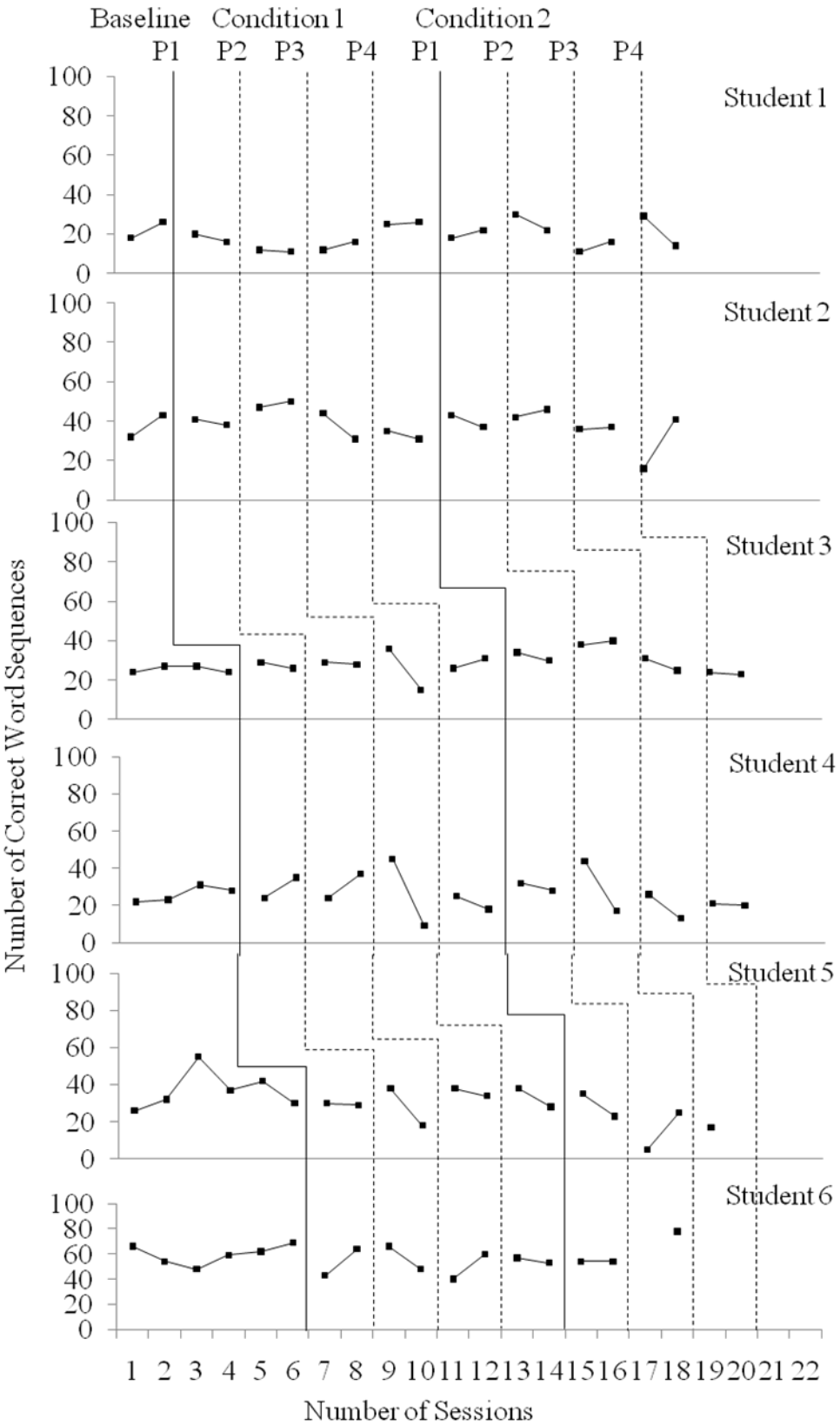


Figure 2. Correct Word Sequences on Curriculum-Based Measures of Written Expression across Participants and Conditions

Writing Quality: Quality Measure (Research Question 2: Harris & Graham, 1996)

Figure 3 illustrates the points Students 1-6 earned for writing quality, as measured by the Scale for Scoring the Inclusion and Quality of the Parts of a Story (Harris & Graham, 1996) on the curriculum-based measures of written expression across the study. Tables 14-19 detail the mean, level, trend, and percentage of nonoverlapping data.

Baseline Results: Trends

Trends observed during Baseline were negative and small for Student 2 (-1.00) and Student 3 (-0.30), negative and nearly flat for Student 5 (-0.11), positive and small for Student 6 (0.39), and zero for Students 1 and 4. Most students had shown some stability during Baseline.

Effectiveness of Condition 1 on Quality: Comparison of Trends, Means, and PND

Trends. The trends observed in Condition 1 were negative but nearly flat for Student 1 (-0.11) and Student 3 (-0.01), positive but nearly flat for Student 5 (0.05) and Student 6 (0.07), and negative and small for Student 2 (-0.31) and Student 4 (-0.39). The magnitudes of the trends in Condition 1 were larger than Baseline for Students 1 and 4.

Means. The mean writing quality score in Condition 1 improved above Baseline for Students 2-5. Student 2 increased from 5.5 to 8 points. Student 3 increased from 4.75 to 7.63 points. Student 4 increased from 4.5 to 4.63 points. Student 5 increased from 5.67 to 6.25 points. Student 1 decreased from 6 to 5.63 points. Student 6 decreased from 7.2 to 6.75 points.

PND. The PND results suggest that the Condition 1 intervention was highly effective for Student 2 (88%), moderately effective for Student 3 (63%), and ineffective for Students 1 and 4-6 (0-38%).

Summary. In sum, the collective data indicates that the mean writing quality points improved above Baseline following Condition 1 for two students.

Effectiveness of Condition 2 on Quality: Comparison of Trends, Means, and PND

Trends. The trends observed in Condition 2 were negative and small for Student 1 (-0.33), negative but nearly flat for Student 3 (-0.18) and Student 4 (-0.07), flat at zero for Student 6, and positive but nearly flat for Student 2 and Student 5 (0.10). The magnitudes of the trends were larger for Students 1, 3 and 5, and smaller for Students 2, 4, and 6 compared to the trends observed in Condition 1.

Means. The mean writing quality points increased for Students 1, 4 and 6, and decreased for Students 2, 3 and 5 in Condition 2 when compared to Condition 1. Student 1 increased from 5.63 to 6 points. Student 4 increased from 4.63 to 4.75 points. Student 6 increased from 6.75 to 8 points. Student 2 decreased from 8 to 7.75 points. Student 3 decreased from 7.63 to 7.13 points. Student 5 decreased from 6.25 to 4.20 points.

PND. The PND results indicate that the Condition 2 intervention was ineffective for all students at improving scores in Condition 2 above Condition 1 ranging 0-38%.

Summary. The collective information suggests that the mean writing quality points did not improve above Condition 1 following Condition 2 for all students.

Between-Series Comparisons of Quality

In comparing intervention effects between students, comparisons were made between pairs to look for variability between students at the same time points, between pairs at Baseline and Condition 1 Phase 1, and between pairs at Condition 1 Phase 4 and Condition 2 Phase 1.

Comparing within pairs. Comparisons were made within pairs to examine variability within a pair of students participating in the intervention at the same time point. Following Baseline, Students 1 and 2 differed in how the means changed from Baseline to Condition 1, in trends observed in Condition 1, and PND results. In Condition 2, the students differed in how the

means changed. Both students exhibited negative trends across the phases, except for flat trends noted in Phase 1 for Student 1 and Phase 4 for Student 2. Given the low PND, the intervention was ineffective compared to Condition 1 for both students.

Student 3 and 4 comparisons following Baseline indicate that both students demonstrated an increase in the mean in Condition 1 and had a negative trend but Student 4 had a greater magnitude. The students differed in PND results. In Condition 2, the students differed in how the means changed from Condition 1 to Condition 2. Trends in Condition 2 were similar. The intervention was ineffective compared to Condition 1 for both students given the low PND.

Student 5 and 6 comparisons following Baseline indicate differences in how the mean changed in Condition 1. The students shared similar trends and PND results. In Condition 2, the students differed in how the mean changed from Condition 1. Trends slightly differed. Low PND results indicated that Condition 2 was ineffective compared to Condition 1 for both students.

Comparing Baseline and Condition 1 between pairs. Students 1 & 2 (Condition 1 Phase 1) and Students 3 & 4 (Baseline) were compared. While the trends differed between and within pairs, the biggest comparison was the trend magnitude between pairs. Students 1 & 2 had larger trends compared to Students 3 & 4. Students 3 & 4 (Condition 1 Phase 1) were compared to Students 5 & 6 (Baseline). Similarly, trends differed between and within pairs. However, Students 3 demonstrated a larger trend in magnitude compared to Students 5 & 6.

Comparing Condition 1 and Condition 2 between pairs. Students 1 & 2 (Condition 2 Phase 1) and Students 3 & 4 (Condition 1 Phase 4) were compared. Within pair differences made the between pair differences difficult to ascertain. Each pair featured one student with a flat trend and one with a trend of higher magnitude than the other. One commonality within pairs that differed between pairs was the difference in levels. Students 1 & 2 featured a larger level change

than Students 3 & 4. Students 3 & 4 (Condition 2 Phase 1) were compared to Students 5 & 6 (Condition 1 Phase 4). Students 3 & 4 featured negative trends while Students 5 & 6 featured negative and positive trends.

Summary

The study sought to examine whether the mean quality points on the WE-CBMs, as measured by the Scale for Scoring the Inclusion and Quality of the Parts of a Story (Harris & Graham, 1996) increased across two conditions, above observed performance during Baseline. I expected to find positive intervention effects replicated across students. One analysis involved the comparison of Condition 1 effects to Baseline at the individual level. Students 2-5 increased the mean quality in Condition 1 above Baseline. Students 5 and 6 had shown a positive but small trend in Condition 1. The intervention was moderately effective for Student 3 but highly effective for Student 2, when comparing PND. A second analysis was conducted within a pair of students. Students did not perform similarly within pairs. A third analysis occurred between students at different stages in the study. In comparing Students 1 & 2 (Condition 1 Phase 1) and Students 3 & 4 (Baseline), Student 1 featured a positive and steeper trend than those at Baseline. In comparing Students 3 & 4 (Condition 1 Phase 1) and Students 5 & 6 (Baseline), all students featured a negative trend but the trend was steeper for Student 3. To conclude, there was some evidence to support Condition 1 effectiveness to improve writing quality initially, when analyzing PND and increased means, but the effects may not have sustained across the condition given the negative trends.

Condition 2 effects differed compared to Condition 1. At the individual level, Students 1, 4 and 6 improved the mean quality in Condition 2 above Condition 1. Students 2 and 5 had positive but nearly flat trends and only Student 2 had a greater trend in magnitude in Condition 2

compared to Condition 1. PND results suggested the intervention was ineffective for all students. When comparing students in one phase to students in another phase, trend direction did not appear to differ between students. Some trends were steeper than others but these trends were negative. In sum, many students wrote higher quality stories at the beginning of Condition 2 but this effect was not sustained across the condition.

Table 14

WE-CBM Writing Quality (Harris & Graham, 1996) for Student 1

Phase	Mean	SD	Slope	Level	PND	Effectiveness
Baseline	6.00	0.00	0.00	n/a	n/a	n/a
Condition 1	5.63	0.92	-0.11	-1	25%	ineffective
Phase 1	6.00	1.41	2.00	-1	50%	questionably
Phase 2	6.00	1.41	2.00	-2	0%	ineffective
Phase 3	5.50	0.71	1.00	-2	0%	ineffective
Phase 4	5.00	0.00	0.00	-1	0%	ineffective
Condition 2	6.00	1.07	-0.33	2	0%	ineffective
Phase 1	7.00	0.00	0.00	2	100%	highly
Phase 2	6.50	0.71	-1.00	0	0%	ineffective
Phase 3	5.50	0.71	-1.00	0	0%	ineffective
Phase 4	5.00	1.41	2.00	-1	0%	ineffective

Table 15

WE-CBM Writing Quality (Harris & Graham, 1996) for Student 2

Phase	Mean	SD	Slope	Level	PND	Effectiveness
Baseline	5.50	0.71	-1.00	n/a	n/a	n/a
Condition 1	8.00	1.60	-0.31	3	88%	highly
Phase 1	7.50	0.71	-1.00	3	100%	highly
Phase 2	10.00	1.41	-2.00	4	100%	highly
Phase 3	8.00	1.41	-2.00	0	0%	ineffective
Phase 4	6.50	0.71	-1.00	0	0%	ineffective
Condition 2	7.75	2.12	0.10	2	13%	ineffective
Phase 1	7.00	1.41	-2.00	2	50%	questionably
Phase 2	6.50	2.12	-3.00	2	0%	ineffective
Phase 3	10.50	2.12	-3.00	7	100%	highly
Phase 4	7.00	0.00	0.00	-2	0%	ineffective

Table 16

WE-CBM Writing Quality (Harris & Graham, 1996) for Student 3

Phase	Mean	SD	Slope	Level	PND	Effectiveness
Baseline	4.75	1.50	-0.30	n/a	n/a	n/a
Condition 1	7.63	1.41	-0.01	4	63%	moderate
Phase 1	7.00	1.41	-2.00	4	50%	questionably
Phase 2	8.50	0.71	-1.00	3	0%	ineffective
Phase 3	7.50	2.12	-3.00	1	0%	ineffective
Phase 4	7.50	2.12	3.00	0	0%	ineffective
Condition 2	7.13	1.25	-0.18	0	0%	ineffective
Phase 1	7.50	2.12	-3.00	0	0%	ineffective
Phase 2	7.00	0.00	0.00	1	0%	ineffective
Phase 3	8.00	1.41	2.00	0	50%	questionably
Phase 4	6.00	0.00	0.00	-3	0%	ineffective

Table 17

WE-CBM Writing Quality (Harris & Graham, 1996) for Student 4

Phase	Mean	SD	Slope	Level	PND	Effectiveness
Baseline	4.50	0.58	0.00	n/a	n/a	n/a
Condition 1	4.63	1.19	-0.39	1	38%	ineffective
Phase 1	6.00	0.00	0.00	1	100%	highly
Phase 2	5.00	1.41	-2.00	0	0%	ineffective
Phase 3	3.50	0.71	-1.00	0	0%	ineffective
Phase 4	4.00	0.00	0.00	1	0%	ineffective
Condition 2	4.75	0.71	-0.07	1	38%	ineffective
Phase 1	4.50	0.71	-1.00	1	50%	questionably
Phase 2	5.50	0.71	1.00	1	50%	questionably
Phase 3	4.50	0.71	-1.00	-1	0%	ineffective
Phase 4	4.50	0.71	-1.00	-1	0%	ineffective

Table 18

WE-CBM Writing Quality (Harris & Graham, 1996) for Student 5

Phase	Mean	SD	Slope	Level	PND	Effectiveness
Baseline	5.67	0.82	-0.11	n/a	n/a	n/a
Condition 1	6.25	1.67	0.05	2	25%	ineffective
Phase 1	6.00	1.41	-2.00	2	0%	ineffective
Phase 2	6.00	0.00	0.00	1	0%	ineffective
Phase 3	6.50	2.12	3.00	-1	50%	questionably
Phase 4	6.50	3.54	-5.00	1	50%	questionably
Condition 2	4.20	1.92	0.10	0	0%	ineffective
Phase 1	5.00	1.41	2.00	0	0%	ineffective
Phase 2	3.00	2.83	4.00	-5	0%	ineffective
Phase 3	5.00	n/a	n/a	0	0%	ineffective
Phase 4	--	--	--	--	--	--

Table 19

WE-CBM Writing Quality (Harris & Graham, 1996) for Student 6

Phase	Mean	SD	Slope	Level	PND	Effectiveness
Baseline	7.20	1.48	0.39	n/a	n/a	n/a
Condition 1	6.75	1.49	0.07	-1	0%	ineffective
Phase 1	6.50	0.71	1.00	-1	0%	ineffective
Phase 2	8.00	1.41	2.00	0	50%	questionably
Phase 3	5.00	1.41	2.00	-5	0%	ineffective
Phase 4	7.50	0.71	1.00	1	100%	highly
Condition 2	8.00	0.00	0.00	0	0%	ineffective
Phase 1	8.00	0.00	0.00	0	0%	ineffective
Phase 2	8.00	n/a	n/a	0	0%	ineffective
Phase 3	--	--	--	--	--	--
Phase 4	--	--	--	--	--	--

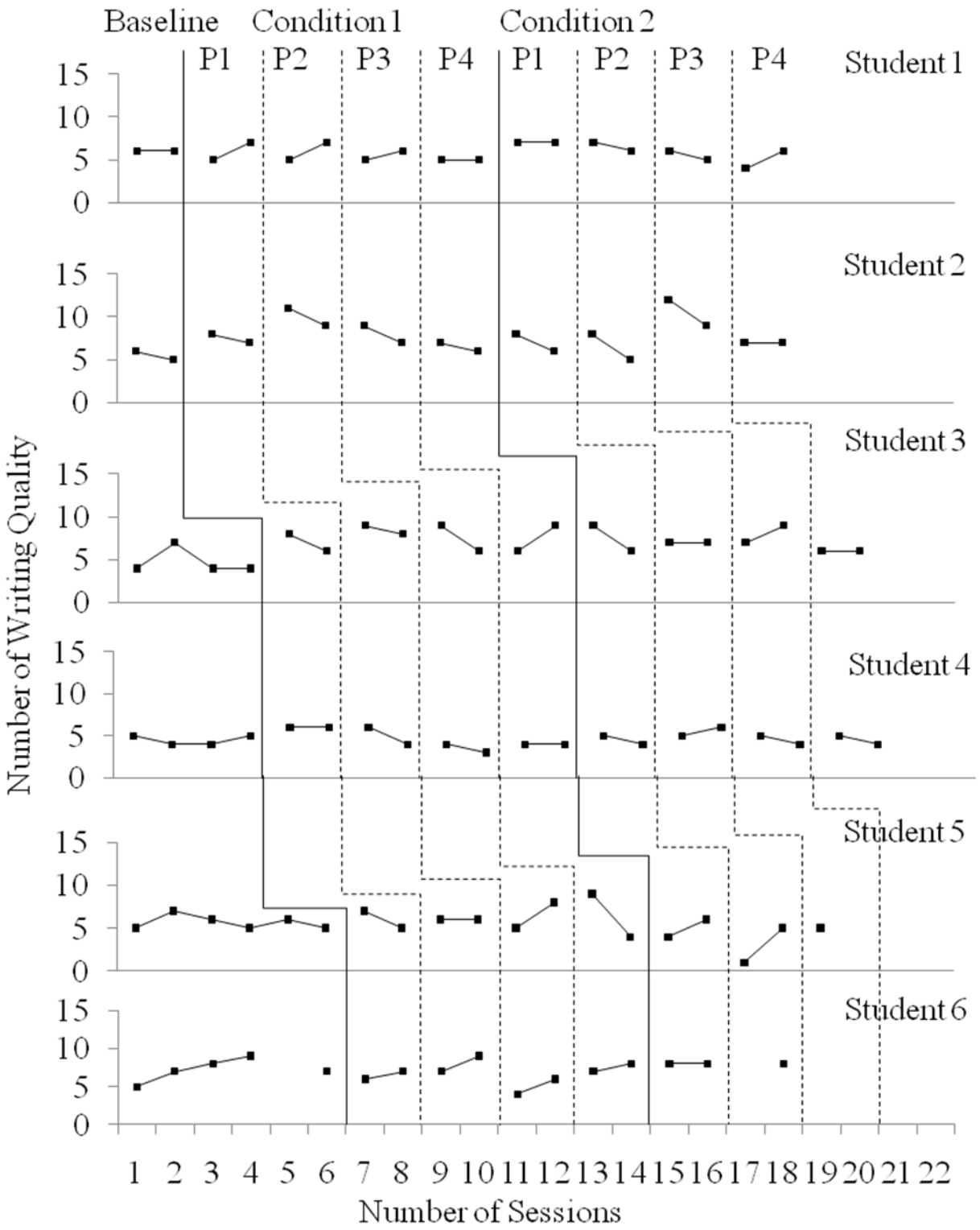


Figure 3. Writing Quality Points (Harris & Graham, 1996) on Curriculum-Based Measures of Written Expression across Participants and Conditions

Writing Quality: Number of Story Parts (Research Question 2)

Figure 4 illustrates the number of story parts, out of seven possible parts taught during the modified SRSD process, Students 1-6 wrote on the curriculum-based measures of written expression across the study. Tables 20-25 describe the Baseline and condition means, trends, change in level, and percentage of nonoverlapping data.

Baseline Results: Trends

Observed trends during Baseline indicate a flat trend at zero for Students 1 and 4, negative but small trends for Student 2 (-1.00) and Student 3 (-0.30), and positive but nearly flat trends for Student 5 (0.03) and Student 6 (0.15). Baseline data suggests students were exhibiting stable writing performance.

Effectiveness of Condition 1 on Story Parts: Comparison of Trends, Means, and PND

Trends. Observed trends during Condition 1 show negative but nearly flat trends for all students (-0.01 to -0.27) and a positive but nearly flat trend for Student 5 (0.07). Trend magnitudes were greater than Baseline for three students but these trends were also negative.

Means. The mean number of story parts in Condition 1 increased above Baseline for Students 2, 3, and 5. Student 2 increased from 4.50 to 5.25 parts. Student 3 increased from 3.75 to 4.88 parts. Student 5 increased from 4.5 to 5 parts. Students did not achieve the mean maximum number of story parts at any point in the condition.

PND. The PND results indicate that the intervention in Condition 1 was ineffective at increasing the number of story parts for all students (0-25%).

Summary. The evidence suggests that the mean number of story parts did not improve above Baseline following Condition 1 for three students. Trends tended to be flat across the condition.

Effectiveness of Condition 2 on Story Parts: Comparison of Trends, Means, and PND

Trends. Observed trends in Condition 2 were negative but nearly flat for Students 1, 3, 4, and 6 (-0.06 to -0.36), and positive but nearly flat for Students 2 and 5 (0.06 and 0.10). Trend magnitudes were greater than Condition 1 trends for Students 1, 4, and 5.

Means. Students 1, 4 and 6 increased the number of story parts in Condition 2 above means observed in Condition 1. Student 1 increased from 4.13 to 4.5 parts. Student 4 increased from 3.13 to 3.63 parts. Student 6 increased from 4.75 to 5.67 parts. Students did not achieve the maximum mean number of story parts during the condition.

PND. The PND results indicate that the intervention in Condition 2 was ineffective at improving the number of story parts above Condition 1 for all students (0-13%).

Summary. The evidence suggests that the mean number of story parts did not increase to the maximum points allowed following Condition 2 for all students. It appears that the intervention maintained students' performance from Condition 1.

Between-Series Comparisons of Story Parts

In comparing intervention effects between students, comparisons were made between pairs to look for variability between students at the same time points, between pairs at Baseline and Condition 1 Phase 1, and between pairs at Condition 1 Phase 4 and Condition 2 Phase 1.

Comparing within pairs. Comparisons were made within pairs to examine variability within a pair of students participating in the intervention at the same time point. To begin, Student 1 and 2 were compared in Condition 1 following Baseline. Students differed in how the means changed, but both had similar trends. PND results were ineffective for both students. In Condition 2, the students differed in how the means changed and in trend direction and magnitude. PND results were ineffective for both students.

Students 3 and 4 were compared following Baseline in Condition 1. The students differed in how the means changed, but had similar trends. The PND results suggest the intervention was ineffective for both students. In Condition 2, both students had similar trends and increases in the means. However, the PND results indicated that Condition 2 was ineffective for both.

Students 5 and 6 were compared in Condition 1 following Baseline. The students differed in how the means changed and differed in trends. The PND results suggest the intervention was ineffective. In Condition 2, the students differed in trend and changes in mean. The PND results indicate the intervention was ineffective for both students.

Comparing Baseline and Condition 1 between pairs. Students 1 & 2 (Condition 1 Phase 1) and Students 3 & 4 (Baseline) were compared. Students in Condition 1 had higher means but the trends did not appear to be much different from students in Baseline. Students 3 & 4 (Condition 1 Phase 1) and Students 5 & 6 (Baseline) were compared. Only Student 3 had a higher mean in Condition 1 than students at Baseline. Students in Condition 1 tended to have negative trends while students at Baseline had positive trends.

Comparing Condition 1 and Condition 2 between pairs. Students 1 & 2 (Condition 2 Phase 1) and Students 3 & 4 (Condition 1 Phase 4) were compared. Only Student 2 had a higher mean than students at Condition 1. Trends differed among students; Student 3 had the highest and positive trend while Student 1 had a negative trend and Student 2 had a flat trend. Students 3 & 4 (Condition 2 Phase 1) and Students 5 & 6 (Condition 1 Phase 4) were compared. Students at Condition 1 tended to have higher means and steeper trends than Students in Condition 2. All students had negative trends.

Summary

The study sought to examine whether the number of story parts on the WE-CBMs increased to the maximum number allowed across two conditions, above observed performance during Baseline. Students could write up to seven possible parts, as instructed during the modified SRSD intervention. I expected to find positive intervention effects replicated across students. One analysis involved the comparison of Condition 1 effects to Baseline at the individual level. Half of the students increased the mean in Condition 1. Trends were generally negative and PND results suggested the intervention was ineffective for all students. A second analysis was conducted within a pair of students. Students did not perform similarly within pairs. A third analysis occurred between students at different stages in the study. In comparing Students 1 & 2 (Condition 1 Phase 1) and Students 3 & 4 (Baseline), students in Condition 1 had higher means but trends across students were similar. In comparing Students 3 & 4 (Condition 1 Phase 1) and Students 5 & 6 (Baseline), only one student in Condition 1 had a higher mean than Baseline and trends in Condition 1 were negative. To conclude, there was some evidence to support limited Condition 1 effectiveness to increase story parts for a few students when looking at increased means between Baseline and Condition 1 but the effects may not have sustained across the condition given the negative trends.

For Condition 2 effects at the individual level, half of the students improved the mean in Condition 2 above Condition 1. Trends tended to be negative for most students. PND results suggested the intervention was ineffective for all students. When comparing students in one phase to students in another phase at the same time point, some students had higher means in Condition 2 compared to Condition 1 but trends were generally negative. In sum, a few students wrote stories with more story parts at the beginning of Condition 2 but this effect was not

sustained across the condition. Condition 2 did not appear effective at increasing story parts to at least seven parts.

Table 20

WE-CBM Writing Quality (Story Parts) for Student 1

Phase	Mean	SD	Slope	Level	PND	Effectiveness
Baseline	5.00	0.00	0.00	n/a	n/a	n/a
Condition 1	4.13	0.64	-0.04	-1.00	0%	ineffective
Phase 1	4.50	0.71	1.00	-1	0%	ineffective
Phase 2	4.00	1.41	2.00	-2	0%	ineffective
Phase 3	4.00	0.00	0.00	-1	0%	ineffective
Phase 4	4.00	0.00	0.00	0	0%	ineffective
Condition 2	4.50	1.07	-0.36	1.00	13%	ineffective
Phase 1	5.00	0.00	0.00	1	100%	highly
Phase 2	5.50	0.71	-1.00	1	50%	questionably
Phase 3	4.50	0.71	-1.00	0	0%	ineffective
Phase 4	3.00	0.00	0.00	-1	0%	ineffective

Table 21

WE-CBM Writing Quality (Story Parts) for Student 2

Phase	Mean	SD	Slope	Level	PND	Effectiveness
Baseline	4.50	0.71	-1.00	n/a	n/a	n/a
Condition 1	5.25	1.16	-0.12	1	25%	ineffective
Phase 1	5.00	0.00	0.00	1	0%	ineffective
Phase 2	6.00	1.41	2.00	0	50%	questionably
Phase 3	5.50	2.12	-3.00	0	0%	ineffective
Phase 4	4.50	0.71	-1.00	1	0%	ineffective
Condition 2	4.63	1.41	0.06	1	0%	ineffective
Phase 1	4.50	0.71	-1.00	1	0%	ineffective
Phase 2	3.50	2.12	-3.00	1	0%	ineffective
Phase 3	6.00	1.41	-2.00	5	50%	questionably
Phase 4	4.50	0.71	1.00	-1	0%	ineffective

Table 22

WE-CBM Writing Quality (Story Parts) for Student 3

Phase	Mean	SD	Slope	Level	PND	Effectiveness
Baseline	3.75	1.50	-0.30	n/a	n/a	n/a
Condition 1	4.88	0.64	-0.01	1.00	0%	ineffective
Phase 1	4.50	0.71	1.00	1	0%	ineffective
Phase 2	5.50	0.71	-1.00	1	50%	questionably
Phase 3	5.00	0.00	0.00	-1	0%	ineffective
Phase 4	4.50	0.71	1.00	-1	0%	ineffective
Condition 2	4.75	0.71	-0.17	0.00	0%	ineffective
Phase 1	5.00	0.00	0.00	0	0%	ineffective
Phase 2	5.50	0.71	1.00	0	50%	questionably
Phase 3	4.50	0.71	1.00	-2	0%	ineffective
Phase 4	4.00	0.00	0.00	-1	0%	ineffective

Table 23

WE-CBM Writing Quality (Story Parts) for Student 4

Phase	Mean	SD	Slope	Level	PND	Effectiveness
Baseline	3.50	0.58	0.00	n/a	n/a	n/a
Condition 1	3.13	1.13	-0.27	0	13%	ineffective
Phase 1	4.50	0.71	1.00	0	50%	questionably
Phase 2	3.00	0.00	0.00	-2	0%	ineffective
Phase 3	2.00	1.41	-2.00	0	0%	ineffective
Phase 4	3.00	0.00	0.00	2	0%	ineffective
Condition 2	3.63	0.52	-0.06	1	0%	ineffective
Phase 1	3.50	0.71	-1.00	1	50%	questionably
Phase 2	4.00	0.00	0.00	1	0%	ineffective
Phase 3	3.50	0.71	-1.00	0	0%	ineffective
Phase 4	3.50	0.71	-1.00	1	0%	ineffective

Table 24

WE-CBM Writing Quality (Story Parts) for Student 5

Phase	Mean	SD	Slope	Level	PND	Effectiveness
Baseline	4.50	1.05	0.03	n/a	n/a	n/a
Condition 1	5.00	1.41	0.07	2.00	22%	ineffective
Phase 1	4.50	0.71	-1.00	1	0%	ineffective
Phase 2	5.00	0.00	0.00	1	0%	ineffective
Phase 3	5.50	2.12	3.00	-1	50%	questionably
Phase 4	5.00	2.83	-4.00	0	0%	ineffective
Condition 2	3.40	1.52	0.10	0.00	0%	ineffective
Phase 1	4.00	1.41	2.00	0	0%	ineffective
Phase 2	2.50	2.12	3.00	-4	0%	ineffective
Phase 3	4.00	n/a	n/a	0	0%	ineffective
Phase 4	-	-	-	-	-	-

Table 25

WE-CBM Writing Quality (Story Parts) for Student 6

Phase	Mean	SD	Slope	Level	PND	Effectiveness
Baseline	4.80	0.45	0.15	n/a	n/a	n/a
Condition 1	4.75	1.04	-0.10	-1	0%	ineffective
Phase 1	5.00	0.00	0.00	-1	0%	ineffective
Phase 2	5.50	0.71	1.00	0	50%	questionably
Phase 3	3.50	0.71	1.00	-3	0%	ineffective
Phase 4	5.00	1.41	-2.00	2	50%	questionably
Condition 2	5.67	0.58	-0.36	2	0%	ineffective
Phase 1	6.00	0.00	0.00	2	0%	ineffective
Phase 2	5.00	n/a	n/a	0	0%	ineffective
Phase 3	-	-	-	-	-	-
Phase 4	-	-	-	-	-	-

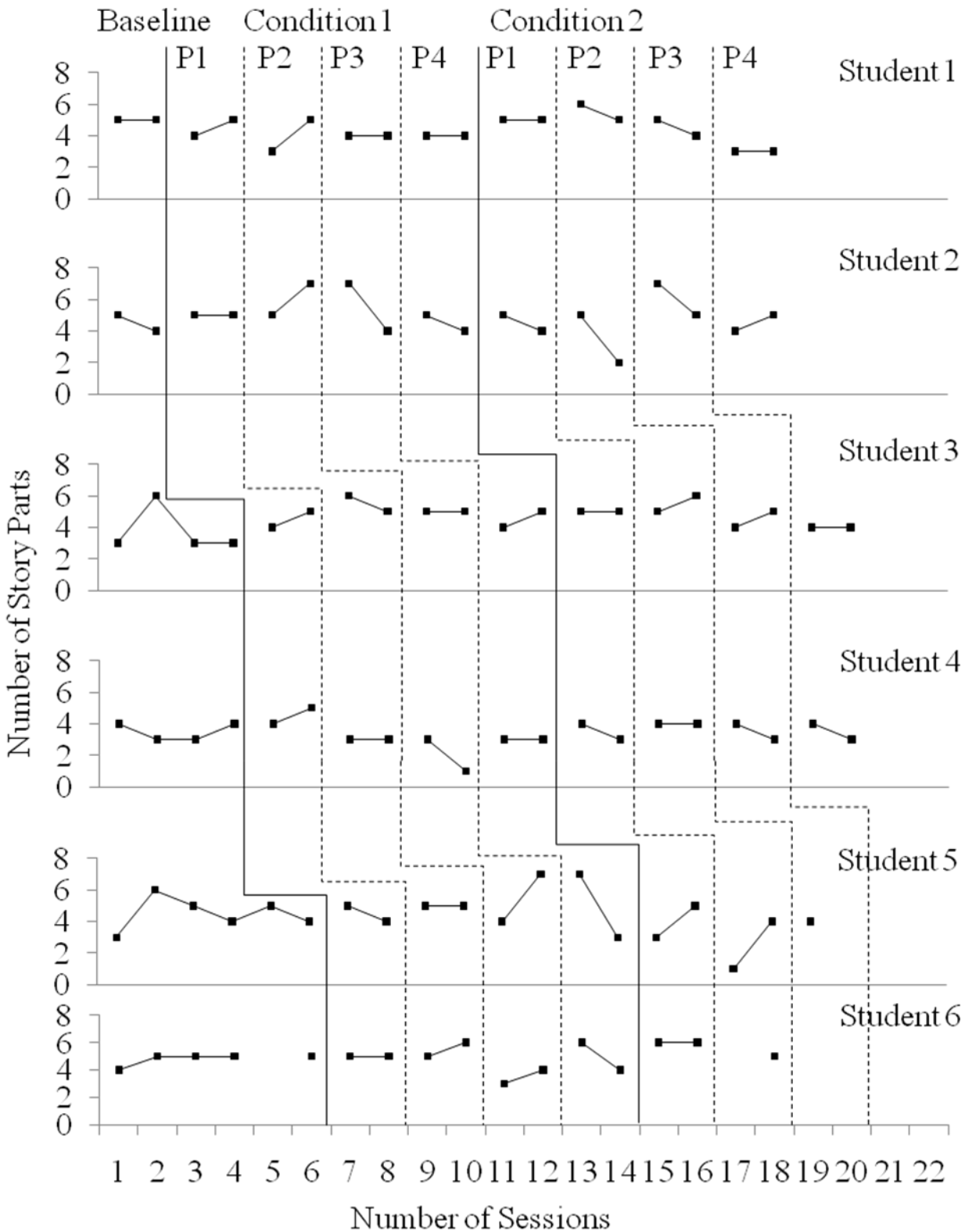


Figure 4. Number of Story Parts on Curriculum-Based Measures of Written Expression across Participants and Conditions

Writing Quality: Teacher Interview/Checklist (Research Question 2)

Figure 5 depicts the changes in teacher perceptions of the student's ability to demonstrate various writing skills across three time points, as measured by the Teacher Interview/Checklist adapted from Bradley-Johnson and Lesiak (1989). Time 2 and Time 3 results were not available for Student 6. Since each student has strengths and weaknesses, results are reported individually.

Student 1 maintained the same scores for writing mechanics at each time point. Spelling and word usage decreased at Time 2 but maintained the same score at Time 3. Vocabulary, paragraph structure, and writing process maintained the same score at Time 1 and 2 but decreased at Time 3. Sentence structured decreased at each time point. Editing increased at Time 2 but decreased to the same level as Time 1 at Time 3.

Student 2 maintained the same score for writing mechanics, spelling, word usage, and vocabulary at each time point. Paragraph structure and handwriting improved at Time 2 but decreased to the same level as Time 1 at Time 3. Sentence structure and writing process increased at Time 2 and maintained at Time 3. Editing improved from Time 1 to Time 3 (Time 2 for editing was not available).

Student 3 maintained the same score for spelling, vocabulary, sentence structure, and editing at each time point. Handwriting, word usage, and paragraph structure increased at Time 2 but then decreased to the same level as Time 1 at Time 3. Capitalization decreased at each time point. Punctuation decreased at Time 2 and maintained at Time 3. Writing process maintained from Time 1 to Time 2 and decreased at Time 3.

Student 4 maintained the same score for handwriting, word usage, writing process, and editing at each time point. Punctuation, vocabulary, and paragraph structure increased at Time 2 and maintained at Time 3. Spelling was the same score at Time 1 and 2 but increased at Time 3.

Sentence structure increased at Time 2 but then decreased to the same level as Time 1 at Time 3. Capitalization increased at Time 2 and then decreased at Time 3.

Student 5 maintained the same score for sentence structure, paragraph structure, and editing. Capitalization, word usage, and vocabulary decreased and remained the same Time 2-3. Spelling was the same score at Time 1 and 2 and then decreased at Time 3. Handwriting decreased at Time 2 and increased at Time 3. Punctuation increased at Time 2 but decreased to the same level as Time 1 at Time 3.

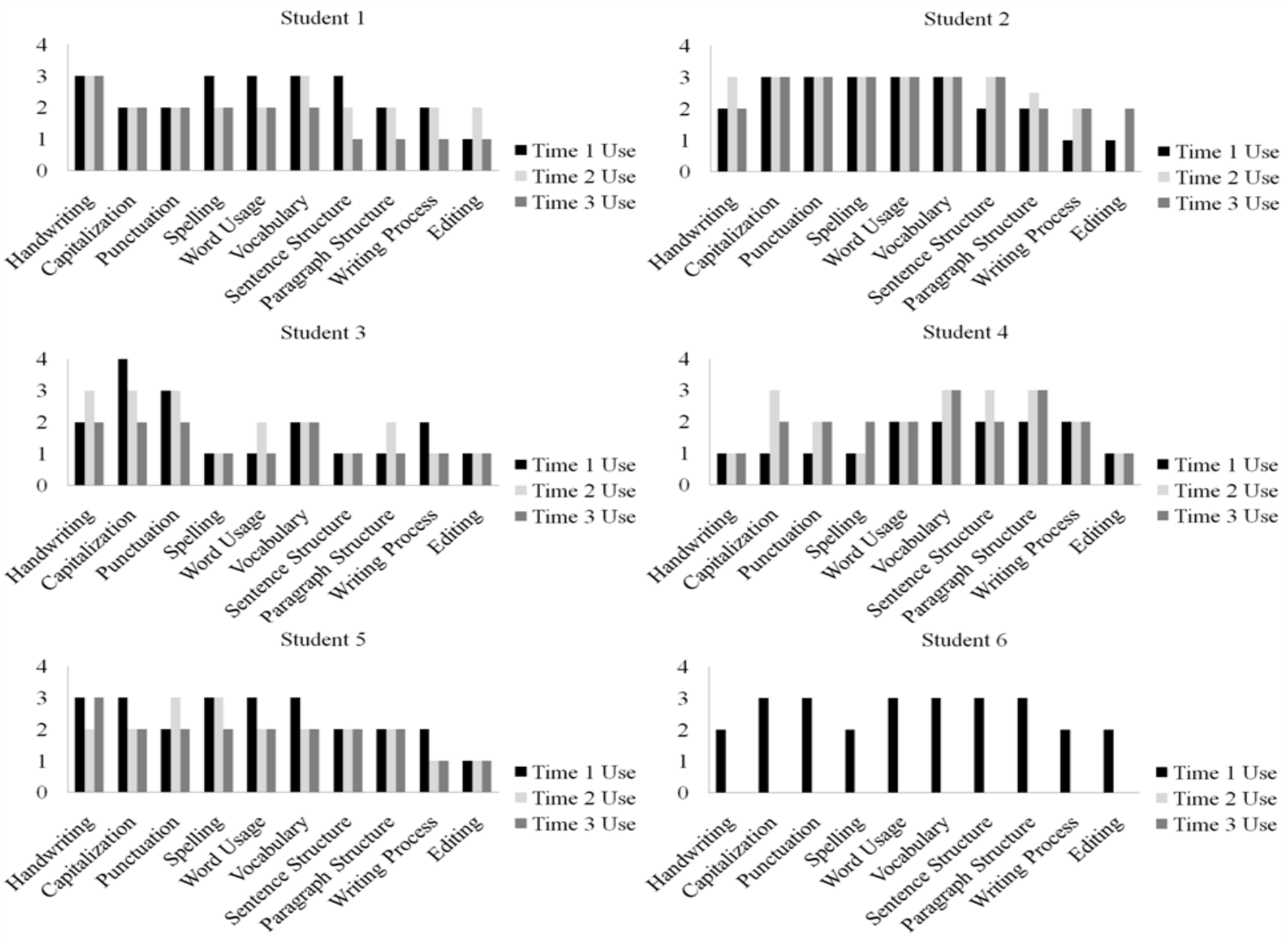


Figure 5. Scores on the Teacher Interview/Checklist across three time points

Self-Talk (Research Question 3)

Thus far, the results do not support the research hypotheses related to writing skills. Students improved Total Words Written following Condition 1 but many students did not improve in other areas after Condition 1 or 2. The next set of questions focus on research questions related to self-talk and self-regulation. Figure 6 illustrates the multiple baseline design of coded self-talk utterances from video recordings for Students 1-5 across Baseline, Condition 1, and Condition 2. Tables 26-30 display the mean, trend, level, and percentage of nonoverlapping data for Students 1-5. Results were not available for Student 6 since parents did not give consent for audio/video recording.

Baseline Results: Trends

Only two students exhibited self-talk during Baseline (i.e., one utterance for each student). Most students had a Baseline mean of zero and a flat trend. These students demonstrated stable Baseline performance. Student 2 had a positive and small trend (1.00) while Student 4 had a negative and small trend (-0.50).

Effectiveness of Condition 1 on Self-Talk: Comparison of Trends, Means, and PND

Figure 5. Scores on the Teacher Interview/Checklist across three time points

Trends. All students, except Student 2, had positive and small trends in Condition 1 with magnitudes greater than Baseline (0.88 to 2.70). Student 2 had a trend of zero.

Means. All students, except Student 2, had larger means in Condition 1 compared to Baseline. Student 2 had a mean of zero. Student 1 increased from 0 to 12.88 utterances. Student 3 increased from 0 to 9.88 utterances. Student 4 increased from 0.33 to 4.75 utterances. Student 5 increased from 0 to 6 utterances.

PND. The PND results indicate that Condition 1 was highly effective at increasing self-talk utterances above Baseline for Students 1 and 3 (88% and 75% respectively). Condition 1 was questionably effective for Students 4 and 5 (50% and 56% respectively). Condition 1 was ineffective for Student 2 (25%).

Summary. The data suggest that the number of self-talk utterances for all students except Student 2 increased in Condition 1. Most students exhibited utterances during Condition 1, an unexpected finding given that self-talk was not explicitly taught.

Effectiveness of Condition 2 on Self-Talk: Comparison of Trends, Means, and PND

Trends. Observed trends in Condition 2 were positive and small for Student 2 (0.74) and Student 3 (3.13), positive but nearly flat for Student 4 (0.03), negative and small for Student 5 (-2.42), and negative but nearly flat for Student 1 (-0.08). Trend magnitudes were larger for Students 2, 3, and 5 in Condition 2 compared to Condition 1. However, Student 5's trend was negative.

Means. The mean self-talk utterances increased in Condition 2 for Students 2 and 3 only. Student 2 increased from 0 to 1.75 utterances. Student 3 increased from 9.88 to 16.71 utterances.

PND. The PND results suggest that Condition 2 was ineffective at increasing self-talk utterances above Condition 1 for all students (0-14%).

Summary. In sum, the collective information indicates that self-talk utterances did not improve in Condition 2 for all students. Although some students demonstrated more self-talk utterances in Condition 2 than in Condition 1, it was not enough to suggest that Condition 2 was more effective than Condition 1.

Between-Series Comparisons of Self-Talk

In comparing intervention effects between students, comparisons were made between pairs to look for variability between students at the same time points, between pairs at Baseline and Condition 1 Phase 1, and between pairs at Condition 1 Phase 4 and Condition 2 Phase 1.

Comparing within pairs. Comparisons were made within pairs to examine variability within a pair of students participating in the intervention at the same time point. Following Baseline, Students 1 and 2 differed in how the mean changed in Condition 1 as well as PND results. Student 2 did not demonstrate self-talk throughout the duration of Condition 1. In Condition 2, the trend direction and the mean change differed between the students. Due to a low PND, Condition 2 was ineffective compared to Condition 1 for both students.

In comparing Students 3 and 4, mean self-talk utterances increased in Condition 1 following Baseline. Trends were positive but had slightly differing magnitude. PND results found the condition to be highly effective and questionably effective compared to Baseline. In Condition 2, how the mean changed differed between the students. Trends varied in magnitude but were both positive. Low PND suggested that Condition 2 was ineffective compared to Condition 1 for the students.

Results for Student 6 were not available; hence comparisons between Student 5 and Student 6 were not feasible.

Comparing Baseline and Condition 1 between pairs. Students 1 & 2 (Condition 1 Phase 1) and Students 3 & 4 (Baseline) were compared. Student 2 and Student 3 did not demonstrate self-talk. Student 1 and Student 4 differed in trend with Student 1 exhibiting a low positive trend and Student 4 exhibiting a low negative trend. Students 3 & 4 (Condition 1 Phase 1) and Student 5 (Baseline) were compared. Student 4 and Student 5 did not use self-talk. Student 3 demonstrated a low positive trend.

Comparing Condition 1 and Condition 2 between pairs. Students 1 & 2 (Condition 2 Phase 1) and Students 3 & 4 (Condition 1 Phase 4) were compared. Student 2 did not demonstrate self-talk. Students 1, 3, and 4 exhibited a moderate negative trend. The trend was larger during Condition 1 Phase 4. Students 3 & 4 (Condition 2 Phase 1) and Student 5 (Condition 1 Phase 4) were compared. All students exhibited a positive trend; however, Student 5 had the steepest trend and highly variable data.

Summary

The study sought to examine whether self-talk utterances, coded from video recordings, increased across two conditions, above observed performance during Baseline. I expected to find positive intervention effects replicated across students. One analysis involved the comparison of Condition 1 effects to Baseline at the individual level. All students, except Student 2, had higher means in Condition 1 Phase 1 compared to Baseline. These students also exhibited steeper and positive trends than at their own Baseline. Student 2 had a flat trend at zero with means of zero. PND results suggest Condition 1 was questionably effective for Students 4 and 5 and highly effective for Students 1 and 3. A second analysis was conducted within a pair of students. Students within pairs did not perform similarly. A third analysis occurred between students at different stages in the study. Student 1 at Condition 1 Phase 1 had a positive and steeper trend compared to Students 3 & 4 at Baseline. Student 3 at Condition 1 Phase 1 had a positive and steeper trend compared to Student 5 at Baseline. In comparing Students 3-5 during Baseline, Students 3 and 5 exhibited flat trends at zero with means of zero and Student 4 exhibited a low and negative trend. In summary, evidence suggests that self-talk utterances increased in Condition 1 for three of the five students.

Condition 2 effects differed compared to Condition 1. At the individual level, only Students 2 and 3 had a higher mean in Condition 2 compared to Condition 1. Students 2 and 3 demonstrated positive trends in Condition 2 that were larger than trends in Condition 1. PND results suggest that Condition 2 was ineffective for all students. When comparing students in one phase to students in another phase, results show that in the first pair Students 1, 3 and 4 had negative trends but Student 4 had a steeper trend than Students 1 and 2 even though Student 4 was in Condition 1 Phase 4. When comparing Students 3 & 4 (Condition 2 Phase 1) to Student 5 (Condition 1 Phase 4), all students had positive trends but Student 5 had a steeper trend. In summary, evidence suggests that self-talk utterances did not increase in Condition 2.

Table 26

Self-Talk Utterances for Student 1 across Phases

Phase	Mean	SD	Slope	Level	PND	Effectiveness
Baseline	0	0.00	0.00	n/a	n/a	n/a
Condition 1	12.88	17.84	2.70	0	88%	highly
Phase 1	0.50	0.71	1.00	0	50%	questionably
Phase 2	6.50	4.95	7.00	2	100%	highly
Phase 3	39.00	18.38	26.00	16	100%	highly
Phase 4	5.50	2.12	3.00	-48	0%	ineffective
Condition 2	10.13	11.38	-0.08	-1	0%	ineffective
Phase 1	4.50	2.12	-3.00	-1	0%	ineffective
Phase 2	9.50	3.54	-5.00	9	100%	highly
Phase 3	26.50	9.19	-13.00	26	100%	highly
Phase 4	0.00	0.00	0.00	-20	0%	ineffective

Table 27

Self-Talk Utterances for Student 2 across Phases

Phase	Mean	SD	Slope	Level	PND	Effectiveness
Baseline	0.50	0.71	1.00	n/a	n/a	n/a
Condition 1	0.00	0.00	0.00	-1	0%	ineffective
Phase 1	0.00	0.00	0.00	-1	0%	ineffective
Phase 2	0.00	0.00	0.00	0	0%	ineffective
Phase 3	0.00	0.00	0.00	0	0%	ineffective
Phase 4	0.00	0.00	0.00	0	0%	ineffective
Condition 2	1.75	3.62	0.74	0	25%	ineffective
Phase 1	0.00	0.00	0.00	0	0%	ineffective
Phase 2	0.00	0.00	0.00	0	0%	ineffective
Phase 3	2.00	2.83	4.00	0	50%	questionably
Phase 4	5.00	7.07	-10.00	6	50%	questionably

Table 28

Self-Talk Utterances for Student 3 across Phases

Phase	Mean	SD	Slope	Level	PND	Effectiveness
Baseline	0.00	0.00	0.00	n/a	n/a	n/a
Condition 1	9.88	9.66	2.15	0	75%	highly
Phase 1	0.50	0.71	1.00	0	50%	questionably
Phase 2	6.50	9.19	13.00	-1	50%	questionably
Phase 3	23.00	0.00	0.00	10	100%	highly
Phase 4	9.50	4.95	-7.00	-10	0%	ineffective
Condition 2	16.71	13.44	3.13	9	14%	ineffective
Phase 1	16.00	1.41	2.00	9	100%	highly
Phase 2	3.00	1.41	-2.00	-13	0%	ineffective
Phase 3	20.00	n/a	n/a	18	100%	highly
Phase 4	29.50	19.09	27.00	-4	50%	questionably

Table 29

Self-Talk Utterances for Student 4 across Phases

Phase	Mean	SD	Slope	Level	PND	Effectiveness
Baseline	0.33	0.58	-0.50	n/a	n/a	n/a
Condition 1	4.75	6.45	0.88	0	50%	questionable
Phase 1	0.00	0.00	0.00	0	0%	ineffective
Phase 2	2.50	3.54	5.00	0	50%	questionably
Phase 3	12.50	9.19	-13.00	14	100%	highly
Phase 4	4.00	4.24	-6.00	1	50%	questionably
Condition 2	4.00	3.32	0.03	0	0%	ineffective
Phase 1	2.00	1.41	2.00	0	0%	ineffective
Phase 2	5.00	1.41	2.00	1	100%	highly
Phase 3	10.00	n/a	n/a	4	100%	highly
Phase 4	2.00	2.83	-4.00	-6	0%	ineffective

Table 30

Self-Talk Utterances for Student 5 across Phases

Phase	Mean	SD	Slope	Level	PND	Effectiveness
Baseline	0.00	0.00	0.00	n/a	n/a	n/a
Condition 1	6.00	8.90	1.92	0	56%	questionably
Phase 1	2.50	3.54	5.00	0	50%	questionably
Phase 2	5.00	7.07	10.00	-5	50%	questionably
Phase 3	1.00	1.41	2.00	-10	0%	ineffective
Phase 4	12.33	13.65	13.50	-2	66%	moderate
Condition 2	5.20	5.93	-2.42	-19	0%	ineffective
Phase 1	11.00	4.24	6.00	-19	0%	ineffective
Phase 2	4.00	n/a	n/a	-10	0%	ineffective
Phase 3	0.00	0.00	0.00	-4	0%	ineffective
Phase 4	--	--	--	--	--	--

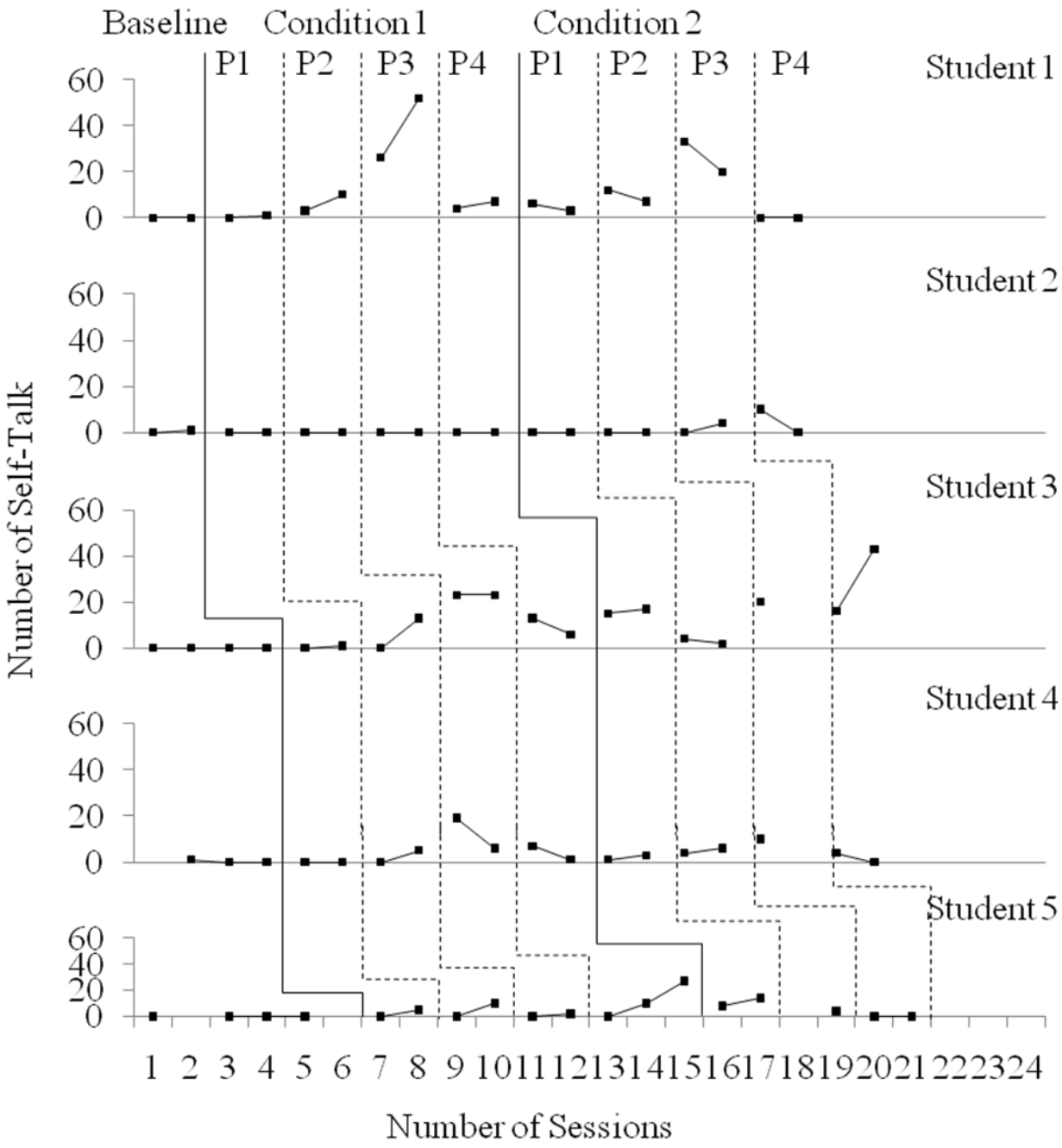


Figure 6. Number of Self-Talk Utterances across Participants and Conditions

Self-Regulation and Executive Functioning (Research Question 4)

Table 31 displays the T-score, percentile, and 90% confidence interval of the Global Executive Composite Scores across three time points for each student taken from the Behavior Rating Inventory of Executive Function, Teacher Form (BRIEF; Gioia, Isquith, Guy, & Kenworthy, 2000). Some time points were not available for Students 5 and 6. The Global Executive Composite Scores were expected to decrease across the course of the study, with the lowest score occurring at the third time point. Decreased scores indicate an improvement in the teacher's perception of self-regulation in the student. T-scores for Student 1 decreased across the course of the study (Time 1 = 106, Time 2 = 99, Time 3 = 92, RCI = -0.634, -0.792). These scores decreased each time beyond the 90% confidence interval. T-scores for Student 2 increased across the study (Time 1 = 74, Time 2 = 78, Time 3 = 81, RCI = 0.363, 0.339). Confidence intervals overlapped at each time point. For Student 3, T-scores decreased consistently (Time 1 = 90, Time 2 = 84, Time 3 = 80, RCI = -0.544, -0.452). Confidence intervals overlapped at each time point. T-scores increased over time for Student 4 (Time 1 = 59, Time 2 = 64, Time 3 = 64, RCI = 0.453, 0.000). Confidence intervals overlapped at each time point. T-scores remained the same for Student 5 (Time 1 = 95, Time 2 = 95, RCI = 0.000). Reliability of Change Indices for all students were insignificant at the $p < 0.05$ level meaning that the BRIEF scores between times were not significantly different from one another.

Table 31

Global Executive Composite Scores Across Three Time points

	Time 1			Time 2			Time 3			RCI	
Student	T-Score	%ile	90% CI	T-Score	%ile	90% CI	T-Score	%ile	90% CI	Time 1 - Time 2	Time 2 - Time 3
1	106	99	103-109	99	99	96-102	92	98	89-95	-0.634	-0.792
2	74	96	72-76	78	98	76-80	81	98	79-83	0.363	0.339
3	90	98	87-93	84	98	81-87	80	97	77-83	-0.544	-0.452
4	59	85	57-61	64	88	62-66	64	88	62-66	0.453	0.000
5	95	99	93-97	95	99	93-97	-	-	-	0.000	-
6	71	95	68-74	-	-	-	-	-	-	-	-

RCI = Reliability of Change Index

Secondary Analysis: Intervention Stories

Stories written as part of the session with guidance from the instructor or independently were analyzed. The secondary analysis focused on Total Words Written and Total Story Parts. Time was not controlled as strictly during this part of the session, like the WE-CBM, and may have taken between 5 and 15 minutes to write. The purpose of this analysis was to examine indicators of fluency and quality within a more natural writing context. Additionally, self-talk utterances were rarely observed during the WE-CBM and typically occurred during the intervention story planning and generation. Since the WE-CBM composed at the end of Session 1 was used when introducing the goal-setting and progress monitoring during the intervention, it was used as an indicator of baseline performance. Intervention stories began with Session 3.

Secondary Analysis: Total Words Written

Figure 7 illustrates writing productivity (Total Words Written) across baseline, Condition 1 and Condition 2 on intervention stories. Tables 32-37 compare baseline and intervention mean, trend, level, and the percentage of nonoverlapping data points for students 1-6.

Effectiveness of Condition 1 on Total Words Written: Comparison of Trends, Means, and PND

Trends. The observed trends in Condition 1 were positive and steep for Students 2, 3, 4, and 6 (ranging 6.69 to 14.26), positive and moderate for Student 5 (3.43), and negative and moderate for Student 1 (-3.86).

Means. In Condition 1, the mean Total Words Written increased above baseline for all students except Student 5. Student 1 increased from 36 to 71.83 TWW. Student 2 increased from 44 to 131.5 TWW. Student 3 increased from 46 to 105.5 TWW. Student 4 increased from 50 to 130.17 TWW. Student 6 increased from 66 to 83.67 TWW. Student 5 decreased from 129 to 68.67 TWW.

PND. The PND results suggest that the Condition 1 intervention was highly effective at improving Total Words Written above baseline for Students 1-4 and 6 (100%). Condition 1 was ineffective for Student 5 (0%).

Summary. Taken together the results suggest that the TWW improved in Condition 1 above baseline for Students 1-4 and 6.

Effectiveness of Condition 2 on Total Words Written: Comparison of Trends, Means, and PND

Trends. Observed trends in Condition 2 were negative and steep for Student 4 (-5.96) and Student 5 (-37), negative and moderate for Student 2 (-3.44), negative and small for Student 6 (-1.14), positive and steep for Student 1 (7.92), and positive and small for Student 3 (0.82). Trend magnitudes were higher for Student 1 and 5 in Condition 1 as compared to baseline, although Student 5 had a negative trend.

Means. The mean Total Words Written increased in Condition 2 above Condition 1 for Students 3, 5, and 6. Student 3 increased from 105.5 to 109.38 TWW. Student 5 increased from 68.87 to 77.5 TWW. Student 6 increased from 83.67 to 97.14 TWW.

PND. The PND results suggest that the Condition 2 intervention was ineffective for all students at improving Total Words Written above Condition 1 (0-43%).

Summary. Taken together, the results indicate that while the intervention increased the mean Total Words Written in Condition 2 for half of the students, too few data points were greater than baseline.

Between-Series Comparisons of Total Words Written

In comparing intervention effects between students, comparisons were made between pairs to look for variability between students at the same time points, between pairs at Baseline and Condition 1 Phase 1, and between pairs at Condition 1 Phase 4 and Condition 2 Phase 1.

Comparing within pairs. Comparisons were made within pairs to examine variability within a pair of students participating in the intervention at the same time point. Student 1 and Student 2 were compared in Condition 1 and results featured means higher than baseline for both students. Trend directions differed between the students. In Condition 2, both students decreased the overall mean. Results differed in terms of direction. Low PND suggest that Condition 2 was ineffective compared to Condition 1.

Student 3 and Student 4 were compared in Condition 1 and results indicate that both students increased the mean above baseline. Trends were positive with a high magnitude. In Condition 2, both students increased the mean compared to Condition 1. Trends were positive for both students but differed in magnitude. Low PND suggest that Condition 2 was ineffective compared to Condition 1.

Student 5 and Student 6 differed in how the means changed in Condition 1 following baseline. Only Student 6 increased the mean above baseline. Trends tended to be high and positive. Both students increased the mean of Condition 2 compared to Condition 1. Trends were negative but differed in magnitude. Low PND suggests the intervention in Condition 2 was ineffective compared to Condition 1 for the students.

Comparing Baseline and Condition 1 between pairs. Students 1 & 2 (Condition 1 Phase 2) and Students 3 & 4 (baseline/Phase 1) were compared. Students 1 & 2 had higher means than the baseline pair. Students 3 & 4 (Condition 1 Phase 2) and Students 5 & 6 (baseline/Phase 1) were compared. Means for Students 3 & 4 were higher than Student 6 only. Three students wrote more words in Condition 1 Phase 2 than baseline.

Comparing Condition 1 and Condition 2 between pairs. Students 1 & 2 (Condition 2 Phase 1) and Students 3 & 4 (Condition 1 Phase 4) were compared. Students 3 & 4 had larger

means than Students 1 & 2. Students 1, 2, and 4 had steep trends. Student 3 had the highest trend magnitude. While students tended to have moderate or high trends, total words written did not appear to increase in Condition 2 over Condition 1.

Students 3 & 4 (Condition 2 Phase 1) and Students 5 & 6 (Condition 1 Phase 4) were compared. Students 3 & 4 had higher and positive trend magnitudes. Means differed within pairs, making a between pairs comparison challenging.

Summary

The secondary analysis sought to examine whether Total Words Written on the intervention stories increased across two conditions, above observed performance during baseline. I expected to find positive intervention effects replicated across students. One analysis involved the comparison of Condition 1 effects to baseline at the individual level. All students except Student 5 wrote more words during Condition 1 than at their own baseline. These students also had PND results that suggested this condition was highly effective. Trends were positive and steep for Students 2, 3, 4, and 6. A second analysis was conducted within a pair of students. Students 1-4 performed similarly within their pairs. Students 5 and 6 differed in performance. A third analysis occurred between students at different stages in the study. Students 1 & 2 wrote more words in Condition 1 Phase 1 than Students 3 & 4 at baseline. Students 3 & 4 wrote more words in Condition 1 Phase 1 than Student 6 at baseline. In sum, it appears that Total Words Written increased in Condition 1 over baseline for nearly all of the students.

Condition 2 effects differed compared to Condition 1. At the individual level, only Students 3, 5 and 6 had means higher in Condition 2 following Condition 1. Students 1 and 3 had positive trends in Condition 2 but only Student 1 had a steeper trend in Condition. PND results show Condition 2 was ineffective for all students. When comparing students in one phase to

students in another phase, results show that Students 1 & 2 did not have higher means in Condition 2 Phase 1 than Students 3 & 4 at Condition 1 Phase 4. While Students 1-3 had positive trends, Student 3 had a higher trend than Students 1 and 2. Student 4 had a higher mean at Condition 2 Phase 1 than Students 5 & 6 at Condition 1 Phase 4. While Students 3-5 had positive trends, Students 3 & 4 had higher trends than Students 5 and 6. In sum, evidence suggests very limited effect for Condition 2. Few students increased the mean over Condition 1 Phase 4.

Table 32

Intervention Story Total Words Written for Student 1

Phase	Mean	SD	Slope	Level	PND	Effectiveness
baseline/Phase 1	36.00	n/a	n/a	n/a	n/a	n/a
Condition 1	71.83	15.73	-3.86	53	100%	highly
Phase 2	79.00	14.14	-20.00	53	100%	highly
Phase 3	77.00	5.66	8.00	4	0%	ineffective
Phase 4	59.50	23.33	33.00	-38	0%	ineffective
Condition 2	65.38	25.54	7.92	-42	25%	ineffective
Phase 1	44.00	14.14	20.00	-42	0%	ineffective
Phase 2	63.00	15.56	-22.00	20	50%	questionably
Phase 3	53.00	4.24	-6.00	4	0%	ineffective
Phase 4	101.50	16.26	23.00	40	100%	highly

Table 33

Intervention Story Total Words Written for Student 2

Phase	Mean	SD	Slope	Level	PND	Effectiveness
baseline/Phase 1	44.00	n/a	n/a	n/a	n/a	n/a
Condition 1	131.50	41.74	14.26	18	100%	highly
Phase 2	87.50	36.06	51.00	22	100%	highly
Phase 3	165.50	27.58	39.00	33	100%	highly
Phase 4	141.50	16.26	-23.00	-32	0%	ineffective
Condition 2	90.38	40.98	-3.44	-66	0%	ineffective
Phase 1	77.00	18.38	26.00	-66	0%	ineffective
Phase 2	139.00	73.08	6.00	46	100%	highly
Phase 3	88.50	57.28	81.00	-94	0%	ineffective
Phase 4	57.00	28.28	40.00	-92	0%	ineffective

Table 34

Intervention Story Total Words Written for Student 3

Phase	Mean	SD	Slope	Level	PND	Effectiveness
baseline/Phase 1	46.00	n/a	n/a	n/a	n/a	n/a
Condition 1	105.50	30.89	9.69	37	100%	highly
Phase 2	97.50	20.51	29.00	37	100%	highly
Phase 3	97.50	34.65	49.00	-39	50%	questionably
Phase 4	121.50	48.79	69.00	-35	50%	questionably
Condition 2	109.38	35.45	0.82	-91	13%	ineffective
Phase 1	82.00	24.04	34.00	-91	0%	ineffective
Phase 2	160.50	9.19	13.00	55	100%	highly
Phase 3	92.50	7.78	11.00	-69	0%	ineffective
Phase 4	102.50	26.16	37.00	-14	50%	questionably

Table 35

Intervention Story Total Words Written for Student 4

Phase	Mean	SD	Slope	Level	PND	Effectiveness
baseline/Phase 1	50.00	n/a	n/a	n/a	n/a	n/a
Condition 1	130.17	34.53	13.86	42	100%	highly
Phase 2	89.50	3.54	-5.00	42	100%	highly
Phase 3	153.50	28.99	41.00	46	100%	highly
Phase 4	147.50	10.61	-15.00	-19	0%	ineffective
Condition 2	119.88	23.70	-5.96	3	0%	ineffective
Phase 1	152.50	13.44	19.00	3	50%	questionably
Phase 2	117.50	3.54	5.00	-47	0%	ineffective
Phase 3	93.50	12.02	17.00	-35	0%	ineffective
Phase 4	116.00	5.66	-8.00	18	100%	highly

Table 36

Intervention Story Total Words Written for Student 5

Phase	Mean	SD	Slope	Level	PND	Effectiveness
baseline/Phase 1	129.00	n/a	n/a	n/a	n/a	n/a
Condition 1	68.67	29.08	3.43	-44	0%	ineffective
Phase 2	62.50	31.82	-45.00	-44	0%	ineffective
Phase 3	54.00	42.43	-60.00	44	0%	ineffective
Phase 4	89.50	6.36	9.00	61	100%	highly
Condition 2	77.50	26.16	-37.00	2	0%	ineffective
Phase 1	96.00	n/a	n/a	2	100%	highly
Phase 2	59.00	n/a	n/a	-37	0%	ineffective
Phase 3	-	-	-	-	-	-
Phase 4	-	-	-	-	-	-

Table 37

Intervention Story Total Words Written for Student 6

Phase	Mean	SD	Slope	Level	PND	Effectiveness
baseline/Phase 1	66.00	n/a	n/a	n/a	n/a	n/a
Condition 1	83.67	13.78	6.69	6	100%	highly
Phase 2	70.00	2.83	-4.00	6	100%	highly
Phase 3	82.50	10.61	15.00	7	100%	highly
Phase 4	98.50	3.54	-5.00	11	100%	highly
Condition 2	97.14	7.97	-1.14	6	43%	ineffective
Phase 1	95.50	9.19	-13.00	6	50%	questionably
Phase 2	106.50	2.12	-3.00	18	100%	highly
Phase 3	88.00	n/a	n/a	-17	0%	ineffective
Phase 4	94.00	2.83	4.00	4	100%	highly

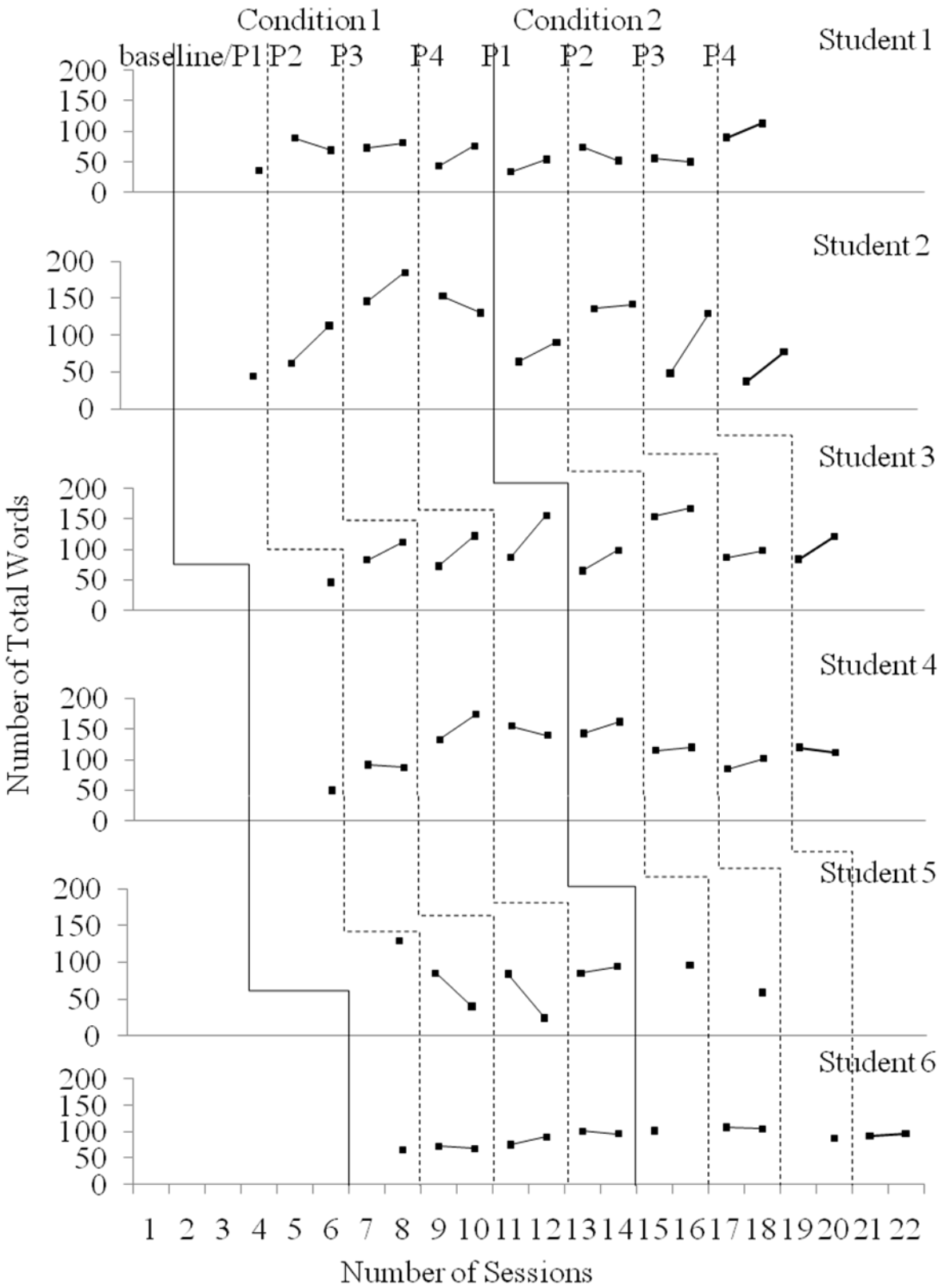


Figure 7. Total Words Written on Intervention Stories across Participants and Conditions

Secondary Analysis: Total Story Parts

Figure 8 illustrates a measure of writing quality (Total Story Parts) across baseline, Condition 1 and Condition 2 on intervention stories. Tables 38-43 compare baseline and intervention mean, trend, level, and the percentage of nonoverlapping data points for students 1-6. The data point in Session 2 of Phase 1 was considered a baseline measure of story parts. Students could write up to seven story parts.

Effectiveness of Condition 1 on Total Story Parts: Comparison of Trends, Means, and PND

Trends. Observed trends in Condition 1 were flat at zero for Students 1 and 2. These students achieved the maximum story parts by the third session (i.e., the first data point of Condition 1) and maintained the story parts through the condition. Students 3, 5, and 6 had nearly flat but positive trends (0.09 to 0.54). Student 4 had a negative but nearly flat trend (-0.14).

Means. All students, except Student 5, increased the mean Total Story Parts in Condition 1 above baseline. Student 1 increased from 6 to 7 parts. Student 2 increased from 5 to 7 parts. Student 3 increased from 3.5 to 6.83 parts. Student 4 increased from 3 to 6.83 parts. Student 6 increased from 4 to 5.83 parts. Student 5 decreased from 7 to 6.5 parts.

PND. The PND results indicate that the intervention in Condition 1 was highly effective for all students, except for Student 5 (83-100%).

Summary. The data suggest that Total Story Parts increased in Condition 1 above baseline for five of the students.

Effectiveness of Condition 2 on Total Story Parts: Comparison of Trends, Means, and PND

Trends. Observed trends were flat at zero for Students 1, 2, 4, and 5. Students 3 and 6 had positive but nearly flat trends (0.06 and 0.07 respectively). These trends indicate the student's ability to maintain the maximum story parts.

Means. Students 1, 2, 4, and 5 had means of seven story parts in Condition 2. Students 3 and 6 had means close to seven story parts and these means were greater than Condition 1.

PND. While using standard guidelines to interpret PND would suggest the intervention was not effective in improving Condition 2 means above Condition 1 means, it was not possible to exceed seven story parts. Hence the results were interpreted as whether or not the student successfully maintaining the growth from Condition 1. All students were able to achieve and maintain seven story parts by the end of the condition.

Summary. Taken together, the results suggest that Total Story Parts increased and maintained in Condition 2 for all students.

Between-Series Comparisons of Total Story Parts

In comparing intervention effects between students, comparisons were made between pairs to look for variability between students at the same time points, between pairs at Baseline and Condition 1 Phase 1, and between pairs at Condition 1 Phase 4 and Condition 2 Phase 1.

Comparing within pairs. Comparisons were made within pairs to examine variability within a pair of students participating in the intervention at the same time point. Students 1 & 2 performed similarly. Each achieved and maintained the maximum story parts allowed immediately following baseline. Condition 1 was highly effective compared to baseline. Condition 2 was effective in maintaining the growth.

Students 3 & 4 increased the mean story parts following baseline. Overall, Condition 1 was highly effective compared to baseline for the students. Condition 2 was effective in maintaining the growth (except Phase 1 for Student 3).

Students 5 & 6 differed in that Student 5 wrote seven story parts in baseline and in all other phases except Phase 2 of Condition 1. Student 6 wrote seven story parts in Phase 4 of Condition 1 and Phases 2-4 of Condition 2.

Comparing Baseline and Condition 1 between pairs. Students 1 & 2 (Condition 1 Phase 2) and Students 3 & 4 (baseline) were compared. Students 1 & 2 wrote more story parts (7) compared to baseline students. Students 3 & 4 (Condition 1 Phase 2) and Students 5 & 6 (baseline) were compared. Students 3 & 4 wrote more story parts than Student 6. In summary, an increase above baseline in Total Story Parts observed in Condition 1 was replicated with multiple students, suggesting that Condition 1 was effective.

Comparing Condition 1 and Condition 2 between pairs. Students 1 & 2 (Condition 2 Phase 1) and Students 3 & 4 (Condition 1 Phase 4) were compared. Only Students 1, 2, and 4 wrote seven story parts. Students 3 & 4 (Condition 2 Phase 1) and Students 5 & 6 (Condition 1 Phase 4) were compared. Only Students 4, 5 and 6 wrote seven story parts. In summary, Condition 2 maintained the maximum total story parts for most of the students, suggesting that the condition was effective.

Summary

The secondary analysis sought to examine whether Total Story Parts of the intervention stories increased across two conditions, above observed performance during baseline. I expected to find positive intervention effects replicated across students. One analysis involved the comparison of Condition 1 effects to baseline at the individual level. Students 1, 2, 3, 4, and 6

increased the total story parts in the intervention stories above their own baseline in Condition 1. A second analysis was conducted within a pair of students. Students in pairs 1 & 2 and 3 & 4 performed similarly across the study. A third analysis occurred between students at different stages in the study. When comparing Students 1 and 2 at Condition 1 Phase 1 to Students 3 and 4 at baseline, Students 1 and 2 wrote more total story parts. When comparing Students 3 and 4 at Condition 1 Phase 1 to Students 5 and 6 at baseline, Students 3 and 4 wrote more total story parts than Student 6 but not Student 5. In summary, the evidence supports a positive effect in increasing Total Story Parts for multiple students in Condition 1.

For Condition 2 at the individual level, Students 1, 2, 4, and 5 maintained the maximum total story parts in Condition 2. Students 3 and 6 had slight decreases in Phase 1 but returned to the maximum Total Story Parts following Phase 1. In summary, the evidence supports a positive effect in Condition 2 in maintaining the maximum Total Story Parts allowable for multiple students across the condition.

Table 38

Intervention Story Total Story Parts for Student 1

Phase	Mean	SD	Slope	Level	PND	Effectiveness
baseline/Phase 1	6.00	n/a	n/a	n/a	n/a	n/a
Condition 1	7.00	0.00	0.00	1.00	100%	highly
Phase 2	7.00	0.00	0.00	1.00	100%	highly
Phase 3	7.00	0.00	0.00	0.00	0%	ineffective
Phase 4	7.00	0.00	0.00	0.00	0%	ineffective
Condition 2	7.00	0.00	0.00	0.00	0%	ineffective
Phase 1	7.00	0.00	0.00	0.00	0%	ineffective
Phase 2	7.00	0.00	0.00	0.00	0%	ineffective
Phase 3	7.00	0.00	0.00	0.00	0%	ineffective
Phase 4	7.00	0.00	0.00	0.00	0%	ineffective

Table 39

Intervention Story Total Story Parts for Student 2

Phase	Mean	SD	Slope	Level	PND	Effectiveness
baseline/Phase 1	5.00	n/a	n/a	n/a	n/a	n/a
Condition 1	7.00	0.00	0.00	2.00	100%	highly
Phase 2	7.00	0.00	0.00	2.00	100%	highly
Phase 3	7.00	0.00	0.00	0.00	0%	ineffective
Phase 4	7.00	0.00	0.00	0.00	0%	ineffective
Condition 2	7.00	0.00	0.00	0.00	0%	ineffective
Phase 1	7.00	0.00	0.00	0.00	0%	ineffective
Phase 2	7.00	0.00	0.00	0.00	0%	ineffective
Phase 3	7.00	0.00	0.00	0.00	0%	ineffective
Phase 4	7.00	0.00	0.00	0.00	0%	ineffective

Table 40

Intervention Story Total Story Parts for Student 3

Phase	Mean	SD	Slope	Level	PND	Effectiveness
baseline/Phase 1	3.50	n/a	n/a	n/a	n/a	n/a
Condition 1	6.83	0.41	0.09	3.50	100%	highly
Phase 2	6.50	0.71	-1.00	3.50	100%	highly
Phase 3	7.00	0.00	0.00	1.00	0%	ineffective
Phase 4	7.00	0.00	0.00	0.00	0%	ineffective
Condition 2	6.88	0.35	0.06	0.00	0%	ineffective
Phase 1	6.50	0.71	-1.00	0.00	0%	ineffective
Phase 2	7.00	0.00	0.00	1.00	0%	ineffective
Phase 3	7.00	0.00	0.00	0.00	0%	ineffective
Phase 4	7.00	0.00	0.00	0.00	0%	ineffective

Table 41

Intervention Story Total Story Parts for Student 4

Phase	Mean	SD	Slope	Level	PND	Effectiveness
baseline/Phase 1	3.00	n/a	n/a	n/a	n/a	n/a
Condition 1	6.83	0.41	-0.14	4.00	100%	highly
Phase 2	7.00	0.00	0.00	4.00	100%	highly
Phase 3	7.00	0.00	0.00	0.00	0%	ineffective
Phase 4	6.50	0.71	-1.00	0.00	0%	ineffective
Condition 2	7.00	0.00	0.00	1.00	0%	ineffective
Phase 1	7.00	0.00	0.00	1.00	0%	ineffective
Phase 2	7.00	0.00	0.00	0.00	0%	ineffective
Phase 3	7.00	0.00	0.00	0.00	0%	ineffective
Phase 4	7.00	0.00	0.00	0.00	0%	ineffective

Table 42

Intervention Story Total Story Parts for Student 5

Phase	Mean	SD	Slope	Level	PND	Effectiveness
baseline/Phase 1	7.00	n/a	n/a	n/a	n/a	n/a
Condition 1	6.50	1.22	0.26	0.00	0%	ineffective
Phase 2	5.50	2.12	-3.00	0.00	0%	ineffective
Phase 3	7.00	0.00	0.00	3.00	0%	ineffective
Phase 4	7.00	0.00	0.00	0.00	0%	ineffective
Condition 2	7.00	0.00	0.00	0.00	0%	ineffective
Phase 1	7.00	n/a	n/a	0.00	0%	ineffective
Phase 2	7.00	n/a	n/a	0.00	0%	ineffective
Phase 3	-	-	-	-	-	-
Phase 4	-	-	-	-	-	-

Table 43

Intervention Story Total Story Parts for Student 6

Phase	Mean	SD	Slope	Level	PND	Effectiveness
baseline/Phase 1	4.00	n/a	n/a	n/a	n/a	n/a
Condition 1	5.83	1.17	0.54	1.00	83%	highly
Phase 2	4.50	0.71	-1.00	1.00	50%	questionably
Phase 3	6.00	0.00	0.00	2.00	100%	highly
Phase 4	7.00	0.00	0.00	1.00	100%	highly
Condition 2	6.86	0.38	0.07	0.00	0%	ineffective
Phase 1	6.50	0.71	-1.00	0.00	0%	ineffective
Phase 2	7.00	0.00	0.00	1.00	0%	ineffective
Phase 3	7.00	n/a	n/a	0.00	0%	ineffective
Phase 4	7.00	0.00	0.00	0.00	0%	ineffective

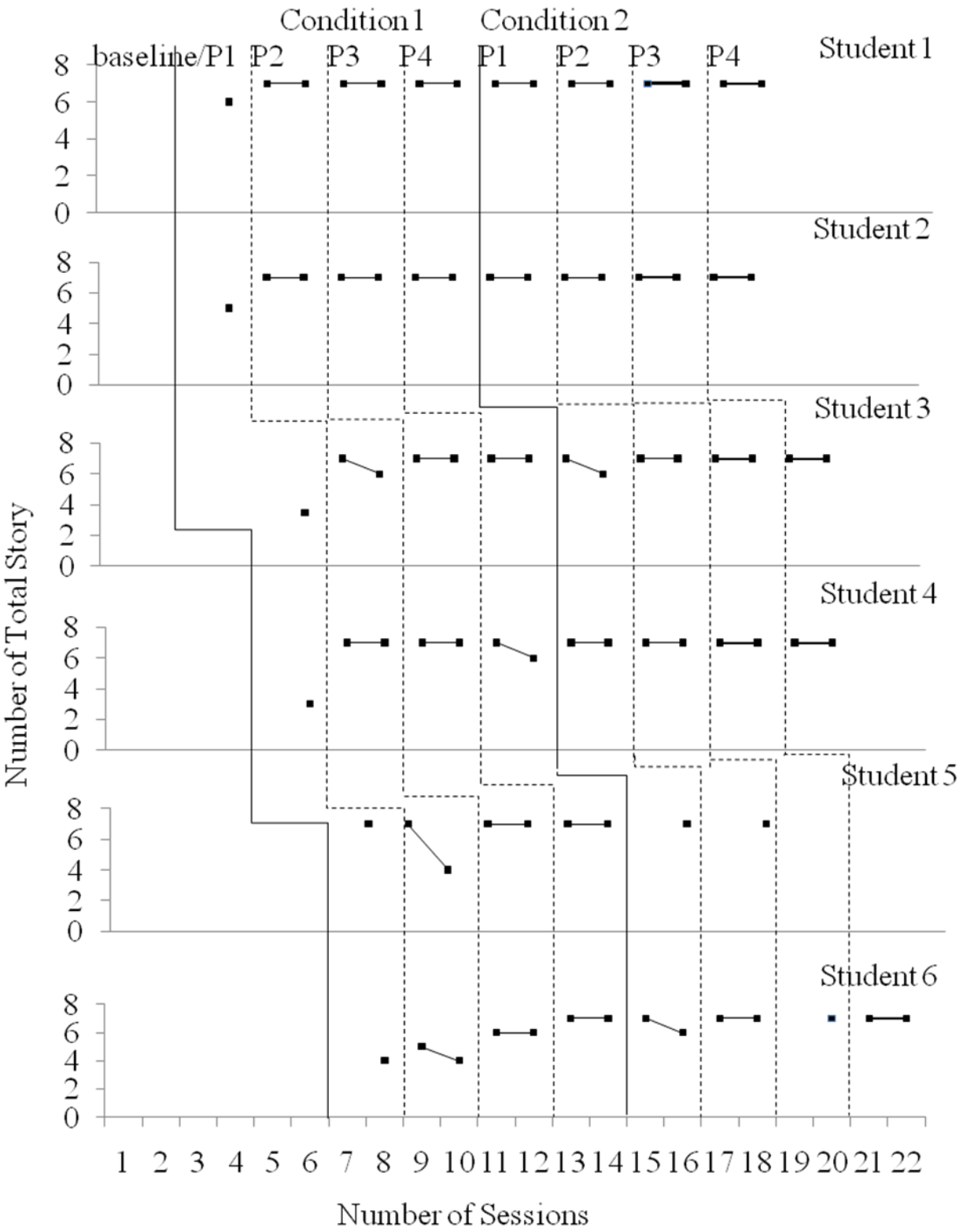


Figure 8. Number of Story Parts on Intervention Stories across Participants and Conditions

Summary of Results

Writing Productivity: Total Words Written

The study examined whether Condition 1 and Condition 2 improved Total Words Written (TWW). Specifically, I expected TWW to improve above Baseline, with a positive and steeper trend, and a PND of at least 50%. Condition 1 was an effective intervention to increase TWW over Baseline, with a positive trend, and a PND over 50% for four students. A steeper trend was not observed for most students. Additionally, I expected TWW to improve above Condition 2, with a positive and steeper trend, and a PND of at least 50%. Condition 2 did not appear to be more effective at increasing TWW compared to Condition 1, lead to positive trends, or a PND higher than 50%. Steeper trends were observed in Condition 2 but these trends were negative.

Writing Fluency: Correct Word Sequences

The study examined whether Condition 1 and Condition 2 improved Correct Word Sequences (CWS). Specifically, I expected CWS to improve above Baseline, with a positive and steeper trend, and a PND of at least 50%. Evidence within and across students was limited. Only Student 4 demonstrated an increased mean, a positive and steep trend, and a PND over 50%. Some students exhibited positive results in fewer areas: 3 students had positive trends and 3 students had higher means in Condition 1. Additionally, I expected CWS to improve above Condition 2, with a positive and steeper trend, and a PND of at least 50%. Condition 2 results were mixed. Only one student had a positive and steeper trend with an increased mean in Condition 2. Two other students had shown an increased mean.

Writing Quality: Scale for Scoring the Inclusion and Quality of the Parts of a Story (Harris & Graham, 1996)

The study examined whether Condition 1 and Condition 2 improved the mean quality points as measured by the Scale for Scoring the Inclusion and Quality of the Parts of a Story (Harris & Graham, 1996). Specifically, I expected writing quality points to improve above Baseline, with a positive and steeper trend, and a PND of at least 50%. There was some evidence to support Condition 1 effectiveness to improve writing quality points but the effects may not have sustained across the condition. Most students (4 out of 6) improved means but very few students had positive and steeper trends with a PND above 50%. Additionally, I expected writing quality points to improve above Condition 2, with a positive and steeper trend, and a PND of at least 50%. Many students wrote higher quality stories at the beginning of Condition 2 but this effect was not sustained across the condition. Most students had negative trends. Students did not have a PND higher than 50%. Condition 2 did not appear effective at improving writing quality.

Writing Quality: Number of Story Parts

The study examined whether Condition 1 and Condition 2 increased the number of story parts. Specifically, I expected students would increase the number of story parts up to all seven necessary parts of a narrative story in Condition 1. The evidence shows that some students increased the number of story parts in Condition 1. However, students did not achieve a mean of seven story parts. Trends were nearly flat and negative suggesting that the students did not show much change during the intervention. Additionally, I expected students to increase or maintain the maximum story parts allowed in Condition 2. Some students increased the mean story parts above Condition 1 but students did not achieve a mean of seven story parts. Trends were nearly flat and negative for most students. It appeared that Condition 2 maintained the students' performance following Condition 1.

Writing Quality: Teacher Interview/Checklist

The study examined whether a student's demonstration of various writing skills in the classroom, as reported by their teacher, would improve after each condition. Students did not make the same gains as one another. Teachers perceived some skills to improve and some to decrease after each condition.

Self-talk

The study examined whether Condition 1 and Condition 2 improved self-talk utterances. Specifically, I expected self-talk utterances to improve above Baseline, with a positive and steeper trend, and a PND of at least 50%. Evidence suggests that Condition 1 was effective at increasing self-talk utterances above Baseline, with positive, steeper trends and a PND higher than 50% for four of the five students. Additionally, I expected self-talk utterances to improve above Condition 2, with a positive and steeper trend, and a PND of at least 50%. Condition 2 was ineffective at increasing self-talk utterances in comparison to Condition 1. Few students increased the mean, had a positive and steep trend, or had a PND greater than 50%.

Self-Regulation and Executive Functioning

The study examined whether a student's self-regulation and executive functioning skills improved after Condition 1, based on the teacher's report of the BRIEF. T-scores of the Global Executive Composite decreased for Student 1 and Student 3, though decreases were not statistically significant. T-scores increased for Student 2 and Student 4, though increases were not statistically significant. T-scores remained the same for Student 5. Additionally, I expected greater improvement would be apparent after Condition 2. Students 1 and 3 continued to decrease, Students 2 and 4 continued to increase, and Student 5 remained the same.

Secondary Analysis: Total Words Written

The secondary analysis examined whether Condition 1 and Condition 2 increased Total Words Written on the intervention stories. Specifically, I expected Total Words Written to improve above Baseline, with a positive and steeper trend, and a PND of at least 50%. Condition 1 was an effective intervention to increase the mean, lead to positive trends, and exhibit a PND greater than 50% for nearly all of the students. Additionally, I expected Total Words Written to improve above Condition 2, with a positive and steeper trend, and a PND of at least 50%. Evidence suggests very limited effect for Condition 2. Few students increased the mean and even fewer had positive trends or a PND greater than 50%.

Secondary Analysis: Total Story Parts

The secondary analysis examined whether Condition 1 and Condition 2 increased Total Story Parts on the intervention stories. Specifically, I expected students would increase the number of story parts up to all seven necessary parts of a narrative story. The evidence supports a positive effect in increasing Total Story Parts for multiple students in Condition 1. Additionally, I expected Total Story Parts to improve and maintain the seven story parts in Condition 2. The intervention in Condition 2 was effective in maintaining the maximum Total Story Parts allowable for multiple students across the condition.

Post-hoc analysis: Examining self-talk and writing together

While the research questions did not directly focus at the intersection between self-talk or self-regulation improvement and writing skill improvement, post-hoc analysis found that a few students that improved in self-talk or self-regulation also had improvements in some areas of writing. First of all, students that improved in teacher perceptions of self-regulation on the BRIEF were examined for improvements in writing. Student 1 improved in the BRIEF scores at the second and third time point, though the difference was not significant, as well as in Total

Words Written on the WE-CBM and intervention story after Condition 1, self-talk utterances after Condition 1, and Total Story Parts in the intervention story after Condition 1 and maintaining effect in Condition 2. Student 3 improved in the BRIEF scores at the second and third time points, though the difference was not significant, as well as in the Total Words Written on the WE-CBM and intervention story after Condition 1, Correct Word Sequences after Condition 1, writing quality points after Condition 1, Total Story Parts on the intervention story after Condition 1 and maintained during Condition 2, and self-talk utterances after Condition 1. Secondly, students who had some improvements in self-talk but not on the BRIEF were examined. Student 4 and 5 demonstrated questionable improvement in self-talk after Condition 1 as defined by the percentage of nonoverlapping data. Student 4 also improved Total Words Written on the WE-CBM and intervention story after Condition 1 and improved Total Story Parts on the intervention story after Condition 1 and maintained that effect in Condition 2. Student 5 only improved additionally in the Total Story Parts on the intervention story. This student wrote seven story parts in all phases of each condition except for during Phase 2 of Condition 1. In summary, a few of the students that exhibited improvements in self-talk or self-regulation also improved in some areas of writing.

Chapter 5 Discussion

The purpose of this study was to examine the effect of two interventions, Self-Talk Internalization Strategy situated within a modified SRSD instructional model (Condition 2) and a planning and drafting strategy taught using a modified version of the Self-Regulated Strategy Development instructional model (Condition 1), on writing and self-talk for students with attention difficulties. A multiple-baseline single-case design across six students in fourth and fifth grade was used to investigate these interventions. This chapter discusses the major findings, potential explanations of the findings, study limitations, implications for practice, and suggestions for future studies.

Major Findings

This study had four main research questions, with some questions subdivided to investigate specific components of the dependent variable. The major dependent variables of interest included writing productivity and fluency, narrative writing quality, self-talk, and self-regulation.

Research question 1 writing fluency: Not supported

It was hypothesized that Condition 2 would improve Total Words Written, an indicator of productivity, for elementary students with attentional difficulties more than Condition 1, as measured using a curriculum-based measure of written expression. The Condition 1 improved Total Words Written above Baseline for four of the students. Condition 2 did not effectively improve Total Words Written above Condition 1.

Additionally, it was hypothesized that Condition 2 would improve Correct Word Sequences, an indicator of fluency, for elementary students with attentional difficulties more than Condition 1, as measured using a curriculum-based measure of written expression. Results

for this hypothesis were mixed. While some students demonstrated positive effects in Condition 1, only one student was able to demonstrate positive effects across multiple variables. Condition 2 exhibited some positive effects for a few students. The results of this study differ from the many studies that reported improvement in the number of words written and story quality. Reid and Lienemann (2006), for example, reported significant improvements in these two variables in a single-case design study with students with ADHD. It is possible that the difference between this study and previous studies is related to the differences in writing measures. While this study examined a fluency measure, other studies looked at improvements made in the stories written during the intervention in which there was more time to write. It is also possible that students experienced a decrease in instructional support prior to actually being ready to demonstrate mastery of the writing strategy. These hypotheses are further explored later in this chapter.

Research question 2 writing quality: Not supported

It was hypothesized that Condition 2 would improve writing quality for elementary students with attentional difficulties more than Condition 1, as measured using a curriculum-based measure of written expression and the Scale for Scoring the Inclusion and Quality of the Parts of a Story (Harris & Graham, 1996). There was some evidence to support that Condition 1 was somewhat effective in improving writing quality means but the effects may not have sustained across the condition given the negative trends. Many students wrote higher quality stories at the beginning of Condition 2 but this effect was not sustained across the condition and may not have effectively at improved writing quality.

Additionally, it was hypothesized that narrative writing quality (number of story parts) would improve for elementary students with attentional difficulties participating in Condition 2 more than Condition 1, as measured using a curriculum-based measure of written expression.

Results show some positive effects but little effect at improving story parts for all students in both conditions. Students did not write a mean of seven story parts in either condition.

To gain a social validity perspective, it was hypothesized that Condition 2 would improve writing quality for elementary students with attentional difficulties more than Condition 1, as reported by the general education teacher using the Teacher Interview/Checklist of Written Expression. Students did not make the same gains as one another. Teachers perceived some skills to improve and some to decrease after each condition. Results from this study differ than results reported from other studies. For example, Glaser and Brunstein (2007) found improvements in writing quality as measured by the Harris and Graham (1996) writing rubric when self-regulation components of the intervention were present in addition to the writing mnemonic instruction. As previously hypothesized with the Total Words Written, the differences between the studies may be attributed to the type of measure used. It is also possible that students experienced a decrease in instructional support prior to actually being ready to demonstrate mastery of the writing strategy. These hypotheses are further explored later in the chapter.

Research question 3 self-talk: Not supported

It was hypothesized that the number of self-talk utterances (Berk, 1986) would increase for elementary students with attentional difficulties after participating in Condition 2 more than Condition 1. Utterances were analyzed on two levels: private speech utterances and task-relevant external speech utterances. Results indicated that Condition 1 was effective at increasing self-talk utterances above Baseline for three of the five students, given increased means, positive trends, and PND results. Condition 2 had minimal positive effects and was considered ineffective at increasing self-talk utterances in comparison to Condition 1. Previous studies have not examined self-talk utterances as an isolated factor during the SRSD implementation; however,

some studies have examined the self-regulation components of SRSD and the value added to the overall intervention. One such study conducted by Graham and Harris (1989) found that even when the explicit components of self-regulation were removed from the intervention, positive writing effects were still apparent. They hypothesized that there were components of SRSD that implicitly modeled self-regulation which made participants perform nearly as well as the full SRSD participants. It is possible that while self-talk was not explicitly taught during the first condition, participants picked up on the implicit modeling and demonstrated that skill in the first condition. A decline in self-talk utterances in Condition 2 may be attributed to an unnatural feeling students may have had when self-talk was taught explicitly. These hypotheses are further explored later in the chapter.

Research question 4 self-regulation: Not supported

It was hypothesized that Condition 2 would improve executive functioning/self-regulation for elementary students with attentional difficulties more than Condition 1, as measured using the Behavior Rating Inventory of Executive Function (BRIEF). T-scores of the Global Executive Composite decreased for Student 1 and Student 3 after each time point. T-scores increased for Student 2 and Student 4 at each time point. T-scores remained the same for Student 5. Changes in T-scores were statistically insignificant for all students. Previous studies have not examined self-regulation outcome measures, specifically using the BRIEF, however, some studies commented on the effects of SRSD on self-regulating behavior of the participants. For example, Graham, Harris and MacArthur (1993) reported that participants in the SRSD intervention improved self-regulating behaviors such as goal setting and self-monitoring. This study found perceived improvements in self-regulating behavior, as measured by the BRIEF, for two students. The literature supports the positive changes in self-regulation for these two

students. However, BRIEF scores actually declined in the opposite direction for two other students, differing from previous studies examining self-regulation. It is hypothesized that self-regulation may not have improved for these students because of cognitive overload. These students also did not show many positive gains in writing skills. It is possible that the students were overwhelmed by the pace of the instruction or the amount covered in one session, contributing to limited gains across the board. This hypothesis is further explored later in the chapter.

Secondary analysis

Secondary analysis was conducted in order to examine indicators of productivity and quality within a more natural writing context. Time was not as controlled during the intervention stories, compared to the WE-CBM, as students could take 5-15 minutes to write their story. However, self-talk utterances were rarely observed during the time in which students wrote the WE-CBM and typically occurred during the intervention story planning and generation. The secondary analysis attempted to examine how writing indicators changed during the same time that the self-talk was observed.

Secondary analysis Total Words Written: No support for Condition 2. The secondary analysis examined whether Total Words Written on the intervention stories increased across two conditions, above observed performance during baseline. Condition 1 increased the Total Words Written over baseline for nearly all of the students. Evidence suggested limited effect for Condition 2. Previous studies have found significant improvements in total words written on stories composed during the intervention (Mason, Harris, & Graham, 2003; Graham, Harris, & MacArthur, 1993). Three hypotheses may explain the similarities and differences between this study and previous studies. For one, this study is similar to other studies in that a positive effect

occurred in Condition 1. It may be likely that the intervention stories used as outcome measures contributed to similar positive results. Secondly, as Graham and Harris (1989) suggested, it is possible that implicit self-talk modeling in Condition 1 contributed to the positive effects noted on the intervention stories. Self-talk utterances by the instructor or the student were not apparent during the WE-CBM. Thus positive effects occurred in Condition 1 on the intervention stories, not during the WE-CBMs, and aligned with previous studies reporting improvement in number of words written. Thirdly, this study differs from previous studies in that Condition 2 did not lead to further improvements. It is hypothesized that students did not improve in Condition 2 above Condition 1 due to cognitive overload or because students were shifting a focus on increasing words to improving quality, as indicated in the next section. These hypotheses are further explored later in the chapter.

Secondary analysis Total Story Parts: Support for Condition 2. The secondary analysis examined whether Total Story Parts on the intervention stories increased across two conditions, above observed performance during baseline. The evidence supports a positive effect in increasing Total Story Parts for multiple students in Condition 1. Condition 2 was effective in maintaining the maximum Total Story Parts allowable for multiple students across the condition. This finding is consistent with other studies that found significant improvements and sustained story parts on stories composed during the intervention (Mason, Harris, & Graham, 2003; Graham, Harris, & MacArthur, 1993). It is hypothesized that the results align with previous studies because these studies used intervention stories as outcome measures, rather than using WE-CBMs. This hypothesis is further explored later in the chapter. As far as why students were able to maintain positive results in Condition 2 for Total Story Parts but did not significantly

improve for Total Words Written, it is hypothesized that students focused more on quality than quantity of words throughout the study on the intervention stories.

Potential Explanations of Findings

This section highlights the expected outcomes, positive results observed in Condition 1, unexpected findings, and a discussion on how attention difficulties may have impacted the results. I expected to see positive growth in writing fluency, writing quality, and self-talk across the two conditions.

Expected outcomes in Condition 1

Condition 1 results show positive intervention effects for Total Words Written on the WE-CBM, self-talk utterances, Total Words Written on the intervention story, and Total Story Parts on the intervention story. A few students saw positive effects on the quality variables as measured by the WE-CBM and the BRIEF. These positive effects may be attributed to the effective components of the modified SRSD intervention. SRSD is an intervention that uses explicit instruction in the writing process, guided practice and modeling, self-regulatory strategies, and consideration of the student's unique skills and interests. Numerous studies have found SRSD to be highly effective for a range of students (Asaro-Saddler & Saddler, 2010; Danoff et al., 1993; De La Paz, 1999; De La Paz, 2001; Graham & Harris, 1989b; Graham et al., 2005; Graham et al., 2000; Graham & MacArthur, 1988; Graham et al., 1992; Harris & Graham, 1985; Harris & Graham, 1999; Lienemann et al., 2006; Mason et al., 2003; Saddler, 2006; Saddler & Asaro, 2007; Sexton et al., 1998). Additionally, it has been hypothesized that SRSD contains implicit self-regulating procedures that are present in the intervention even when a strategy like self-talk is removed in Condition 1 (Graham & Harris, 1989a). Given the research supporting its use, SRSD likely contributed to the growth seen in Condition 1.

While I expected greater growth to occur in Condition 2, the results show that growth did not occur. Two possible explanations are considered: 1) Condition 1 focused on writing and the addition of self-talk in Condition 2 overwhelmed students, halting further improvements across variables, or 2) the decrease in scaffolded support from the graduate instructor occurred too soon for students, contributing to a decline in performance toward the end of the conditions. These possible explanations will be outlined in the next paragraphs.

Cognitive overload

First of all, it is possible that the growth that occurred in Condition 1 was attributed to a targeted focus on writing while adding the self-talk internalization strategy overwhelmed students in Condition 2 and halted further improvements. Learning and maintaining new skills requires effortful control and attention to the task. Skills that are more challenging for an individual to learn will likely require more practice, sustained focus, and cognitive control in order for the individual to demonstrate the skill successfully. Given the many parts of the writing process, the student will likely face increased difficulty for each part of that process that does not work efficiently. Some students are at a disadvantage if the writing task is too difficult, taxing the student's working memory, and impacting the student's processing capacity (Flower & Hayes, 1980; Johnston & Heinz, 1978). Studies have found decreases in writing quality and quantity when tasks increase demands on the working memory system (Lea & Levy, 1999). Furthermore, the population of interest in this study likely has poor cognitive strategies that monitor self-control and reflective problem solving (Ross, Poidevant, & Miner, 1995). Higher-order and lower-order cognitive processing deficits for students with attention difficulties have been argued to be contributing factors to difficulty with control, planning, and organization – components essential to writing (Korkman & Pesonen, 1994; Grodzinsky & Diamond, 1992).

Taken together, students in the study may have been overwhelmed with the addition of the self-talk internalization strategy when the writing strategy was not an automatic and controlled process at the time the self-talk strategy was introduced. Thus the students were able to show positive growth in the first condition but demonstrated minimal or no growth in the second condition across several variables. I hypothesize that more time spent in Condition 1, with more careful consideration of the student's mastery level, would lead to more sustained growth in writing.

Instructional support

The second explanation considers the role of the individual's processing capacity and automaticity of the writing process in combination with the role of the graduate student instructor. In addition to the importance of the working memory system reviewed above, another factor in the writing instruction process is the use of scaffolding by a teacher. As an adult and a child collaborate to complete a task the adult supports the child, directs thought, breaks down the task, and adjusts the task difficulty to the child's level (Wood, Bruner, & Ross, 1976 cited in Berk, 1992). Vygotsky (1978) argued that children need adults to support new skill development in order to achieve successful independence. The decreased performance in writing observed at the end of Condition 1 and in Condition 2 may be attributed to a change in the type of support the student received across phases. Many students demonstrated a decrease in performance on WE-CBM after Phase 2 or 3 of Condition 1 and 2. For example, on Total Words Written (WE-CBM), three students decreased TWW after Phase 2 (Modeling) of Condition 1 and were not able to recover. A similar trend occurred for four students in Condition 2. It is possible that the type of scaffolding provided by the instructor in Phase 3 and 4 was not enough to meet the needs of the student, hence the decrease in performance. Students may have needed more sessions in

Phase 2 and 3 in order to sustain positive growth across the condition. Intervention stories did not have the same trends as the WE-CBM results. Only two students had decreases in TWW in Condition 1 and this occurred in Phase 4 (Independent Practice). In Condition 2, four students decreased TWW after Phase 2 (Modeling) but had increases in Phase 4 (Independent Practice). Differences between WE-CBM and intervention story results may be more attributable to the type of assessment and will be discussed further on in this chapter.

Self-talk

Another surprising result was that self-talk utterances occurred more during Condition 1 rather than during Condition 2. Generally self-talk is explicitly taught during the second half of the SRSD intervention. For the purpose of this study, self-talk instruction was removed from the SRSD lesson plans in Condition 1 and formally introduced in Condition 2. However, the graduate student instructor implicitly modeled self-talk as they demonstrated how to use the writing mnemonic during Condition 1. While it is possible to expect that self-talk would appear in Condition 1, the more important question is to examine why self-talk happened more in Condition 1 when explicit instruction occurred in Condition 2. As proposed above, students may have been overwhelmed with the addition of the self-talk intervention in Condition 2 which led to a decrease or a stop in the improved performance in writing and self-talk. It may be hypothesized that students naturally used self-talk in Condition 1, either by their own accord or as a way to copy their graduate student instructor. Once self-talk was introduced in Condition 2 during formal instruction, using self-talk may have become unnatural for students. The students may have resisted the intervention because it felt unnatural. Research in using self-talk to improve performance has been mixed in the past. Berk (1992) discussed the limitations of the knowledge researchers have on the development and purpose of self-talk. Despite the limitations,

researchers have examined various uses of self-talk with children and adults. Winsler and Naglieri (2003) found that children with an awareness of self-talk tended to perform better on a task than children that did not report an awareness of self-talk. Additionally, a different study found that young students performed better on tasks when using covert self-talk rather than overt self-talk (Meichenbaum, 1975). In this case, students in the current study did not increase self-talk utterances or writing performance once self-talk was made explicit in Condition 2. Students were made aware of overt self-talk utterances in Condition 2 and the results contradict previous findings. It may be that students in the fourth and fifth grade prefer to use covert self-talk or perform better when using covert self-talk however overt self-talk was evident in Condition 1. Researchers and practitioners will need to closely monitor potential factors that impact a student's use of self-talk, like motivation, self-consciousness, and preference for self-talk type, in addition to measuring self-talk utterances.

Assessment differences

Contrasting results between the curriculum-based measure of written expression (WE-CBM) and the intervention stories was the third unexpected finding of the study. Examining the differences between the sources of information may provide some insight into the way writing performance is considered.

First of all, there were differences in time and structure of the tasks. Students were restricted to one minute for planning time and three minutes to write during the WE-CBM while students on average planned for 5 minutes 36 seconds and wrote for 8 minutes and 33 seconds for the intervention story. Furthermore, students had access to the graduate student instructor's feedback or prompt to use the writing mnemonic during the intervention story. Students could not use the graduate student instructor for help during the WE-CBM.

While these differences seem obvious, the difference in time and structure likely contributed to differences in observed growth beyond the obvious. For one, students had an opportunity to participate in a scaffolded experience on the intervention story. The graduate student instructor gradually decreased the amount of support as students practiced overtime. Sharing the thinking load initially may have allowed the student more time and space to observe how to integrate the writing strategy into their own writing on the intervention story. Students did not visibly apply the writing strategy to the WE-CBM because this was not modeled for them in the same way it was done for the intervention story. Secondly, while students had the opportunity to plan before writing under both circumstances, the students had more time to plan before the intervention story. The students were observed taking advantage of that time before the intervention story but not during the WE-CBM. Students typically sat quietly in their seat instead of writing notes as was done during the intervention story. Research-based instructional strategies that help writers make better use of planning time may impact the student's ability to expand upon ideas and to produce writing of better quality (Graham & Harris, 1997). It may be argued, in addition, that students had more time to write the intervention story during the session as instructional time led by the instructor decreased. While more time may explain the improvement and maintenance of the Total Story Parts in the intervention story, given that the student has more time to think about including all parts, it is not clear why additional time did not also improve Total Words Written in both conditions.

Curiously enough, several studies have used the intervention story as a way to monitor progress during the study or to measure growth before and after the course of the intervention, as previously discussed. The results of the current study highlight the importance of considering how researchers and practitioners define mastery. CBMs are very specific indicators of mastery;

it is a tool that measures fluency or automaticity. It may be hypothesized that mastering the intervention story is a prerequisite to mastering the WE-CBM and generalizing new writing skills to the classroom. In other words, students likely gained writing skills during the intervention story but may not have developed these skills to a level of automaticity, as the WE-CBM would indicate. Teachers likely did not see many gains in the classroom, as indicated on the Teacher Interview/Checklist, because students did not have a solid understanding of how to use the writing strategy across settings. As students continue to practice the writing strategy toward independence and engage in activities that help generalize the strategy outside of the intervention setting, mastery of writing strategy and automaticity may be more evident in the WE-CBM and teacher report.

The impact of attentional difficulties

Five of the six students did not have an ADHD diagnosis but parents reported difficulty with attention in personal observations. Parents rated attention problems and hyperactivity within the at-risk or clinically significant areas according to the BASC-2 forms. Teachers reported elevated scores in these areas on the BASC-2 but for half of the students scores were lower than the students' parent ratings.

Student 2 was the only student that had an ADHD diagnosis and was receiving medical treatment. Teacher BASC-2 ratings indicated lower scores on the attention and hyperactivity scales in comparison to parent ratings. When analyzing the dependent variables, Student 2 performed comparatively to many of the other students except in self-talk. Student 2 demonstrated the fewest utterances in Condition 1 and Condition 2.

It is possible that the results of the study were due in part to the influence of attentional problems. Children with ADHD typically have difficulty effectively using cognitive strategies,

monitoring self-control, and using reflective problem-solving (Ross et al., 1995). Barkley (1997) adds that ADHD is associated with neurologically-based deficits that impact executive functioning skills like organization, planning, and cognitive flexibility. Furthermore, deficits in lower- and higher-order processes likely impact academic performance as typical developing students outperform students with ADHD in writing (Barry et al., 2002; Re et al., 2008).

Writing performance results were mixed. When comparing TWW and CWS results to the normative population, four out of six students scored above the 50th percentile on TWW and only Student 6 consistently scored above the 50th percentile on CWS. However, these students began the intervention scoring above the 50th percentile on these measures. Where it appeared students consistently struggled was in CWS, during Baseline and the conditions, scoring below the 50th percentile. While students did not seem to have difficulty producing written work, greater difficulty came when the students had to juggle production with monitoring correct use of writing conventions. It is possible that the students had difficulty with this variable because they had not mastered self-monitoring strategies or the cognitive flexibility needed to write as previously discussed.

Results from the intervention stories in the secondary analysis differ than results from the WE-CBMs. When students were engaged in instruction that provided scaffolded support, graphic organizers to help plan the story, and longer time to plan and write the story, more students made gains on the intervention stories in Total Words Written in Condition 1 and Total Story Parts in Conditions 1 and 2, as compared to the WE-CBMs. It may be hypothesized that the imposed structure and support during the intervention writing task helped mediate some of the self-regulating and coping skills associated with attentional difficulties.

With regard to self-talk, Berk (1992) posits that while children with ADHD may have developed self-talk along with typically developed children, self-talk may not be a naturally effective strategy for children with ADHD to regulate their behavior. This could be one reason why it was observed in Condition 1 (i.e., students picked up on the modeled behavior in Condition 1) but seemed to decrease in Condition 2 (i.e., instruction either created an unnatural setting or students did not pick up on how self-talk could be used to regulate their behavior). Furthermore, Student 2 demonstrated the least number of self-talk utterances which may be explained by his medication. Researchers have found that while students with ADHD use self-talk, occurrences decrease with medication use (Kopecky et al., 2005).

Limitations

Methodological design

There are a few limitations to the study related to methodological design, participants and intervention structure. To begin, multiple-baseline across subjects design is typically employed to help control for extraneous variables that could affect the dependent variable by systematically introducing changes of the independent variable. In essence, the subjects are their own controls if the researcher can show reliable changes in the dependent variable are functionally related to changes in the independent variable. According to Horner and colleagues (2005), experimental control is likely evident when experimental effect is documented at three separate time points within or across subjects. For most of the dependent variables measured in this study, the expected intervention effects were not observed and without stable baselines, determining whether experimental control was established and an effect took place is muddled.

Related to the previous limitation, the results did not see stable baselines for Total Words Written and Correct Word Sequences on the WE-CBMs. Stability prior to implementing changes

in the independent variable can help make clearer functional relationships between independent and dependent variables. Trends toward the expected outcome prior to the intervention implementation may mean that other extraneous variables were influencing the dependent variable.

Another limitation is that the study did not use a reversal design to compare whether results would have differed if STIS occurred prior to SRSD-only. Sequential or carryover effects whereby the dependent variable is influenced by intervention order or close temporal proximity may explain results in Condition 2 (Hayes, Barlow, & Nelson-Gray, 1999). Using a reversal or alternate treatment design may help to better understand whether these effects were in place.

Furthermore, the methodology employed was time-based rather than criterion-based. Previous researchers like Graham and colleagues (2000) have suggested that strategies using the SRSD instructional model need to follow a criterion-based progression so that students progress through the intervention at their instructional pace. In addition, a time-based approach does not allow for the flexibility needed to establish a stable baseline and systematically begin Condition 1.

Finally, researchers need to document changes in the dependent variable with reliability when using visual inspection. There are a few ways in which this can happen: documenting clear changes in the dependent variable following a stable baseline, replicating the expected results across subjects, and calculating the effect size of the changes. Reliance on stable baselines has already been discussed. Furthermore, results toward the expected outcome need to be replicated more than once and for at least a majority of the subjects involved in order to reliably conclude that the outcomes are the result of the intervention (Hayes et al, 1999). Because positive results were not replicated across subjects for most variables in both conditions, it was difficult to

conclude that Condition 1 and Condition 2 were effective interventions. Another way to examine the reliability of change is to calculate the effect size. One study calculated effect sizes for repeated measures across individual subjects by dividing the difference between mean scores during the intervention and mean scores during baseline by the standard deviation of the baseline (Ogg & Carlson, 2009). However, this calculation is only appropriate when baselines are stable. If each condition had several more observations (e.g., at least 10-50 more) then it is possible that data analysis may have included statistical analyses using time series techniques in which changes in trend and levels are computed simultaneously for statistical significance while considering potential serial dependency of the data (Kazdin, 1976).

Modified SRSD instruction

The strategy taught using the SRSD model during this intervention was for planning and drafting a story. This was not the full SRSD instructional model as generalization and maintenance were not addressed in this study. SRSD studies tend to explore these factors during instruction (e.g., talking to students about using the strategy in other settings, using classroom teachers to initial stories written during the intervention) and after the intervention (e.g., monitoring performance post-instruction and interviewing classroom teachers to examine potential uses in the classroom). Learning a new skill is only the beginning of successfully mastering that new skill. It is important for students to maintain performances post-intervention in order to continue towards mastery. Some researchers even noted the importance of providing booster sessions for students that declined in performance post-instruction (Graham & Harris, 1985; Graham & MacArthur, 1988; Harris & Graham, 1999). Limited generalization and not focusing on maintenance were limitations to this study and may have affected the measured outcomes.

Limited population

Another limitation was related to the study's population. The study drew from a limited population of students in one elementary school in the Midwest. Furthermore, the final selection of students may not have been representative of the school's population. Participation was limited to the students that provided consent. While extraneous factors like socioeconomic status, ethnicity, previous academic performance, and special education eligibility were not known, it is possible that these factors may have contributed to the students' performance in this study. Additionally, with regard to participant selection, one student did not provide consent to participate in video recording, making it difficult to ascertain self-talk growth or intervention fidelity.

Participant resistance

Other limitations were specifically related to the participants in the study. Student 5 was able to demonstrate interest in working with the graduate student instructor at the beginning of the study. However, the student's interest decreased and frustration increased by the 7^{th} session. Although the graduate student instructor was able to use positive reinforcement with success for a few sessions, Student 5 refused to participate any further after Session 13. It was understood by the instructor that this student was receiving special education services as a student with an emotional impairment but that this eligibility occurred during the course of the study. His eligibility may explain his resistance or he may have refused to participate because the study required him to engage in a potentially challenging task for him. In any event, the student left the study prior to the end which made it difficult to compare Student 5 and Student 6 in the last phase of Condition 2. Additionally, the resistance to the intervention may have had a negative impact on the results and may not be representative of the student's true ability.

Participant motivation

A third related limitation to the study was that student perceptions and motivation to participate and work through the study were unknown. It is possible that some students disengaged with the sessions as the study progressed which may have negatively impacted the student's performance. Research has shown that prior achievement and interpersonal skills can influence motivation, in turn influencing student engagement with the academic task (DiPerna, Volpe & Elliott, 2001). Gaining additional insight into the participant's motivation, interests, previous experiences with writing, and writing attitude may have helped the graduate student instructor when working with the participant. It would have provided insight that classroom teachers likely have on a daily basis.

Degree of attention difficulties

The last limitation related to participants was that the study did not specifically identify or confirm an ADHD diagnosis. Instead, the study used parent report and scores from the BASC-2 and considered attention difficulties as a continuum. An ADHD diagnosis typically requires a medical opinion which was not utilized in this study. Furthermore, a wide range in how attention difficulties may have impacted writing could have varied greatly between students. A closer examination of the intensity and severity of the attention problems may have clarified differences between students. Additionally, it is possible that the students with a diagnosis may not have had attention difficulties that manifested in writing.

Intervention instruction

There were some limitations to the study related to instruction. First of all, the students' schedules were set as consistently as possible but professional development days, holidays, and snow days interrupted the course of the sessions. While accommodations to the schedule were

made with little difficulty, it is possible that these missed days and longer time spans between sessions could have had an effect on performance. Because all schedules were readjusted the results could not examine this.

Secondly, an objective way to define mastery or independence of the writing strategy may have been a helpful tool to use for this study. Graduate student instructors reported their observations of the student's progress each week with the primary investigator. Instructor report and informal analysis of the intervention story indicated that the student was progressing in the study. However, the CBM data and some of the intervention data suggested that the students may not have been ready to move toward independence as quickly. While the primary investigator provided guidance for supporting a particular area of the intervention in the upcoming session, additional sessions were not added to the intervention schedule. Some studies discuss the importance of adding sessions when students are not ready to move on to the next step in the strategy (Graham et al., 2000). The current study found creating a schedule challenging as well as obtaining teacher buy-in for additional time out of the classroom. Using an objective way to define mastery would better support the need for an additional session and aid with decision making to add a session.

Classroom learning environment

It is possible that extraneous factors related to the participant's classroom environment may have impacted the outcome of the study. This study did not examine the writing curriculum, daily activities, or teaching methods employed in the general education classroom during the course of the intervention. This information may have been useful to further examine the participant's learning history (i.e., previous experience with writing instruction), and whether

these factors may or may not reinforce the strategy learned during the SRSD and STIS instruction.

CBM limitations

Some limitations to the results of the study may pertain to the CBM data. While a few studies have found adequate reliability and validity for the use of screening written expression skills using a CBM, like the probes used from AIMSweb, research needs to expand and examine the technical adequacy of CBM use for progress monitoring (McMaster & Espin, 2007). A recent literature review of writing CBMs by McMaster and Espin found that not all scoring procedures for a writing CBM were sensitive to achievement differences within a grade and that studies looking at technical adequacy of the screening tool only administered the measures a few times over a long period of time (ex. fall and spring administrations).

Another limitation of the CBM data was the low inter-rater reliability for the quality points. This variable had considerably lower reliability compared to Total Words Written and Correct Word Sequences. One reason behind the lower reliability could be the difficulty in scoring the writing samples. The scoring for story quality (Harris & Graham, 1996) is more subjective and examines a variety of story parts. Additional training on the scoring rules might have been more helpful to the raters. Student handwriting was another challenge. Some stories were extremely difficult to rate due to limited legibility. Typing the stories as written by the participants in the study may have eliminated this challenge and should be considered for future studies.

Inter-rater Reliability

While inter-rater reliability was calculated for the writing samples, the study procedure did not include the calculation of inter-rater reliability for self-talk utterances. This is a limitation

to the study. Using inter-rater reliability could have addressed the consistency in which self-talk was coded and potentially strengthened the discussion of the results. Future studies should consider adding an additional trained rater to code self-talk in order to calculate inter-rater reliability.

Missing Data

Some information for Student 6 was missing due to miscommunication with the instructor assigned to the student. As a result, scores from some of the intervention stories, WE-CBMs and BRIEF assessments were not included in the analysis. Comparisons between pairs and across students that included Student 6 were not always possible.

Implications for Practice

Using SRSD

Positive intervention effects were noted for many variables across multiple students during Condition 1. Other studies already highlighted found positive effects increasing words written and writing quality. Evidence supports the use of modified SRSD in classrooms. Educators should still be mindful in how the intervention is implemented with careful consideration of the student's unique interests and progress in the intervention. Understanding the student's level of mastery is discussed in the next section.

Using CBM to progress monitor

For the purposes of this study, written expression CBMs were used to track the participant's response to the intervention throughout the course of the study. CBMs are generally thought of as quick measures of fluency, or automaticity, of a given skill. When a student's level of fluency is slow or labored, it can mean that the student does not perform at the expected grade level, that the expected skill is too difficult, and that the student expends a significant amount of

effort to demonstrate the skill. It is likely that the student is not yet fluent. Educators would want to focus on intervening strategies that effectively improve fluency in order to improve achievement and afford the student more cognitive energy to focus on higher-level achievement skills. Thus educators would want to use a fluency measure to monitor the student's improvement in fluency.

CBMs have been used over the last few decades to monitor progress in the general education curriculum, to write objective goals in Individualized Education Programs, and to monitor a student's response to an intervention (Shinn, 2007). These short, standardized, and validated tools give educators an indication of the student's level of automaticity for a given skill. No matter the intended use of the CBM, the general goal for educators is to use the information to guide educational decisions and changes in the learning environment in order to improve student achievement (Stecker, Fuchs & Fuchs, 2005). These decisions rely on technically sound instruments, an area of continued need for progress monitoring measures for written expression.

Studies have found powerfully significant results for reading achievement when teachers used CBM data to support changes in instruction, rather than relying on typical procedures (ex. unsystematic observation) for special education evaluation of progress toward IEP goals (Fuchs, Deno & Mirkin, 1984). While these previous studies focused more on reading and mathematics achievement, they provide initial indication that CBM tools are useful when making educational decisions and have led to greater gains in achievement. The dilemma that educators face when using CBMs for written expression is that while a quick measure of automaticity helps educators understand the student's fluency, these tools do not currently have the advantage of having decades of research to back its technical adequacy like CBMs for reading and mathematics.

However, there is some evidence to suggest that the CBMs for written expression show moderate reliability and validity (McMaster & Campbell, 2005; Espin, Weissenburger, & Benson, 2004). Practitioners need to be cautious when using CBMs to monitor progress until further research is conducted that speaks to greater technical adequacy for progress monitoring purposes.

Given the differences between results from the CBM data and the intervention stories, it may be wise for the educator to consider both products when monitoring a student's progress toward mastery of writing skills. Products like the intervention stories used in the analysis may show how a student is applying the new writing skills within an authentic task and when given enough time, particularly as the acquisition of new skills may require more time to solidify and to be used accurately. CBMs could be used in conjunction with these writing products in order to document how fluent the student is becoming in generalizing the writing skills to a fluency task. The CBM allows educators to see how the student uses the new skills with ease and accuracy; an important skill to develop (Fuchs & Fuchs, 2002).

Understanding mastery

Researchers caution educators in moving too quickly to the next step in the SRSD intervention without thinking about the student's level of mastery, as was previously discussed (Graham, Harris & Troia, 2000). While there are various ways to check how well the student retained and used the strategy, best practices would suggest that educational decisions be based on objective and measurable data (Shinn, 2007). Additionally, educators would benefit from forming short term goals to guide student progress over the course of the SRSD implementation. Progress monitoring data gathered and compared to the short term goal would inform educators on the student's ability to demonstrate the SRSD strategies. Besides progress monitoring, educators need to be mindful of other factors that could influence mastery development, like

motivation, resistance to the intervention, and feelings of being overwhelmed by a challenging task. If an educator notices any difficulties that could be attributed to these factors, it may be helpful for the educator to reconsider how the intervention is implemented.

Future Direction

Research should continue to investigate interventions that target writing skill and self-regulation. In particular, future studies could examine limitations addressed in the previous section. This study did not examine possible extraneous variables that may have impacted a student's progress in writing. These variables may include previous academic achievement, prior writing experiences, and student perceptions of self-talk and academic motivation. It may be helpful if future studies examined the use of the combined interventions with students without attention difficulties. As hypothesized previously, students with attention difficulties could be at an additional disadvantage when writing given observed difficulties with organization, self-control, and concentration. Students without attention difficulties may respond more positively to the intervention or feel less overwhelmed by the addition of Condition 2. Lastly, future studies need to consider how to closely monitor student mastery throughout the intervention and devise specific and objective ways to identify when students are mastering the writing intervention before progressing to the next step of the intervention. Developing these procedures would allow for close monitoring of appropriate instructional support.

APPENDICES

APPENDIX A

Conceptual Framework

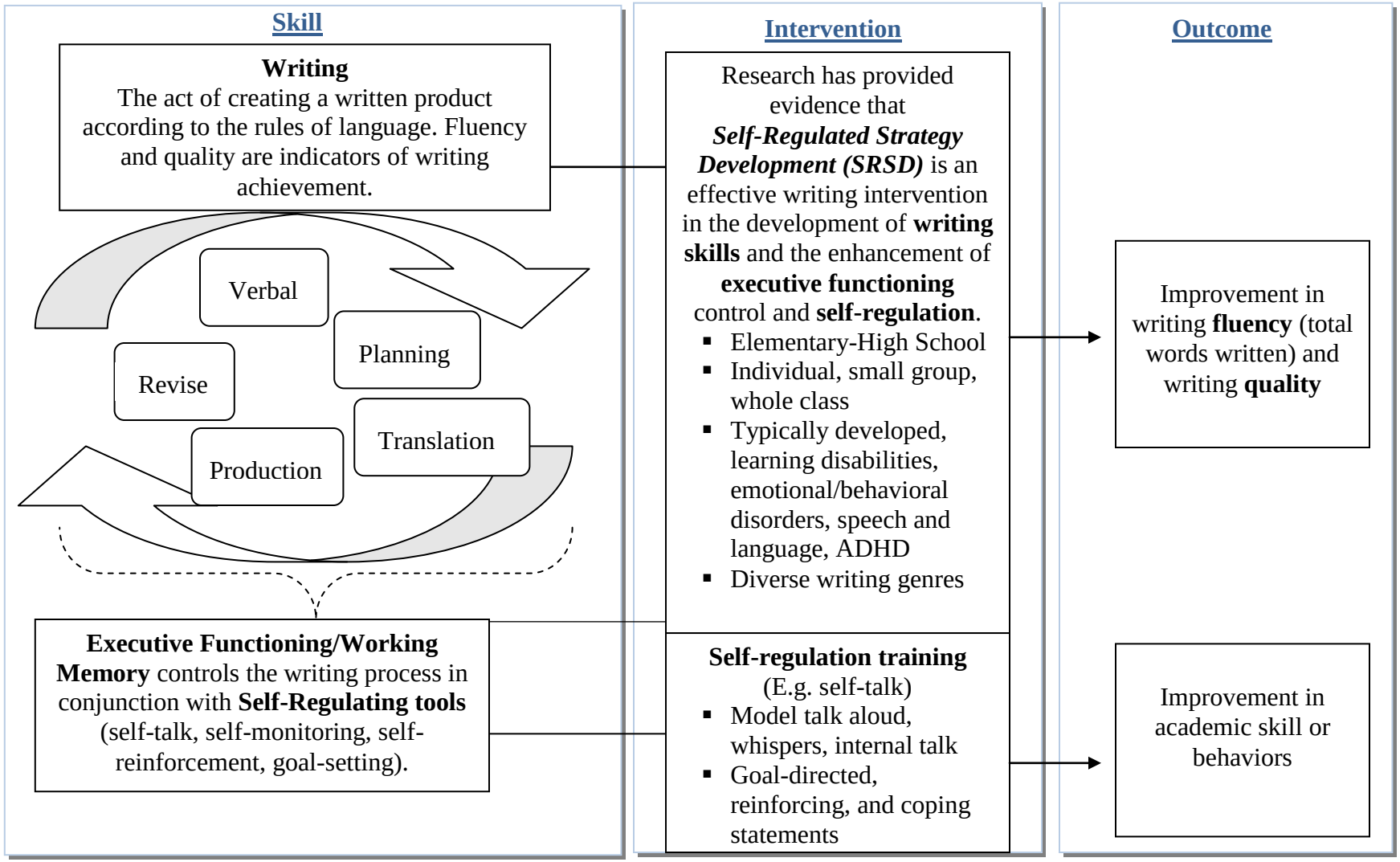


Figure 9. Grand Conceptual Framework

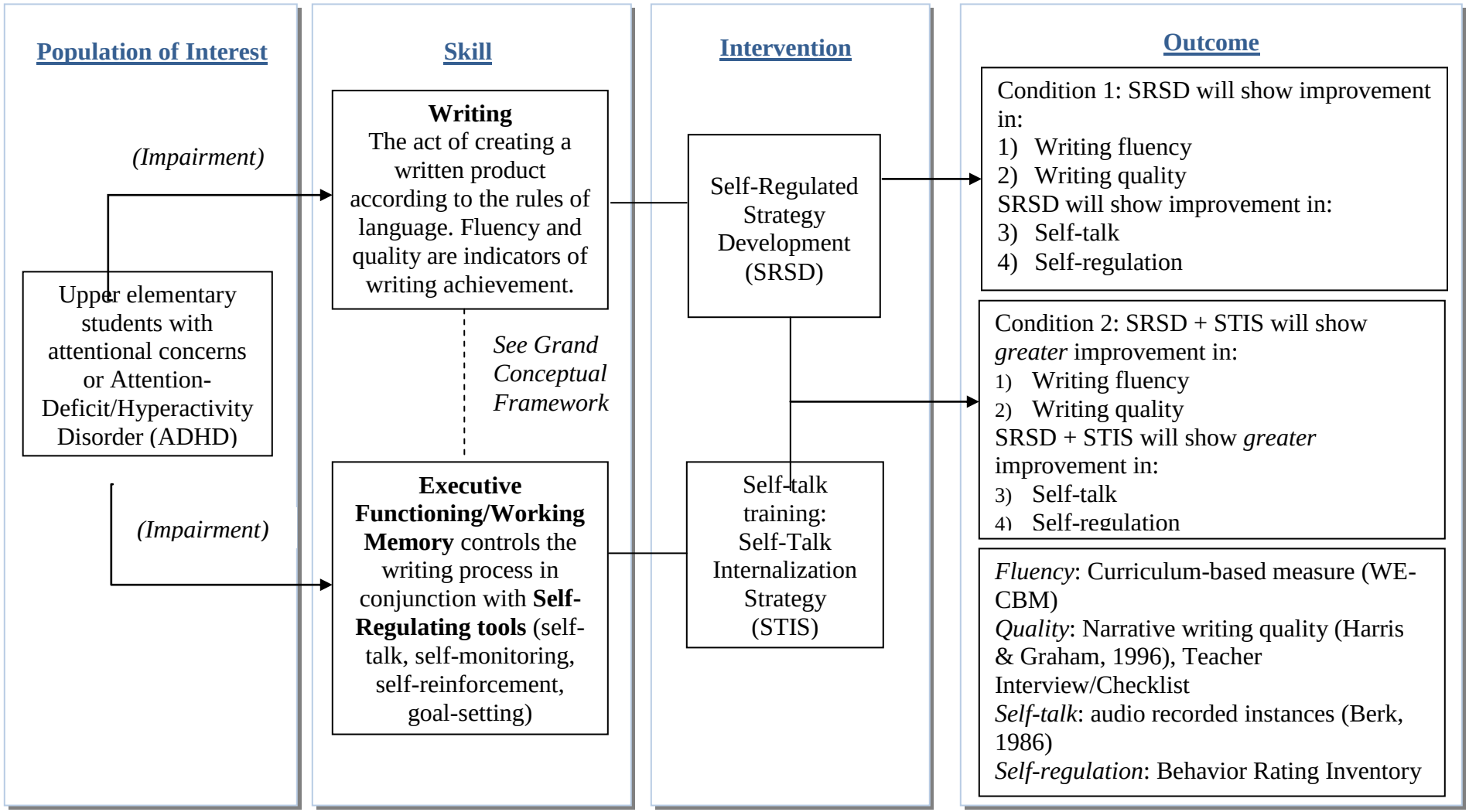


Figure 10. Writing and Attentional Concerns Conceptual Framework

APPENDIX B

Scale for Scoring the Inclusion and Quality of the Parts of a Story

Student's Name: _____

Total Score: _____

Directions: Read the story once to get a general impression, then look at the story again to score each part. For each part, circle the appropriate rating. Total the sum of the ratings and enter the score in the space above.

Main Character

0 – No main character is established.

1 – A main character is presented; however, he/she is just a name on a page. Very little information or detail about the main character is provided.

2 – A main character is presented and described in such detail that he/she is always "real" for you.

Locale

0 – No locale or place is mentioned.

1 – Locale is given, but little description offered ("the town of Atlanta").

2 – Locale given, with more complete description offered or unusual locale is chosen ("the town of Atlanta which sets between two rivers and covered a space of three square miles" or "the new planet, Andromeda").

Time

0 – No time given.

1 – Time given, but traditional in reference ("once upon a time" or "a long time ago").

2 – Time given, but unusual in reference or more complete description ("March 31st at 3:00 in the afternoon" or "a long time ago, before men walked on the earth").

Starter Event

0 – The precipitating event which causes the main character to establish a goal is not presented.

1 – The precipitating event which causes the main character to establish a goal is presented. The precipitating event can be a natural occurrence (a landslide), an internal response (loneliness), or an external action (the dragon stole the jewel).

2 – Add one point if the precipitating event is complex, unusual, or well described ("A meteor hit the mountain, and that started a landslide which hit the village. As a result the man lost everything that he owned" or "His mother left him home day after day. As a result Johnny was lonely").

Goal

0 – The goal or purpose of the main character is not established.
1 – The goal or purpose of the main character is established but not clearly articulated ("Bill set off to do something").
2 – The goal or purpose of the main character is clearly articulated ("Bill decided that he would rescue his friend").
3 – Add one additional point if two or more goals are clearly articulated.

Action

0 – The actions that the main character initiates in order to achieve the goal are not presented.
1 – What the main character does in order to achieve the main goals is presented.
2-4 Add one point for each of the following:

A. Actions or events happen in a logical order (i.e., they are not inconsistent)
B. Ingenuity or originality are used to solve situations or predicaments ("Bill made a laser-reflector to capture his enemy").
C. If there is more than one well-defined episode. For example, if the main character tries one action and it is unsuccessful (storms the castle but has to retreat due to boiling oil) and then tries another action (tries to sneak in through a tunnel), add one point. Similarly, if the main character goes to one place during his travels and then to another, add one point.

Ending

0 – No real ending, lack of conclusion, or story seems unfinished. In other words, the long-range consequences of the main character's actions are not resolved.
1 – Long range consequences of main character's actions are resolved, but the ending or conclusion is fairly common ("They lived happily ever after – Billy slew the dragon and rescued the princess").
2 – Long-range consequences of main character's actions are resolved. In addition, the conclusion or ending is unusual, or the ending contains a moral ("This is how he got the name Eagle-Arrow. It just goes to show crime doesn't pay" or "The prince is killed, and so was his horse").

Reaction (expressed anywhere in the story)

0 – The emotional reactions of the main character are not presented.
1 – Some emotional feelings expressed by the main character ("the boy was happy with what he had done").
2 – Emotional feelings of the main character expressed with depth ("I hated everyone in that black moment. I felt hot anger. Why did they have to humiliate me?")

Source: Harris, K. R. & Graham, S. (1996). *Making the writing process work: Strategies for composition and self-regulation*. Cambridge, MA: Brookline Books.

APPENDIX C

Teacher Interview/Checklist for Written Expression

Student: _____ Date: _____

Teacher: _____ Grade: _____

Please consider each of the following components of written expression. Indicate how well the student uses these parts of writing in their assignments and how important it is for the student to be able to demonstrate this skill in their writing.

1.) Handwriting

How well does the student use this skill in their writing?

1	2	3	4
Limited skill	*Beginning*	*Basic*	*Proficiency*

How important is it for the student to demonstrate this skill in their writing?

1	2	3	4
Not expected			*Always expected*

2.) Capitalization

How well does the student use this skill in their writing?

1	2	3	4
Limited skill	*Beginning*	*Basic*	*Proficiency*

How important is it for the student to demonstrate this skill in their writing?

1	2	3	4
Not expected			*Always expected*

3.) Punctuation

How well does the student use this skill in their writing?

1	2	3	4
Limited skill	*Beginning*	*Basic*	*Proficiency*

How important is it for the student to demonstrate this skill in their writing?

1	2	3	4
Not expected			*Always expected*

4.) Spelling

How well does the student use this skill in their writing?

1	2	3	4
Limited skill	*Beginning*	*Basic*	*Proficiency*

How important is it for the student to demonstrate this skill in their writing?

1	2	3	4
Not expected			*Always expected*

5.) Correct Word Usage (e.g., verb tense, noun-verb agreement, other parts of speech)

How well does the student use this skill in their writing?

1	2	3	4
Limited skill	*Beginning*	*Basic*	*Proficiency*

How important is it for the student to demonstrate this skill in their writing?

1	2	3	4
Not expected			*Always expected*

6.) Vocabulary

How well does the student use this skill in their writing?

1	2	3	4
Limited skill	*Beginning*	*Basic*	*Proficiency*

How important is it for the student to demonstrate this skill in their writing?

1	2	3	4
Not expected			*Always expected*

7.) Structure of Sentences

How well does the student use this skill in their writing?

1	2	3	4
Limited skill	*Beginning*	*Basic*	*Proficiency*

How important is it for the student to demonstrate this skill in their writing?

1	2	3	4
Not expected			*Always expected*

8.) Structure of Paragraph

How well does the student use this skill in their writing?

1	2	3	4
Limited skill	*Beginning*	*Basic*	*Proficiency*

How important is it for the student to demonstrate this skill in their writing?

1	2	3	4
Not expected			*Always expected*

9.) Using the Writing Process (e.g., plan, organize, write, revise, edit)

How well does the student use this skill in their writing?

1	2	3	4
Limited skill	*Beginning*	*Basic*	*Proficiency*

How important is it for the student to demonstrate this skill in their writing?

1	2	3	4
Not expected			*Always expected*

10.) Proofreading/Editing

How well does the student use this skill in their writing?

1	2	3	4
Limited skill	*Beginning*	*Basic*	*Proficiency*

How important is it for the student to demonstrate this skill in their writing?

1	2	3	4
Not expected			*Always expected*

Adapted from: Bradley-Johnson, S., & Lesiak, J. (1989).
Problems in Written Expression: Assessment and Remediation.
New York: Guilford Press.

APPENDIX D

Self-Talk Coding

Table 44

Levels of self-talk		Frequency	% of Total
Level 1			
	(1) Private speech	-	-
	(2) Social speech	-	-
	(3) Uncodable	-	-
	Total Level 1	-	
Level 2			
	(1) Task-irrelevant external (TI)	-	-
	(2) Task-relevant external (TRE)	-	-
	Total Level 2	-	

Berk, L. E. (1986). Relationship of elementary school children's private speech to behavioral accompaniment to task, attention, and performance. *Developmental Psychology, 22*, 671-680.

APPENDIX E

Criterion-Referenced Written Language Skills Checklist

	Yes	No	?
PURPOSE			
Demonstrates a clear purpose in writing	_____	_____	_____
PROCESS			
Uses the four steps of the writing process			
Planning	_____	_____	_____
Transcribing	_____	_____	_____
Reviewing	_____	_____	_____
Revising	_____	_____	_____
PRODUCT			
Demonstrates fluency			
Total words written	_____	_____	_____
Total words spelled correctly	_____	_____	_____
Total words spelled incorrectly	_____	_____	_____
Total correct words written	_____	_____	_____
Total correct word sequences	_____	_____	_____
Demonstrates syntactic maturity			
Different sentence forms			
Simple	_____	_____	_____
Compound	_____	_____	_____
Complex	_____	_____	_____
Compound-complex	_____	_____	_____
Different sentence types			
Declarative	_____	_____	_____
Interrogative	_____	_____	_____
Imperative	_____	_____	_____
Exclamatory	_____	_____	_____
Demonstrates semantic maturity (Vocabulary)			
Produces content that reflects the following:			
Organization of thought	_____	_____	_____
Originality	_____	_____	_____
Style	_____	_____	_____
Uses standard conventions (Mechanics)			
Capitalization			
First word in sentence	_____	_____	_____
Proper nouns	_____	_____	_____
First word of quotation	_____	_____	_____
Punctuation			
Period	_____	_____	_____
Question mark	_____	_____	_____

Exclamation mark	_____	_____	_____
Comma	_____	_____	_____
Apostrophe	_____	_____	_____
Quotation marks	_____	_____	_____
Correct Spelling	_____	_____	_____
Legible Handwriting	_____	_____	_____

STRATEGIES

Uses procedures for deciding what to do next	_____	_____	_____
Uses procedures for doing it	_____	_____	_____

APPENDIX F

Intervention Schedule

Table 45

Intervention Schedule for an Individual Student

Week	Session	Phase	SRSD Lesson	STIS Lesson
1	Pre-assessment: BASC-2, WE-CBM, Teacher Interview/Checklist for Written Expression, Criterion-Referenced Written Language Skills Checklist, BRIEF			
2-8	1	SRSD Phase 1: Instruction	Lesson 1: Instruction	
	2		Lesson 2: Instruction	
	3	SRSD Phase 2: Model	Lesson 3: Model	
	4		Lesson 4: Model	
	5	SRSD Phase 3: Guided Practice	Lesson 5: Guided Practice	
	6		Lesson 5: Guided Practice	
	7	SRSD Phase 4: Independent	Lesson 6: Independent	
	8		Lesson 6: Independent	
	Mid-Assessment: Teacher Interview/Checklist for Written Expression, BRIEF			
	9	STIS Phase 1: Instruction	Lesson 6: Independent	Mini-Lesson 1: Instruction
	10		Lesson 6: Independent	Mini-Lesson 1: Instruction
	11	STIS Phase 2: Model	Lesson 6: Independent	Mini-Lesson 2: Model
	12		Lesson 6: Independent	Mini-Lesson 2: Model
	13	STIS Phase 3: Guided Practice	Lesson 6: Independent	Mini-Lesson 3: Guided Practice
	14		Lesson 6: Independent	Mini-Lesson 3: Guided Practice
	15	STIS Phase 4: Independent	Lesson 6: Independent	Mini-Lesson 4: Independent
	16		Lesson 6: Independent	Mini-Lesson 4: Independent
9	Post-assessment: WE-CBM, Teacher Interview/Checklist for Written Expression, BRIEF			

Table 46

Intervention Schedule across Participants

Session	Student 1	Student 2	Student 3	Student 4	Student 5	Student 6
	Pre-assessment activities					
1	SRSD	SRSD				
2						
3			SRSD	SRSD		
4						
5					SRSD	SRSD
6						
7						
8						
9	STIS	STIS				
10						
11			STIS	STIS		
12						
13					STIS	STIS
14						
15						
16						
17						
18						
19						
20						
	Post-assessment activities					

APPENDIX G

WRITING PROCESS CHECKLIST (CONDITION 1)

Complete this checklist after working on the writing piece for the day.

Time and Place

_____ I got started working right away.
_____ I always had the materials ready that I needed each time.
_____ I sat down to work.

Understanding the Task

_____ I read or listened to the teacher's directions carefully.
_____ I asked the teacher to explain any part of the assignment that was unclear.
_____ I restated what I was supposed to do in my own words.

Planning

_____ I thought about who would read my paper.
_____ I thought about what I wanted my paper to accomplish.
_____ I started planning my paper before I actually started writing it.
_____ I used the POW, WWW, What = 2, How = 2 strategy to help me plan my paper.

Seeking and Organizing Information

_____ I tried to remember everything I already knew about the topic before starting to write.
_____ I got all the information I needed before starting to write.
_____ I organized all of the information I had gathered before starting to write.

Writing

_____ I thought about what I wanted my paper to accomplish as I wrote.
_____ I thought about the reader as I wrote.
_____ I continued to develop my plans as I wrote.
_____ I made revisions in my paper as I wrote.

Revising

_____ I revised the first draft of my paper.
_____ I checked to make sure that the reader would understand everything I had to say.
_____ I checked to make sure that my goals for the paper were accomplished.
_____ I made my paper better by adding, dropping, changing, or rearranging parts of my paper.
_____ I corrected errors of spelling, capitalization, punctuation, and the like.
_____ I used a strategy to help me revise.
_____ I reread my paper before turning it in.

Seeking Assistance

_____ I asked my teacher for help when I needed it.

WRITING PROCESS CHECKLIST (CONDITION 2)

Complete this checklist after working on the writing piece for the day.

Time and Place

_____ I got started working right away.
_____ I always had the materials ready that I needed each time.
_____ I sat down to work.

Understanding the Task

_____ I read or listened to the teacher's directions carefully.
_____ I asked the teacher to explain any part of the assignment that was unclear.
_____ I restated what I was supposed to do in my own words.

Planning

_____ I thought about who would read my paper.
_____ I thought about what I wanted my paper to accomplish.
_____ I started planning my paper before I actually started writing it.
_____ I used the POW, WWW, What = 2, How = 2 strategy to help me plan my paper.
_____ I used my "think aloud" words to help me plan my paper.

Seeking and Organizing Information

_____ I tried to remember everything I already knew about the topic before starting to write.
_____ I got all the information I needed before starting to write.
_____ I organized all of the information I had gathered before starting to write.

Writing

_____ I thought about what I wanted my paper to accomplish as I wrote.
_____ I thought about the reader as I wrote.
_____ I continued to develop my plans as I wrote.
_____ I made revisions in my paper as I wrote.
_____ I used my "think aloud" words as I wrote.

Revising

_____ I revised the first draft of my paper.
_____ I checked to make sure that the reader would understand everything I had to say.
_____ I checked to make sure that my goals for the paper were accomplished.
_____ I made my paper better by adding, dropping, changing, or rearranging parts of my paper.
_____ I corrected errors of spelling, capitalization, punctuation, and the like.
_____ I used a strategy to help me revise.
_____ I reread my paper before turning it in.

Seeking Assistance

_____ I asked my teacher for help when I needed it.

Motivation

_____ I told myself I was doing a good job while I was working on the paper.

APPENDIX H

SRSD-only and STIS Lesson Example and Lesson Worksheets

SRSD-only Lesson Example

POW + WWW With Transfer

Lesson 1

Lesson Overview
The **POW** and **WWW, What=2, How=2** strategies will be introduced in this lesson. The teacher and students will collaboratively locate the story parts **Who, When, Where, What=2, How=2** in two stories. Students will begin to learn the two strategies. Students will establish writing partners and concept of transfer.

Student Objectives
Students will identify the 7 parts of a story in two stories. Students will generate a list of self-talk statements.

Materials
Mnei*Figure 11b*. Single-Case Design Example for an Individual Participant , paper, pencils, scrat

Set the Context for Student Learning

Introduce yourself as a writing teacher. Say, "I'm going to teach you some of the tricks for writing. First, we're going to learn a strategy, or a trick, that good writers use when they write. Then, we are going to learn the trick, or strategy, for writing good stories."

"To get us started, let's spend about 5-10 minutes to write a story." At this time, generally tell students to write a story about whatever they would like.

Develop the Strategy

Step One - Introduce POW.

- Put out the **POW + WWW** mnemonic chart so that only **POW** shows.
- Emphasize **POW** is a trick good writers often use, for many things they write.
- Go over the parts of **POW**, discussing each. (P = Pick my Idea; O=Organize my Notes; W=Write and Say More). Emphasize that they can remember POW because it gives them **POWER** when they write.

- Practice **POW**; turn the mnemonic chart over. Ask each student (skip around) to explain what **POW** stands for. Help as needed. Do until you feel sure that each student knows what **POW** stands for.

- Discuss good stories (briefly) - ask students, what makes a story good? Be sure to include (you add if they don't say it):
    - Good stories are **fun** for me to write and **fun** for others to read.
    - Good stories **make sense** and have several **parts** - we will learn a trick for remembering the parts of a good story.

Step Two – Introduce WWW, What = 2, How = 2

- Introduce **WWW** - uncover more of the mnemonic chart so that the **WWW** shows. "Let's find out what the parts of a good story are." Have students look at the chart. Briefly discuss each W. (Be sure to use the word "character" for **Who**; for **When**, ask students to tell you "how does a person tell **When** in a story?" - Once upon a time ... A long time ago ... Yesterday... Wednesday afternoon at 4:00, and so on. Ask students for examples of what might be **Where** in a story.

- Uncover **What = 2**. Explain and briefly discuss each **What**. Get examples of how a writer might tell each.

- Uncover **How = 2**. Explain and briefly discuss each **How**. Get examples of how a writer might tell each.

Step Three – Find Parts in a Story

- Say, "Now we're going to read a story to find out if the writer used all of the parts of a good story." (Leave out the mnemonic chart where students can see it.)

- Lay out a **WWW** graphic organizer. Point out the story parts reminder **(WWW, What=2, How=2)** at the top, and review what it stands for.

- Give each student a copy of the story *(Albert);* ask students to read along silently while you read the story out loud. Then read the story out loud again and tell them to raise their hands when they hear **Who, When**, or **Where** in the story. Call on students as they raise their hands (all students should have a turn). As they identify **Who, When**, and **Where**; you write each in the appropriate space on the graphic organizer. DO NOT USE FULL SENTENCES – DO THIS IN NOTE FORM.

- Tell students that they are now looking for the 2 **Whats** and 2 **Hows**. Briefly review what each means (be sure students know what the "goal" means for the first **What** question). Remind to raise their hands when they hear one in the story. Read the story from beginning. Stop as hands are raised; you write each **What** and each **How** in the appropriate space on the graphic organizer. DO NOT USE FULL SENTENCES – DO THIS IN NOTE FORM. If you get to the end of the story and students have not identified

all of the parts, go back over the story and help as needed. Be sure to be encouraging and positive throughout.

Step Four – Practice Story Parts

- Practice Story Parts Reminder. Turn over mnemonic chart and students' papers. Ask students to tell you the "story parts reminder". (They should tell you: **W-W-W; What = 2; How = 2**). Ask students to write the reminder on scratch paper. If students have trouble, turn chart back over and allow them to look. Keep doing this until all students can tell you the reminder and write it on paper for memory.

- Practice story parts to criterion. Ask students to explain the parts. (Keep chart turned over, but allow students to look at the **W-W-W; What = 2; How = 2** that they wrote out on scratch paper.) Help as needed. Do this until you feel sure that students know what all the parts are.

Step Five – Establish Transfer

- Emphasize that you want them to use **POW** and **WWW** in all of their other classes where they can.

- Describe and discuss the Goal for next time: use all or parts of **POW** and/or **WWW** in other classes or for other writing tasks. Brainstorm together some classes or other writing tasks they could use both **POW** and **WWW** for, being sure to note that we should use **POW** with **WWW** whenever we use **WWW**. Other ideas could be: book reports, letters to friends, reports on special topics, writing for a school newsletter, writing about something that happened to you or a special event, and so on. Briefly note that for some tasks, like writing a report, all parts of the **WWW** trick might not be right to use - so what could we do? (Change **WWW** to fit the kind of report we need to write; don't use all of **WWW** if it doesn't make sense; **WWW** is in many reports).

- Tell the students to report back to you on using all or any parts of **POW/WWW** next time (for example, students might report making notes for a writing task before they wrote, this would count). Show them their "I transferred my strategies" chart and explain that they will write down and put a star next to each time they tell you about using all or any part of **POW/WWW** outside of this class. Briefly discuss the word **"transfer"**- transfer means to move (like I transferred schools means that I moved from one school to another). Emphasize that you want them to **transfer** what they learn about **POW** and **WWW** from this class to other classes and other writing tasks.

Wrap- Up

- Announce test (no grade) next session! Students will come and write out **POW** and the story parts reminder and tell what they mean from memory. Have each student take their scratch paper with **POW** and the story parts reminder on it with them.

- Remind them that they will fill in the transfer chart next time.

- Give each student their own folder & a copy of the story parts reminder chart. Have them put today's work and their charts in their folder.

POW

Pick my Idea
Organize my Notes
Write and Say More

W-W-W What=2 How=2

Who is the main character?
When does the story take place?
Where does the story take place?
What does the main character do or want to do; what other characters do?
What happens then? What happens with other characters?
How does the story end?
How does the main character feel; how do other characters feel?

Figure 11. SRSD Mnemonic Worksheet

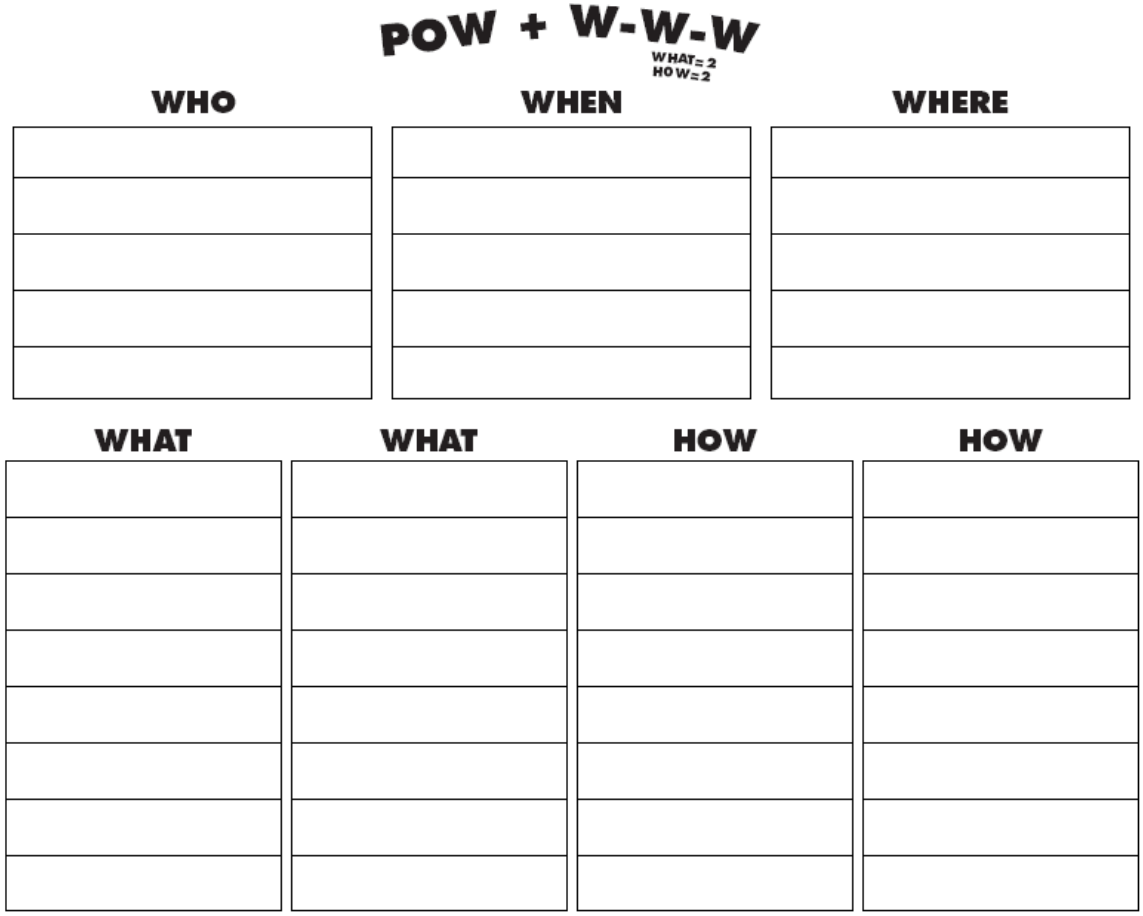


Figure 12. SRSD Mnemonic Student Planning Worksheet

STIS Lesson Example

Mini-Lesson 1: Instruction

Lesson Overview

Students will also learn how to be thoughtful (and talkative) writers by using speech to guide the writing process.

Student Objectives

Students will identify the 7 parts of a story in two stories. Students will generate a list of self-talk statements.

Materials

Self-talk worksheet, paper, pencils, scratch paper, student folders

Set the Context for Student Learning

Say, "I'm going to teach you some new tricks for writing. First, we're going to learn a strategy, or a trick, that good writers use when they write. Then, we are going to learn the trick, or strategy, for writing good stories."

"To get us started, let's spend about 5-10 minutes to write a story." At this time, generally tell students to write a story about whatever they would like. Students are encouraged to continue to use the writing worksheets from the SRSD lessons.

Develop the Strategy and Self-Regulation

Introducing Self-talk

- Introduce self-talk to the students by asking if they every talk to themselves to help them do a task. For example, say, "We all have to do new or hard things from time to time. Sometimes it makes it easy for us to talk out the steps to a problem. Sometimes, I like to talk out the steps to a math problem to help me do it right. Does this ever happen to you?"

- Next, encourage students to give their own examples about self-talk.

- Talk about how we might not always realize that we talk to ourselves and that everyone does it. This may help students to feel normal when practicing self-talk later in the lesson. Say, "even though you may think it's silly now to think about it, we are going to practice talking out loud while we write. Eventually, we'll learn and practice how to whisper to ourselves and then we'll practice talking to ourselves in our head. All good writers are thoughtful writers. This means that good writers are always thinking about their writing."

- Present a list of phrases students will practice using before/during/after writing (All good writers are thoughtful writers!). A poster board of phrases will be displayed at each lesson. The teacher will go over the different types of phrases to use.

- The students and the teacher will practice using the phrases through repeated drill-and-practice exercises. For example, the teacher would ask the student to picture themselves getting ready to write. What are phrases that we can say to ourselves to get ready to write?

- Lastly, the teacher and the students will develop a list of the students' own phrases to use and record these phrases on a worksheet. Say, "each time we meet, you will take out your self-talk worksheet and practice using these phrases while you write. I will help you to remember to use them, too."

Wrap-Up

- The students complete a curriculum-based measure of written expression for three minutes.

- The teacher reminds the students to bring the self-talk worksheet to the next session.

My Self-Statements

To think of good ideas:

While I work:

To check my work:

Figure 13. SRSD Self-Statements Student Worksheet

Self-Talk Phrases

(The following phrases will be posted on the board during each lesson.)

Good writers are thoughtful writers!

Before I write the story…

1.) "What is my goal today?"
2.) "I need to POW, and use WWW, What = 2, How = 2"
3.) "I want to write a good story that has all 7 parts, makes sense, and is fun for me to write and for others to read"
4.) "Let's write some notes"
5.) "I am ready to focus and start writing"

While I write the story…

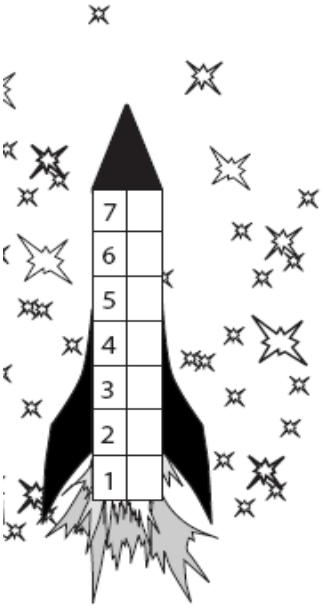
1.) "Then what happens…?"
2.) "Did that make sense or should I write more?"
3.) "I need to check my notes"
4.) "I can do this"
5.) "I have great ideas!"

After I write the story…

1.) "I did a great job!"
2.) "It'll be fun to share my story with others"
3.) "Did I meet my goal?"

APPENDIX I

Goal Attainment Worksheet



Author: _____

Partner: _____

How many story parts? _____
Color in the rocket to show how many story parts were included.

How many words written? _____

Points

1 = Needs a lot more work
2 = Could be a little better
3 = Pretty good the way it is
4 = Terrific, other kids should see this

Questions for Your Partner

After reading and marking the author's story, answer the following:

1. Does the writer use lots of descriptive words?	1	2	3	4
2. Does the writer use different kinds of sentences that are clear?	1	2	3	4
3. Is the story creative and enjoyable to read?	1	2	3	4
4. Does the story have a beginning, middle, and end?	1	2	3	4
5. Does the writer include the 7 parts of a good story (WWW, What=2, How=2)?	1	2	3	4
6. Is the paper free of errors (spelling and punctuation)?	1	2	3	4

Author Goals

My total points this time was _____.

My score 0 did 0 did not go up from last time.

The quality goal for my next story is _____ points.

Next time I will try to improve my score most for question 1 2 3 4 5 6

I also have set a quantity goal for my next story of _____ words.

Adapted from G. Troia (unpublished)

APPENDIX J

Outline of Self-Talk in Original SRSD Lessons

Lesson 3

- Teacher models POW using self-talk (reminders of what the teacher has to do while writing)
- Very brief introduction to using statements to help you work
- Teacher asks students to come up with a list of things to say to themselves while they are writing and records these on a separate paper for the students to reference
- Teacher models WWW, What = 2, How = 2 using self-talk
- Discussion about self-statements: What to say to yourself to get started? Things to say while you work? Things to say when you're finished?
- Students can think in their head or whisper to themselves

Lesson 4

- Students use their self-statements list while writing a story
- Students take the lead as much as possible in writing a story while the teacher provides help
- Teacher encourages the student to use their mnemonic worksheets and the self-statements list as much as possible

Lesson 5

- Students use their self-statements list while writing a story
- Students are encouraged to work more independently with prompting from the teacher
- Teacher encourages the use of self-statements as much as possible

Lesson 6

- Students use their self-statements sheet
- Teachers encourage independent writing, with prompting only when needed

APPENDIX K

Types of Self-Talk Statements in Other Studies

Types of statements

Questions about the nature of the task (Meichenbaum & Goodman, 1971; Swanson & Kozleski, 1985)

1.) "What is my goal for today?"
2.) "I need to POW"
3.) "I need to follow the WWW, What=2, How=2"
4.) "Do I need my writing chart?"
5.) "I need to focus on my writing"
6.) "I am ready to start writing"

Elaboration (Patthey-Chavez & Clare, 1996; Marom, 1998)

1.) "Then what happens?"
2.) "I need to use million-dollar words"

Clarification (Patthey-Chavez & Clare, 1996, Marom, 1998)

1.) "Did that make sense?"
2.) "I need to write more here"

Using Pauses (Patthey-Chavez & Clare, 1996)

1.) "I should stop writing and make sure I am following my notes"

Self-question & Follow-up Questions (Swanson & Kozleski, 1985; Wixon & Stone, 1984)

1.) "What did I mean here?"

Demonstrate planning and rehearsal (Meichenbaum & Goodman, 1971)

1.) "I need to remember to POW"
2.) "Let's write some notes to start"
3.) "I want to write a good story that has all seven parts, makes sense, and is fun for me to write and for others to read."

Self-reinforcement – praise & encouragement (Meichenbaum & Goodman, 1971; Marom, 1998; Swanson & Kozleski, 1985)

1.) "I did a great job!"
2.) "I am a hard worker"
3.) "I have great writing ideas"
4.) "It'll be fun to share my story with others."

Coping statements (Swanson & Kozleski, 1985)

1.) "I can do this"
2.) "This is hard for me but I am going to do my best"
3.) "If I get stuck, I know I can ask for help"
4.) "Take my time, a good story idea and good parts will come to me."

APPENDIX L

Intervention Integrity Checklist

Integrity Checklists: SRSD Lesson 1

Observer: _____ Date: _____
Session Duration: _____

Intervention Component	Was the intervention component observed?	
	Yes	No
The intervention was introduced as a way to learn strategies (tricks) to becoming a good writer.		
Students write a story.		
Instructor explains POW.		
Students and teacher practice the meaning of POW.		
Instructor discusses "good parts" to a story with students.		
Instructor teaches WWW, What = 2, How = 2.		
Instructor and students find 7 parts of story in an example.		
Students practice the seven parts, towards memorization.		
Instructor encourages students to use their new tricks in class and to report to the teacher what they did at the next meeting.		
Instructor reminds students of a small quiz on new tricks at the next meeting.		

Percentage of Intervention Integrity: _____

Integrity Checklists: STIS Mini-Lesson 1

Observer: _____ Date: _____
Session Duration: _____

Intervention Component	Was the intervention component observed?	
	Yes	No
The intervention was introduced as a way to learn strategies (tricks) to becoming a good writer.		
Students write a story.		
Instructor discusses importance of self-talk in writing.		
Instructor and students make a list of self-talk phrases on a poster board and on the student worksheet.		
Students practice self-talk phrases.		
Instructor encourages students to use their new tricks in class and to report to the teacher what they did at the next meeting.		
Instructor reminds students to bring the self-talk worksheet to the next meeting.		

Percentage of Intervention Integrity: _____

APPENDIX M

Data Analysis Plan for Research Questions

Table 47

Data Analysis Plan Comparing SRSD and STIS to the SRSD-only Condition

Question	Variable	Measure	Visual Analysis
1.) Does Condition 2 improve writing fluency for elementary students with attention issues more than Condition 1?			
1a.) Does Condition 2 improve total words written for elementary students with attentional difficulties more than Condition 1?	Growth in Total Words Written (TWW)	Curriculum-based measure of written expression (WE-CBM)	Comparison of baseline and intervention trends, latency in change, level and mean (split-middle technique); Percentage of nonoverlapping data points
1b.) Does Condition 2 improve correct word sequences for elementary students with attentional difficulties more than Condition 1?	Growth in Correct Word Sequences (CWS)	Curriculum-based measure of written expression (WE-CBM)	Comparison of baseline and intervention trends, latency in change, level and mean (split-middle technique); Percentage of nonoverlapping data points
2.) Does narrative writing quality improve for elementary students with attentional difficulties participating in Condition 2 more than Condition 1?			
2a.) As measured using a curriculum-based measure of written expression more than Condition 1?	Growth in Narrative writing (number of narrative story parts out of seven possible)	Curriculum-based measure of written expression (WE-CBM)	Comparison of baseline and intervention trends, latency in change, level and mean (split-middle technique); Percentage of nonoverlapping data points
2b.) As measured using a curriculum-based measure of written expression more than Condition 1?	Growth in Narrative writing (Harris & Graham, 1996)	Curriculum-based measure of written expression (WE-CBM)	Comparison of baseline and intervention trends, latency in change, level and mean (split-middle technique); Percentage of nonoverlapping data points

Table 47 (cont'd)

2d.) As reported by the general education teacher?	Written language skills	Teacher Interview/Checklist of Written Expression	Comparison of items checked in the areas of Purpose, Process, and Product (Pre/Post)
3.) Does the number of self-talk utterances (Berk, 1986) increase for elementary students with attentional difficulties after participating in Condition 2 more than Condition 1?			
3a.) Level 1 (i.) Private speech (ii.)Social speech (iii.) Uncodable	Growth in Self-talk	Audio/Video recording and coding	Comparison of baseline and intervention trends, latency in change, level and mean (split-middle technique); Percentage of nonoverlapping data points
3b.) Level 2 (i.) Task-irrelevant (ii.)Task-relevant (ex.) (iii.) Task-relevant (int.)	Growth in Self-talk	Audio/Video recording and coding	Comparison of baseline and intervention trends, latency in change, level and mean (split-middle technique); Percentage of nonoverlapping data points
4.) Does executive functioning/self-regulation improve for elementary students with attentional difficulties participating in Condition 2 more than Condition 1?			
4a.) As measured using the BRIEF?	Self-regulation/ Executive Functioning	Behavior Rating Inventory of Executive Function (BRIEF; Gioia, Isquith, Guy, & Kenworthy, 2000)	Visual analysis and calculation of Reliability of Change Index of the pre/post tests administered at three points (baseline, end of condition 1, end of condition 2)

Appendix N

Student Writing Examples

Curriculum-based measures of written expression

Student 1

Baseline Session 2
in the haunted house it was a ried nautical went on it and she got scared so she closed her eye's and next thing you know it was over and nautical was happy with joy again

Condition 1 Session 8
it was a space ship i didn't no what to do so i ran all the way home and tolled my sister what happen she did not care so i told my mom She said "it proble was Just the sun" i said "no it was a space ship"

Condition 2 Session 8
the best thing that happend to me was when i Jumped out of a plian with out a parie a shoot and mom came and cout me or! Jumped off a Balcone onto a trampoler or! Ice skating on

Student 5

Baseline Session 2
Once oupon a time there was a boy he went into a hantied house and he seen a gost and screamed ahhhh and then went to his mom and huged a gost and then he pied his pants and that is my story about the boy and the hunted house. And the

Condition 1 Session 8
I saw a large glowing ting it was the northern lights man "that was cool" he thought that was asome and that was that that asome he evan thought that was asome he was coll to the colers were blue and red pink and that The end.

Condition 1 Session 13
The race car's lined up and sunndley They crashed comeing out of the rifs he crashed into Tony Stewert o no what happened out ther I dont know I just lost control The End that is about the dire Tony Stewert. and

Intervention stories

Student 3

Baseline
Mother bare sleap all witere and stucke her hend out and sail papa bera and bady bear playing in the mud! She was mand this is wear live food hiend in there so she was mad the now mud in her house and there no food. She is feers.

Condition 1 Session 8
One day tom was walking Home with is dog from a waklafone for dogs then he found a door with a key. But this was the mailed of the steeat. But tomarow was his Brithday Agast 25. He would be up sate if He could not get out. But he waslk in any ways and found him in a world fole of Nothing all he could se was the gold Door and whight all arowed him. Then he triad to open the Door. Then he was traped. Then out of now ware cam a bage ball. It was bosing his dog weant casey. Then he teard Now there was to and they hit him but they weant Backe. Then they stoped. The he sat Down his frend open the Door. Dount shut it." he scream then they walk out they had goun all overe the wourdled and they ware in parish. They took a plane home but he was sad he bid not want to mis his prarty.

Condition 2 Session 16
I were walking down the street on a warm saturday morning at 11:00am right after my soccer game. Then a limousine pulls up at the stop sign at Gaven's house. Then the window rolls down. The case of Good luck Charlie and their boss are in there and ask if I could be part of Good Luck Charlie. I ask Dad if I could go. He said yes so then I went. I had to move to Hollywood. I was sad that I had to move but happy and great that I was on the show. I was the new neighbor that just moved in. I get fan mail from all my friends from Grand Ledge, Michigan.

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REFERENCES

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