

THE EFFECTS OF SELF-REGULATED STRATEGY DEVELOPMENT ON THE
WRITTEN LANGUAGE PERFORMANCE OF STUDENTS ON THE AUTISM
SPECTRUM

by

Dannette Allen-Bronaugh
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Performance of Students on the Autism Spectrum

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DEDICATION

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ABSTRACT

THE EFFECTS OF SELF-REGULATED STRATEGY DEVELOPMENT ON THE WRITTEN LANGUAGE PERFORMANCE OF STUDENTS ON THE AUTISM SPECTRUM

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A multiple baseline, multiple probe design was used to determine the effectiveness of self-regulated strategy development (SRSD) instruction for persuasive writing (POW + TREE) for three fourth grade and three sixth grade students with high-functioning autism who had writing goals in their IEPs. The intervention occurred after school, three days a week for an average of 14.8 days (10.40 hours) of instruction across three instructional phases (SRSD, fluency, and generalization phases). Each session was timed to ensure students received 45 minutes of instruction. For the first phase of instruction, students were taught to write one-paragraph essays. Once students mastered the strategy, the fluency phase taught students to plan and write a persuasive response in 10 minutes. In the final phase, students received one day of generalization instruction. Three weeks later students received one maintenance and generalization probe and one maintenance and generalization fluency probe for a total of four essays. Participants essays were

assessed on the number of essay parts, essay quality, number of words, sentences and transition words written. Throughout instruction, students were assessed on their knowledge of the SRSD POW + TREE strategy. In addition, student and parents interviews were conducted. At post SRSD, overall performance indicated 88.83-100% PNDs as well as level changes from low levels, with no trend or a slight decreasing trend at baseline to mid levels at post SRSD on essay measures. Post-fluency performance for essay parts and essay quality indicated increases from low levels at baseline fluency to mid to high level of performance. Overall PNDs from baseline fluency to post-fluency were 83.33-100%. At post-fluency, all participants remained above baseline performance across all essay measures. Varied results were noted from maintenance to maintenance fluency as well as from generalization to generalization fluency with overall PNDs ranging from 83.33-100%. The findings from the current study extend previously conducted SRSD research for students with ASD and EBD. Study results, implications for education of students with ASD and suggestions for future research will be discussed.

1. INTRODUCTION

Almost 380,000 children between the ages of 6 to 21 received special education services under the Individuals with Disabilities Education Act (IDEA), due to a diagnosis of autism (U.S. Department of Education, 2011). Many high-functioning school-age students with autism spectrum disorder (ASD) are educated in inclusive classrooms and have common academic goals (Estes, Rivera, Bryan, Cali, & Dawson, 2011). However, there is limited research on the academic achievement and needs of individuals with ASD (Estes et al., 2011). The No Child Left Behind Act of 2001 (NCLB, 2002; U.S. Department of Education, 2004) mandates the inclusion of evidence-based teaching strategies in educational practices. Similar emphasis on higher standards was also incorporated in the 2004 reauthorization of the IDEA, with the addition of the requirement that individualized education programs (IEPs) should contain “a statement of the special education and related services and supplementary aids and services *based on peer-reviewed research* [emphasis added] to the extent practicable, to be provided to the child, ... (34 C.F.R. § 300.320 (a) (4), 2006, p. 46788). The current research base on academic interventions for students with ASD is limited. Educators need to be able to find evidence-based strategies to assist them in educating students with ASD.

The purpose of this study is to investigate the effectiveness of using self-regulated strategy development to improve the persuasive writing ability of children with an autism

spectrum disorder (ASD). This chapter presents an introduction to the following topics: the importance of writing; background on autism; difficulties students with ASD might have with writing; and background on self-regulated strategy development (SRSD) and its application with students on the autism spectrum. Finally, the present study and the research questions are described, followed by definitions of terms.

Importance of Writing

Writing is an important task that is difficult for many children to master. It is a skill students need to succeed in school, as well as later in life. Writing is a tool used to demonstrate knowledge. However, writing is not an easy task for many individuals, both with and without disabilities. Robert Reid, referring to all students (not just those with disabilities), states in *Powerful Writing Strategies for all Students*, “Our kids don’t know how to write” (Harris, Graham, Mason, & Friedlander, 2008, p. ix). He goes on to state that these problems are greater for students with special needs or disabilities. Papers written by students with disabilities contain fewer ideas, are poorly organized, and are written at a lower quality when compared to typically developing peers (Harris et al., 2008).

According to the U.S. Department of Education, Institute of Education Sciences, using a computer-based writing assessment administered to students in 8th and 12th grade, only 24 percent of students in both grades are performing at a proficient level (National Center for Education Statistics, NCES, 2012). About half of the students in these grades are performing at a basic writing level and 20 percent are performing below a basic level. In addition, only three percent of students in both grades performed at an advanced level.

The NCES report further indicates that 60 percent of students with a disability in both 8th and 12th grade performed below the basic level of writing performance compared to 15-18 percent of non-disabled peers. Difficulty with writing can impact students not only in their success at school, but throughout their entire lives (NCES, 2012).

Lienemann, Graham, Leader-Janssen, and Reid (2006) proposed that one way to prevent writing disabilities is by providing effective early instruction to at-risk students in order to maximize their writing development. Improvement in writing scores for students with disabilities, requires that explicit writing instruction be provided, using techniques that have proven to be effective in evidence-based research studies (Lienemann et al., 2006). Lienemann et al., (2006) further state that addressing children's writing problems early on is advantageous because maximizing the writing development of students as they are learning to write should minimize the number of students who develop long-term writing problems. This idea of early, rigorous instruction could then be applied to all students, not just students with learning disabilities.

The National Commission on Writing (NCW) recommends that writing become a central focus in the schools, because students' educational and occupational success will be affected if they do not learn to write well (Lienemann et al., 2006). Interventions provided early in the education of students with writing disabilities have proven effective (Danoff, Harris, & Graham, 1993; Saddler, Moran, Graham, & Harris, 2004), however, little research has been conducted with students with writing difficulties who have been diagnosed with an autism spectrum disorder (ASD).

Background on Autism Spectrum Disorders

Autism is referred to as a spectrum disorder that affects individuals to varying degrees. Autism and four other disorders (Rett's Disorder, Childhood Disintegrative Disorder, Asperger's Disorder, and Pervasive Developmental Disorder-Not Otherwise Specified) fall under the umbrella category of Pervasive Developmental Disorders (PDD) in the American Psychiatric Association's (2000) *Diagnostic and Statistical Manual of Mental Disorders*, 4th ed., text revision (DSM-IV-TR). These disorders are developmental, neurological, and vary from mild to severe. In addition these disorders are complex in nature and have a variety of criteria that must be met in order for a child to be diagnosed with any one of the disorders under the PDD umbrella. These disorders are characterized by varying degrees of impairment in a child's reciprocal social interaction and communication skills; the presence of stereotypical behaviors, interests and activities; age of onset; and mental functioning.

According to a recent publication by the National Dissemination Center for Children with Disabilities (NICHCY, 2010, a draft of the next version of the DSM proposes to change the category of PDD to Autism Spectrum Disorders. Additional changes to the DSM will incorporate Asperger's syndrome, childhood disintegrative disorder, and PDD-NOS under this umbrella term of Autism Spectrum Disorders rather than maintaining them as distinct diagnostic conditions. Further, the draft DSM-V proposes to remove Rett's disorder from the DSM completely (APA, 2012). Throughout this paper, unless otherwise indicated, the term Autism Spectrum Disorder (ASD) will be used, as it is one commonly used to discuss students with any one of these diagnoses. In

addition, the DSM-V eliminates Asperger syndrome as a separate diagnostic category and is subsumed under the label ASD (Mayes et al., 2013).

Asperger's disorder. Asperger's disorder was officially recognized and added to the American Psychiatric Association's DSM-IV in 1994. Asperger's disorder is characterized by impairments in social interaction and repetitive patterns of behavior, interests, and activities that cause impairments in social, occupational, or other important areas of functioning. Typically, there is no significant delay in language acquisition. However, more subtle aspects of social communication may be affected, such as the ability to read other people's body language or understand sarcasm. According to the DSM-IV-TR, there are no significant delays in cognitive development, self-help skills, or adaptive behavior. Individuals with Asperger's tend to have average to above average intelligence. The major distinction between autistic disorder or autism and AD is children with AD develop language skills at typical developmental milestones, while children with autism more frequently have significant delays in the development of expressive language (American Psychiatric Association, 2000). Asperger's tends to be diagnosed later in life than other autism spectrum disorders as it is not until difficulties with social interactions, peer relationships and repetitive behaviors, interests, and activities become apparent that parents seek help and formal diagnosis is obtained (American Psychiatric Association, 2000; Barnhill, 2001). According to the National Institute of Neurological Disorders and Stroke (NINDS), a division of the National Institute of Health, the incidence of Asperger's disorder is not well established; is

considered by many to be the mildest form of autism; and is synonymous with more highly functioning individuals with ASD (NINDS, 2007).

Autistic disorder. According to the DSM-IV-TR, children who are diagnosed with autistic disorder have impairments in social interaction and communication; delay in the development of spoken language; and restrictive, repetitive stereotyped patterns of interests and activities (American Psychiatric Association, 2000). In addition, children with autistic disorder may not interact with other children or be able to see the needs of others. If the child is verbal, he or she may not be able to initiate or sustain conversation with others. Individuals must present a delay or abnormal functioning in one or more of these areas before the age of three to receive a diagnosis of autism. It has also been noted that individuals with autism have a diagnosis of mental retardation that ranges from mild to profound (American Psychiatric Association, 2000). In March 2012, the Centers for Disease Control and Prevention reported that the prevalence of autism has risen to 1 in 88 children in the United States overall, with 1 in 54 boys being diagnosed in contrast to 1 in 252 girls (CDC, 2012).

Childhood disintegrative disorder. This disorder is characterized by regression in multiple areas following two years of apparently normal development. Prior to the age of two, children present with age appropriate verbal and nonverbal communication, social relationships, play, and adaptive behavior. Sometime after the age of two, but before the age of ten, a significant loss of previously acquired skills is seen in at least two of the following areas: expressive or receptive language; social skills; adaptive behavior; bowel or bladder control; play; or motor skills. Children with a diagnosis of childhood

disintegrative disorder often exhibit social and communication deficits and behavioral features also observed in individuals with an autistic disorder diagnosis. In addition, this disorder is much less common than autistic disorder and is associated with severe mental retardation (American Psychiatric Association, 2000).

Pervasive developmental disorder not otherwise specified (PDD-NOS). PDD-NOS is the least specific diagnosis under the ASD category in the DSM-IV-TR (NICHCY, 2012). The diagnostic criteria under DSM-IV-TR for PDD-NOS are exclusionary criteria, stating what the diagnosis is not. Since the diagnosis of PDD-NOS “does not have specific criteria it is often seen as a catchall diagnosis for children that do not fit the criteria for one of the other pervasive developmental disorders (Walker et al., 2004). These criteria can include impairments in the development of social interaction skills due to delays in either verbal or nonverbal communication skills. In addition, individuals may also have stereotypical behavioral interests and activities (American Psychiatric Association, 2000). Walker et al., (2004) state that “there is little to no consensus in the literature as to how children with PDD-NOS differ from children with AS,” which can lead to a lot of confusion in the diagnostic process. Walker et al., go on to state that individuals who receive a diagnosis of PDD-NOS typically have fewer autistic symptoms than children diagnosed with AS. In addition, students who receive a PDD-NOS diagnosis typically have delayed language skills where those who receive an AS diagnosis do not.

Rett’s disorder. With this disorder, the development of specific deficits follows a period of normal development and functioning after birth. Between the age of 5 and 48

months, skill development and the rate of head growth begins to slow down. The developmental regression is very distinctive. Rett's is almost always seen in girls and associated with severe or profound mental retardation (American Psychiatric Association, 2000). Estimates are that Rett syndrome occurs in 1 of every 10,000 to 23,000 female births and in all racial and ethnic groups worldwide (NINDS, 2009).

Writing Difficulties of Individuals with ASD

Delano (2007a) writes that there has been little research conducted on the academic needs of students with ASD, which is surprising considering the number of students being identified on the autism spectrum. What is known is that individuals with ASD often experience academic problems and may have learning disabilities, as well as organizational difficulties, inflexibility, and literal thinking styles. Difficulties in these areas could impact a student's written language ability (Delano, 2007a).

Griswold, Barnhill, Myles, Hagiwara, and Simpson (2002) reported that Hans Asperger described the academic abilities of his patients as uneven and that they frequently failed reading, writing, and math. The exception to this was when the student's special interests matched the subject matter under consideration. Gross (1994) reported that while students with ASD do not have specific areas of academic strengths or weaknesses, the area of penmanship was an issue for many students with ASD. Griswold et al. (2002) investigated the formal and informal written expression skills of 16 adolescent students with ASD compared to neurotypical students. The visual results of this study revealed that the students with ASD had more variability in their performance. The sentences produced by students with ASD tended to be shorter and less complex than

typical peers. Delano (2007b) adds that the sentences of students with ASD tend to be poorly organized, as well. In addition, Griswold et al. (2002) reported that students with ASD did not have any more grammatical errors as neurotypical students. A practice recommendation based on the results of this study is that students with ASD could benefit from (a) instruction in sentence and paragraph construction; (b) how to write drafts and how to proofread—focusing on content, first and mechanics, second; and finally, (c) teaching students how to elaborate on their thoughts when writing. Griswold et al. (2002) write that using preconstructed paragraphs for practice with sentence and paragraph writing is helpful, as well as having students analyze their own work to learn how to elaborate when writing.

Self-Regulated Strategy Development (SRSD)

A writing strategy that has been researched and studied for over twenty years by Steve Graham and Karen Harris, as well as countless other researchers, is self-regulated strategy development (SRSD). The strategy was created initially for students with learning disabilities (LD) by bringing together strategies for writing and self-regulation of the writing process (Harris et al., 2008). Writing is a complex and demanding process with which many students have difficulty. SRSD was thus further developed to address concerns about students, with and without disabilities, who were having difficulty with writing (Harris, Graham, & Mason, 2002). SRSD involves explicit teaching of strategies so that students learn to facilitate completion of their writing tasks (Lienemann et al., 2006).

SRSD instruction has been used successfully in research to help students with disabilities become effective writers. SRSD provides students with strategies for planning, writing, revising, editing, and monitoring their writing (Delano, 2007b; Lienemann et al., 2006; Saddler et al., 2004). SRSD involves six stages of instruction that include (a) develop background knowledge; (b) discuss it; (c) model it; (d) memorize it; (e) support it; and (f) independent performance. Self-regulation is developed as students learn how to set goals, self-monitor, self-instruct, and reinforce their own writing (Graham & Harris, 2003; Harris et al., 2002). This is accomplished through modeling, explicit instruction, and practice. In addition, students are taught to use self-talk to plan and evaluate their work, and to use self-reinforcing statements to replace their negative beliefs about their writing ability (Delano, 2007a). SRSD involves interactive learning between the teacher and student using a scaffolding approach so the student gradually begins to work independently (Delano, 2007a).

SRSD instruction, both for persuasive writing and across genres, has been researched and found to be effective for students with learning disabilities (LD) and emotional and behavioral disorders (EBD), with the majority of the studies focusing on students with LD (De La Paz, 2005; De La Paz & Graham, 1997; Graham & Harris, 1989; Graham, Harris, & Mason, 2005; Harris et al., 2006; Mason & Shriner, 2008; Mastropieri et al., 2009; 2010). In order to teach students to write persuasive essays, the mnemonic POW + TREE is used, which stands for **P**ick an idea, **O**rganize notes, **W**rite and say more, plus **T**opic, **R**easons, **E**xplanations and **E**nding.

SRSD Instruction for Students on the Autism Spectrum

Currently there are four published studies that investigate the use of SRSD for different writing genres specific to students with ASD. Delano (2007a) used SRSD for vocabulary instruction to increase the use of (a) action and describing words and (b) revision in the writings of a 12-year-old male with ASD. The student made gains in all areas and was able to maintain gains after two weeks. Delano (2007b) conducted another study involving three males ranging in age from 13.6 years to 17.4 years, to teach persuasive writing using SRSD through video self-modeling. The strategy was divided into two segments. First students were taught to increase the number of words written and how to monitor their progress. Second students were taught how to use the mnemonic TREE to write a persuasive essay that contained a topic, reason, explanation, and ending. The interventions were one-on-one with each participant creating their own video for each segment. The first segment lasted for nine sessions and the second strategy intervention lasted for five sessions. Each student in this study showed gains in the number of words written, as well as the overall quality of the essay, and they were able to maintain gains above baseline at one week and at three months.

Asaro (2008) implemented SRSD for story writing with one 10-year-old male with ASD, whose writing was poorly organized and lacked detail. In a total of 15 lessons, the student's writing increased from baseline—in the number of story elements and the overall essay quality—however at maintenance, his overall essay quality dropped. Asaro-Saddler and Saddler (2010) expanded their earlier study to teach story writing using SRSD with three males, ages 6.10 years to 9.00 years old, with a transfer

component for writing a personal narrative, based on a given prompt. The intervention was conducted one-on-one and lasted between six and nine days. All students made gains in the number of story elements written, as well as the number of words and overall essay quality, and the students were able to transfer what they had learned in the intervention to writing personal narratives.

Mastropieri et al. (2009; 2010; 2012) used SRSD to teach middle school students with emotional and behavior disorder (EBD) to write persuasive essays using the POW + TREE strategy. Ten eighth-grade students with EBD participated (Mastropieri et al., 2009). One student was also classified with a comorbid disorder of autism. This individual along with all the other participants made significant improvements in the number of persuasive essay parts written between baseline and post-intervention. As in the previous Mastropieri et al. (2009) study, Mastropieri et al. (2010) taught twelve individuals with EBD to write persuasive essays. All of the participants had a primary disability category of EBD along with a variety of comorbid conditions. One individual in this study also had a diagnosis of autism. This individual made significant gains in his ability to write persuasive essays after being taught the POW+TREE strategy (Mastropieri et al., 2010). Mastropieri et al. (2012) conducted another study using SRSD to teach middle school students with EBD to write persuasive essays. In this study four of the twelve individuals also had a diagnosis of autism. As in the previous study there was significant improvement in the number of persuasive essay elements included in essays from baseline to post-intervention for all students (Mastropieri et al., 2012).

Statement of the Problem

Myles (2005) documents the social and behavioral distinctiveness of children with ASD, however, there is limited research regarding (a) the writing skills of children with an ASD diagnosis and (b) instructional strategies that are effective for this population. With the number of children diagnosed with ASD increasing, as well as requirements that teachers use evidence-based practices, research is needed to find effective interventions.

The Current Study

The SRSD strategy is a validated procedure, which has improved the writing ability of students across disabilities. The purpose of this study is to replicate and extend the current research literature utilizing the SRSD strategy with students with an ASD diagnosis who have average to above average intelligence. This researcher proposed to determine the effectiveness of the SRSD writing intervention with four to six students, in upper elementary school grades (4th – 6th) who had a diagnosis of ASD. The rationale for this is twofold. First, it is more common for high-functioning students with an ASD to be identified at older elementary school ages, rather than during preschool years as is frequently the case for children with more severe impairments. Second is the fact that writing problems begin in kindergarten and get worse as a child ages (Harris et al., 2002). Harris et al. (2002) go on to state, if children who have problems with writing do not receive intervention, they can develop aversions to writing, question their ability, and begin to write less than their peers.

Persuasive writing was selected as the genre because only one other published study involving students with ASD has used this strategy (Delano, 2007b). In addition,

recent literature has found the SRSD strategy for persuasive writing, using the mnemonic POW + TREE, to be effective for students with emotional and behavioral disabilities (EBD) who were also identified as having an ASD diagnosis (Mastropieri et al., 2009; 2010).

This study extends the research base by investigating the effects of direct SRSD instruction for persuasive essays while working one-to-one with high functioning students on the autism spectrum. The study also examines the abilities of students to use SRSD to write an essay within a specified amount of time. This study is also the first to look at the on- and off-task behavior of students with ASD while they participate in a writing intervention. Furthermore, it is the first study to collect self-efficacy data for students with ASD as they participate in a writing task. A qualitative piece was also incorporated into the study to see if students' views of themselves as writers changed over time or remained the same. Parent interviews regarding their child's writing ability and attitudes towards writing were also conducted. In summary, the effects of planning and writing a persuasive essay using the SRSD approach for six children with a diagnosis of autism spectrum disorder, in 4th and 6th grades were explored through the following.

Research Questions

1. Will SRSD instruction for POW + TREE persuasive writing strategy increase the number of essay parts, quality, number of words, sentences, and transition words of persuasive essays on immediate and maintenance measures for students with ASD?

2. Will students be able to learn to write fluently following mastery of the skills learned in writing an untimed one-paragraph essay to planning and writing essays in 10-minutes on immediate and maintenance measures?
3. Will students be able to generalize the use of the POW + TREE strategy to other academic content areas?
4. What levels of on-task behavior do students demonstrate during SRSD instruction, fluency instruction and generalization instruction?
5. Will student perceptions and attitudes of themselves as a writer change as a result of the intervention?
6. Will parents report a change in their children's attitudes about writing as a result of the intervention?

The following section lists the research questions for the current study.

Definition of Terms

Asperger's disorder (AD). According to the DSM-IV-TR a diagnosis of Asperger's Disorder must meet the following criteria:

- A. Qualitative impairment in social interaction, as manifested by at least two of the following:
 1. marked impairment in the use of multiple nonverbal behaviors such as eye-to-eye gaze, facial expression, body postures, and gestures to regulate social interaction
 2. failure to develop peer relationships appropriate to developmental level
 3. a lack of spontaneous seeking to share enjoyment, interests, or achievements

with other people (e.g. by a lack of showing, bringing, or pointing out objects of interest to other people)

4. lack of social or emotional reciprocity

B. Restricted repetitive and stereotyped patterns of behavior, interests, and activities, as manifested by at least one of the following:

1. encompassing preoccupation with one or more stereotyped and restricted patterns of interest that is abnormal either in intensity or focus
2. apparently inflexible adherence to specific, nonfunctional routines or rituals
3. stereotyped and repetitive motor mannerisms (e.g., hand or finger flapping or twisting, or complex whole-body movements)
4. persistent preoccupation with parts of objects

C. The disturbance causes clinically significant impairment in social, occupational, or other important areas of functioning.

D. There is no clinically significant general delay in language (e.g., single words used by age 2 years, communicative phrases used by age 3 years).

E. There is no clinically significant delay in cognitive development or in the development of age-appropriate self-help skills, adaptive behavior (other than in social interaction), and curiosity about the environment in childhood.

F. Criteria are not met for another specific Pervasive Developmental Disorder or Schizophrenia (American Psychiatric Association, 2000, p. 84).

Autism spectrum disorder (ASD). A term used in the literature to refer to a group of developmental disorders currently classified in the DSM-IV-TR under the

umbrella category of Pervasive Developmental Disorders (PDD). This includes Autistic Disorder or Autism, Rett's Disorder, Childhood Disintegrative Disorder, Asperger's Disorder and Pervasive Developmental Disorder-Not Otherwise Specified (PDD-NOS).

Autistic disorder. A diagnosis of Autistic Disorder must meet the following criteria:

- A. A total of six (or more) items from 1, 2, and 3, with at least two from 1, and one each from 2 and 3:
 - 1. qualitative impairment in social interaction, as manifested by at least two of the following:
 - (a) marked impairment in the use of multiple nonverbal behaviors such as eye-to-eye gaze, facial expression, body postures, and gestures to regulate social interaction
 - (b) failure to develop peer relationships appropriate to developmental level
 - (c) a lack of spontaneous seeking to share enjoyment, interests, or achievements with other people (e.g., by a lack of showing, bringing, or pointing out objects of interest)
 - (d) lack of social or emotional reciprocity
 - 2. qualitative impairments in communication as manifested by at least one of the following:
 - (a) delay in, or total lack of, the development of spoken language (not accompanied by an attempt to compensate through alternative modes of communication such as gesture or mime)

- (b) in individuals with adequate speech, marked impairment in the ability to initiate or sustain a conversation with others
 - (c) stereotyped and repetitive use of language or idiosyncratic language
 - (d) lack of varied, spontaneous make-believe play or social imitative play appropriate to developmental level
3. restricted repetitive and stereotyped patterns of behavior, interests and activities, as manifested by at least two of the following:
- (a) encompassing preoccupation with one or more stereotyped and restricted patterns of interest that is abnormal either in intensity or focus
 - (b) apparently inflexible adherence to specific, nonfunctional routines or rituals
 - (c) stereotyped and repetitive motor mannerisms (e.g., hand or finger flapping or twisting, or complex whole-body movements)
 - (d) persistent preoccupation with parts of objects
- B. Delays or abnormal functioning in at least one of the following areas, with onset prior to age 3 years: 1. social interaction, 2. language as used in social communication, or 3. symbolic or imaginative play.
- C. The disturbance is not better accounted for by Rett's Disorder or Childhood Disintegrative Disorder (American Psychiatric Association, 2000, p. 75).

Mastery performance. Mastery of performance for instruction is obtained when a student can write two consecutive essays that include a minimum of eight required

essay parts. Essay parts include a topic, at least three reasons, at least three explanations for each reason, a counter reason, a counter explanation, and an ending.

Persuasive essay. A written composition where the writer tries to convince the reader to accept his point of view or position on a given topic, providing reasons and explanations to support his belief.

Pervasive developmental disorder (PDD). Umbrella category in the DSM-IV-TR under which Autistic Disorder, Rett's Disorder, Childhood Disintegrative Disorder, Asperger's Disorder and Pervasive Developmental Disorder-Not Otherwise Specified fall. The overall disorder is characterized by severe impairments in social interaction skills, communication skills and the presence of stereotyped behaviors, interests and activities that are deviant relative to the individual's mental or developmental age (American Psychiatric Association, 2000, pp. 69-70).

Pervasive developmental disorder – not otherwise specified (PDD-NOS). One of the diagnoses under the PDD umbrella category, individuals with this diagnosis display some symptoms associated with the other disorders (autism, Rett's, Asperger's or childhood disintegrative disorder) but not enough criteria are met for one of these specific disorders (American Psychiatric Association, 2000, p. 84).

POW+TREE. A mnemonic developed to use with the Self-Regulated Strategy Development (SRSD) model of instruction to help students remember the parts of a persuasive essay (Harris et al., 2008). POW represents **P**ick my idea; **O**rganize my notes; **W**rite and say more. TREE stands for **T**opic Sentence; **R**easons; **E**xplanations; and **E**nding.

Self-efficacy. An individual's perceived competency to succeed in a particular area or activity. Bandura (2006) found that people are more likely to engage in activities in which they perceive themselves as being successful.

Self-regulated strategy development (SRSD). A writing strategies approach created by Karen Harris and Steve Graham in 1982 and developed along with colleagues, teachers, and students over almost three decades. The approach brings together powerful strategies for writing and critical strategies for self-regulation of the writing process.

2. LITERATURE REVIEW

This chapter presents a review of literature on students with ASD and particularly on the efforts to improve their academic performance. Individuals with ASD often experience academic problems as well as organizational difficulties, inflexibility, and literal thinking styles, which could impact their written language ability (Delano, 2007a). With the current emphasis on using evidence-based strategies for instruction, research to identify successful intervention strategies is needed to help the ever increasing number of students identified with ASD.

This literature review begins with a discussion of the criteria and processes used to select relevant material for the study. Then a review of literature on autism spectrum disorders (ASD) concentrating on the history and characteristics, academic achievement of students, particularly their issues with writing, is presented. Then literature on writing research to include studies involving typically developing students as well as students with learning disabilities is discussed. This is followed with a review of writing intervention research with a focus on self-regulated strategy development (SRSD) and fluency instruction for students with neurotypical students as well as students with learning disabilities, emotional and behavioral disorders and ASD. Finally, this study and how it extends prior research is reviewed.

Literature Search Procedures

A search of available literature was conducted to identify and locate empirical research relevant to the study. To be included in this review, studies must have (a) appeared in a peer-reviewed journal published in English; (b) performed and described an intervention or treatment; and included at least one of the following (c) a target population of elementary to middle school aged individuals; (d) individuals who had a medical diagnosis of Asperger's Syndrome, Autism Spectrum Disorder, or Pervasive Developmental Disorder-Not Otherwise Specified; (e) a statement that the IQs of the study subjects were within the average or above average range; (f) writing and writing interventions; or (g) Self-regulated strategy development interventions.

To locate articles, the following research databases were searched by keywords: (a) Academic Search Complete; (b) Dissertations and Theses: Full Text; (c) Education Full Text, Education Research Complete; (d) Educational Resources Information Center (ERIC); (e) JSTOR; (f) ProQuest Research Library; (g) PsycInfo; (h) Science Direct; (i) Social Sciences Citation Index; and (j) Web of Science. A hand search was conducted through all the *Research in Autism Spectrum Disorders* journals from 2007 – 2012, as well as an online search of articles in-press, but not yet published. To ensure full inclusion of relevant studies, references of the articles identified through this process were reviewed to identify “ancestor” studies. In addition, an advanced search in Social Citations was performed to determine if any newer articles, which cited already identified articles, were missed in earlier searches. This process was continued until all articles included in this review were identified.

The following key words were used in the search: (a) autism, autism spectrum disorder, Asperger's, Asperger's syndrome, Asperger's disorder, high-functioning autism and pervasive developmental disorder—not otherwise specified; (b) Self-regulated strategy development; (c) writing, writing intervention; and (d) academic, academic interventions. Abstracts of identified articles were then reviewed to determine if they met the inclusion criteria listed above. A discussion of study criteria follows.

Autism Spectrum Disorders

Autism spectrum disorder (ASD) is an umbrella term used to refer to a variety of developmental, neurological disorders affecting a child's social development and ability to communicate. Included in this group of disorders are Asperger's Syndrome, Autism, Childhood Disintegrative Disorder, Pervasive Developmental Disorder-Not Otherwise Specified (PDD-NOS), and Rett's Disorder. For the purposes of this study only students with Asperger's Disorder or PDD-NOS were included because these individuals have average to above average intellectual functioning. In order to more precisely determine the effect of the writing intervention, it was important to minimize the number of variables that could affect a student's performance such as low IQ, emotional behavior issues, or difficulty with handwriting.

The history of Autism will be discussed to present a background of the disorders. Autism is the disability category in the Individuals with Disabilities Education Act (IDEA) (2004) under which students with Asperger's and PDD-NOS receive services. As with any disability category, there are variations between individuals as to the severity of the disorder. Educators follow the criteria outlined in IDEA (2004) to identify

students with ASD. Developmental pediatricians, neurologists, psychologists and psychiatrists use DSM-IV TR to diagnose individuals with ASD. DSM-IV TR provides standardized criteria to help diagnose ASD.

History of autism. In 1943, Leo Kanner, described 11 children (eight boys and three girls) who had significant impairments in their social functioning and language skills (Kanner, 1943). Three of the children Kanner studied were mute. The other eight children were reported to have had a language delay and parents had suspected hearing loss as the reason their child was not speaking. Kanner's review of the literature revealed that the characteristics displayed by these children had not been reported previously. He realized that the characteristics, while seeming rare, might in fact be more prevalent and that these children might have been diagnosed as feeble-minded or schizophrenic (Kanner, 1943). Kanner introduced the label "early infantile autism" to refer to the children he was seeing (Frith, 1991).

One of the first signs noted in young children diagnosed with autism is a lack of pointing and joint attention (looking to share interest and attention with another person) (Frith, 1991). Kanner (1943) stated that the children he observed were unable to relate to other people and every day situations in an ordinary way. He went on to say that parents reported their children as being "self-sufficient" or "in a shell" and that they were happiest when left alone. The children acted as if people were not there and exhibited these behaviors since birth (Kanner, 1943, p. 242). Kanner (1943) noted the children showed a greater interest in objects compared to people, often became frustrated when having to interact with people and did not engage in pretend play. Kanner (1943) also

reported that these 11 children had difficulty with changes in routines and would often have tantrums, yell or cry. He did observe that there was variability in the students' communication skills. Kanner (1943) reported the language spoken by the eight children that spoke was inflexible and literal. Their language lacked spontaneity and the language they did use came from the original context in which it was learned. Finally, Kanner (1943) reported that the children he studied had good cognitive potential including rote memory and that many of the children had excellent memory of earlier events. Kanner did comment that he noticed a possible genetic component to autism that could be seen in families (Frith, 1991).

Kanner (1943) used the term early infantile autism to describe what he was seeing. The term autism comes from the Greek word “autos” meaning self to describe these children. The Diagnostic Statistical Manual (DSM) was first published in 1952; however, it wasn't until the third version in 1980 that autism was recognized as a distinct category. Currently DSM-IV TR includes autistic disorder under the umbrella term ASD as one of five different disorders. Autism was added to IDEA as a disability category in the 1990 reauthorization.

Characteristics of autism disorder. In order to be classified as an individual with Autistic Disorder (AD), according to the DSM-IV TR an individual must meet the following criteria:

- A. A total of six (or more) items from 1, 2, and 3, with at least two from 1, and one each from 2 and 3:
 - 1. qualitative impairment in social interaction, as manifested by at least two of

the following:

(a) marked impairment in the use of multiple nonverbal behaviors such as eye-to-eye gaze, facial expression, body postures, and gestures to regulate social interaction

(b) failure to develop peer relationships appropriate to developmental level

(c) a lack of spontaneous seeking to share enjoyment, interests, or achievements with other people (e.g., by a lack of showing, bringing, or pointing out objects of interest)

(d) lack of social or emotional reciprocity

2. qualitative impairments in communication as manifested by at least one of the following:

(a) delay in, or total lack of, the development of spoken language (not accompanied by an attempt to compensate through alternative modes of communication such as gesture or mime)

(b) in individuals with adequate speech, marked impairment in the ability to initiate or sustain a conversation with others

(c) stereotyped and repetitive use of language or idiosyncratic language

(d) lack of varied, spontaneous make-believe play or social imitative play appropriate to developmental level

3. restricted repetitive and stereotyped patterns of behavior, interests and activities, as manifested by at least two of the following:

(a) encompassing preoccupation with one or more stereotyped and restricted

patterns of interest that is abnormal either in intensity or focus

(b) apparently inflexible adherence to specific, nonfunctional routines or rituals

(c) stereotyped and repetitive motor mannerisms (e.g., hand or finger flapping or twisting, or complex whole-body movements)

(d) persistent preoccupation with parts of objects

B. Delays or abnormal functioning in at least one of the following areas, with onset prior to age 3 years: 1. social interaction, 2. language as used in social communication, or 3. symbolic or imaginative play.

C. The disturbance is not better accounted for by Rett's Disorder or Childhood Disintegrative Disorder (American Psychiatric Association, 2000, p. 75).

There is a wide variation in the functioning of individuals with autism disorder. Some of these individuals will remain nonverbal, while others may experience language delays. Autism was first included in DSM-III in 1980 as a distinct diagnostic category. In 2000, when DSM-IV was updated, autism was a separate category. Under DSM-IV TR Autism Spectrum Disorder was introduced and autism became one of the five subcategories of ASD. In the 1990 reauthorization of IDEA, autism was added as a disability category in which school age children can receive special education services. Children who receive a diagnosis of autism disorder under DSM-IV TR must display problems in social interaction, language delays and difficulties with symbolic play prior to the age of three.

Unlike typically developing infants, infants with autism have impaired social interaction, communication delays and repetitive patterns of behavior. Considerable variation has been noted in the intellectual functioning of individuals diagnosed with autism. In addition many of these individuals are either hyperresponsive or hyporesponsive to sensory stimuli. According to Hallahan et al. (2012), many parents reported that, as babies or toddlers, children with autism did not respond to being picked up or cuddled. Kanner (1943) reported that many times infants and young children with autism did not raise their arms when approached by a caregiver to be picked up, unlike neurotypical children.

Through the study of old home videos, Maestro, Dempsey, and Fodstad (2005), found that children diagnosed with autism had lacked joint attention and did not demonstrate social smiling as an infant. Joint attention is a skill neurotypical children develop enabling them to engage others through eye contact, reaching or pointing and showing items to another person. In addition, Maestro et al. (2005) found that autistic infants were more interested in objects than people and did not pay attention to the faces of adults like neurotypical children did. Hallahan et al. (2012) reported that individuals with autism do not make eye contact and often look at others out of the corner of their eyes. In addition, Frith (2012) and Hallahan et al. (2012) reported that individuals with autism tend to play alone and do not engage in symbolic or imaginative play. Individuals with autism also have difficulties with transitions and changes in routine.

Children with autism who do develop language typically experience language delays. For a small portion of individuals, language regression is evident around the

second year of life, after what appears to have been normal language development (Lord, Shulman, & DiLavore, 2004). Frith (1991) reported that many times children with autism did not appear to comprehend what was being said to them and appeared to be in their own world with little regard to what was going on around them. In addition, the speech of individuals with autism often lacks prosody, sounds robotic in nature, exhibits echolalia (repeating what one hears), and misuses pronouns (Frith, 1991; Hallahan et al., 2012).

Interventions in school need to address both expressive and receptive language delays, social skills and academic skills in the areas the individual is experiencing delays. Mayes and Calhoun (2003) found that individuals with autism experienced deficits in information processing which can interfere with their learning. As students progress through school, they must be able to link prior learned skills to new information. An autistic student's concrete way of thinking may interfere with their ability to generalize or make inferences (Tsatsanis, 2004). By adolescence, autistic children begin to notice that they are different than their peers. They have few friends and become socially isolated. It is imperative that these children receive social skills training to help them interact with peers and adults and lessen their social isolation.

Autism is a disorder that typically continues into adulthood (Frith, 1991; Hallahan et al., 2012). The prognosis of individuals diagnosed with autism varies based on the cognitive functioning of the individual. According to Kirk, Gallagher, Coleman and Anastasiow (2012), the field has paid attention to the education of children but not a lot of attention once these individuals leave school. Transition planning for individuals

should begin early, and is required to begin by age 14 under IDEA (2004). As an individual with ASD progresses into adulthood, finding vocational opportunities for these individuals that downplay social problems and emphasize focused work is important. Hallahan et al. (2012) reported that in many ways the outcomes for individuals with autism are similar to those with intellectual disabilities and the same transition planning that occurs for individuals with intellectual disabilities should be followed for those with autism.

History of Asperger's syndrome. During the same time period Kanner was treating children in Baltimore, Maryland; Hans Asperger, a pediatrician and child psychologist, was studying children in Vienna, Austria. The Austrian children exhibited similar characteristics but did not have the language delays reported by Kanner (1943). Asperger's original paper, published in German in 1944, did not become widely known in the United States until it was translated by Wing (1981). The children Asperger described showed deficits in social skills, had obsessive interests and were physically clumsy. These children did not have any delays in cognitive development and they did not have any delays in language development. Asperger referred to the disorder he was investigating as "autistic psychopathy" (Frith, 1991). It wasn't until 1981 when Wing translated Asperger's paper that the disorder began to be called Asperger syndrome (AS) (Frith, 1991).

Asperger noted the children he observed were considered obnoxious, unchildlike, troublesome, and disrespectful by most adults (Frith, 1991). These children "made their parents' lives miserable and drove their teachers to despair (Frith, 1991, p. 7). However,

Asperger found these children fascinating. The individuals Asperger described in his original paper spoke more like grown-ups than children (Frith, 1991). In addition, he noted peculiarities in the children's non-verbal communication, such as "eye gaze, gestures, posture, voice quality, prosody and word choice" (Frith, 1991, p. 10). Asperger noted that the children he was observing obsessively collected objects.

Asperger's syndrome was not added to the Diagnostic and Statistical Manual until the fourth addition in 1994 (APA, 2004). At that time, Asperger's syndrome was considered a separate disorder from autism and then in 2000 update, Asperger's was placed under ASD. Mayes, Black and Tierney (2013) have indicated that Asperger's syndrome, will be removed from the fifth edition of the Diagnostic and Statistical Manual due out in May of 2013. Mayes et al. (2013) stated that, according to the American Psychiatric Association, the previous separate diagnostic categories seen under DSM-IV TR in fact represent a continuum from mild to severe of the one diagnostic category autism. In their study, Mayes et al. (2013) found that 98% of the children currently diagnosed by DSM-IV TR as low or high functioning individuals with ASD were correctly identified under the DSM-V criteria. In public schools, individuals diagnosed with Asperger's syndrome are provided services under the IDEA label of autism.

Characteristics of Asperger's syndrome. In order to be classified as an individual with Asperger's Disorder, according to the DSM-IV TR an individual must meet the following criteria:

- A. Qualitative impairment in social interaction, as manifested by at least two of the following:

1. marked impairment in the use of multiple nonverbal behaviors such as eye-to-eye gaze, facial expression, body postures, and gestures to regulate social interaction
 2. failure to develop peer relationships appropriate to developmental level
 3. a lack of spontaneous seeking to share enjoyment, interests, or achievements with other people (e.g., by a lack of showing, bringing, or pointing out objects of interest to other people)
 4. lack of social or emotional reciprocity
- B. Restricted repetitive and stereotyped patterns of behavior, interests, and activities, as manifested by at least one of the following:
1. encompassing preoccupation with one or more stereotyped and restricted patterns of interest that is abnormal either in intensity or focus
 2. apparently inflexible adherence to specific, nonfunctional routines or rituals
 3. stereotyped and repetitive motor mannerisms (e.g., hand or finger flapping or twisting, or complex whole-body movements)
 4. persistent preoccupation with parts of objects
- C. The disturbance causes clinically significant impairment in social, occupational, or other important areas of functioning.
- D. There is no clinically significant general delay in language (e.g., single words used by age 2 years, communicative phrases used by age 3 years).
- E. There is no clinically significant delay in cognitive development or in the development of age-appropriate self-help skills, adaptive behavior (other than in

social interaction), and curiosity about the environment in childhood.

- F. Criteria are not met for another specific Pervasive Developmental Disorder or Schizophrenia (American Psychiatric Association, 2000, p. 84).

Based on DSM-IV, in order to be identified as a person with AS, an individual cannot have a significant cognitive delay or any delays in communication and language. DSM-IV states that to be identified as an individual with AS, the person must have "an impairment in social interaction and restricted repetitive and stereotyped patterns of behavior, interest, and activities that cause clinically significant impairment in social, occupational, or other areas of functioning" (APA, 1994).

Unlike a diagnosis of autism there is no criteria for age of onset for AS.

Asperger's syndrome tends to be diagnosed later in life than autism because difficulties with social interactions are not as evident early in life (Barnhill, 2001; Griffin, Griffin, Fitch, Albera, & Gingras, 2006). In addition, individuals diagnosed with Asperger's syndrome tend to have normal to above normal intellectual functioning (Griffin et al., 2006). Thus the major distinctions between autism and AS are the lack of language delays and higher intellectual functioning of children diagnosed with AS. Many times children with AS, have poor eye contact, difficulty understanding sarcasm, interpret situations literally, are clumsy, and have an inability to interpret body language which affects their ability to interact with others (Griswold, Barnhill, Myles, Hagiwara & Simpson, 2002). Asperger found that many times these difficulties did not diminish with age (Griswold et al., 2002). Given the lack of social skills in students with AS and the

fact that these deficits do not diminish, research has focused more on social skills development than on academics.

While individuals with AS tend to have normal to above normal intelligence, Hans Asperger reported that the boys he studied failed reading, writing, and math (Griswold et al., 2002). Griswold et al. (2002) investigated the academic achievement of students with AS and found that their academic performance was varied, ranging from significantly above average to below average. Based on their findings, Griswold et al. (2002) indicated that diagnosing a child with AS does not provide an understanding of their educational strengths as one might gain from other diagnosis. They caution diagnosticians to provide qualitative information regarding a student's performance on testing measures besides just a standard score.

Characteristics of PDD-NOS. In order to be classified as an individual with PDD-NOS, according to the DSM-IV TR the individual must display some symptoms associated with the other disorders (autism, Rett's, Asperger's or childhood disintegrative disorder) but not enough criteria are met for one of those specific disorders (American Psychiatric Association, 2000, p. 84). Therefore, these individuals may experience some difficulties with social interactions and language just not as markedly as those diagnosed with AD or AS. Walker et al. (2004) reported that individuals who receive a diagnosis of PDD-NOS tend to have fewer social difficulties and repetitive behaviors and more language delays than children with AS.

PDD-NOS was first included in the fourth addition of DSM in 1994. According to Hassan and Perry (2011), the proposed DSM-V criteria for ASD would no longer

include PDD-NOS so individuals would just receive a diagnosis of ASD. Mayes et al. (2013) cautioned that fewer students may be identified under the ASD category in DSM-V than would have been identified as PDD-NOS under DSM-IV TR. Mayes et al. (2013) went on to report that in field tests using the DSM-V criteria, only 27% of the children currently diagnosed with PDD-NOS met the criteria for ASD in DSM-V.

As with any of the diagnostic categories under ASD, early diagnosis and intervention is important, offering the best chance at improving outcomes. Matson, Dempsey and Fodstad (2009) found that individuals with PDD-NOS tended to have better verbal communication skills and social relationships than individuals diagnosed with AD or AS. Walker et al. (2004) reported that students with PDD-NOS have fewer repetitive behaviors than individuals diagnosed with autism or Asperger's syndrome.

IDEA criteria for a diagnosis of autism. While medical professionals use the DSM-IV to diagnose individuals with ASD, in order to be eligible for service within schools, students must meet the eligibility criteria of The Individuals with Disabilities Education Act (IDEA). IDEA (2004) defines autism as:

A developmental disability significantly affecting verbal and nonverbal communication and social interaction, generally evident before age three, that adversely affects a child's educational performance. Other characteristics often associated with autism are engagement in repetitive activities and stereotyped movements, resistance to environmental change or change in daily routines, and unusual responses to sensory experiences.

Autism does not apply if a child's educational performance is adversely affected

primarily because the child has an emotional disturbance, as defined under emotional disturbance.

A child who manifests the characteristics of autism after age three could be identified as having autism if the criteria in the first paragraph of this section are satisfied (34 C.F.R. § 3008. (c) (1), 2006, p. 46756).

The Centers for Disease Control and Prevention reported in March 2012, that the prevalence of ASD has risen to 1 in 88 children in the United States overall, compared to 1 in 150 in 2000 (CDC, 2012). The number of boys being diagnosed with autism is 1 in 54 in contrast to 1 in 252 for girls (CDC, 2012). Current estimates are that just under 380,000 school age students in the United States are served under the disability category of Autism, accounting for 0.8% of students age 3-21 receiving special education services (U.S. Department of Education, 2011). According to the National Center for Educational Statistics the number of students 6-21 being served under the IDEA category of Autism has increased 485% in 10 years from 65,000 students in 1999 when numbers were first reported to just under 380,00 students during the 2009-2010 school year. The overall enrollment of students with autism rose from 0.1% to 0.8% of the students receiving special education services.

Causes of ASD. Both Kanner and Asperger reported a biological and heredity basis as a cause for autism (Frith, 1991). Today we still do not know precisely the causes of ASD and research is being conducted on both the neurological and genetic basis of ASD. Scientists have “established unequivocally that the cause is neurological, not interpersonal” (Hallahan et al., 2012, p.240). Hallahan et al. (2012) go on to say that

there is strong evidence that genetics plays a role in many cases. Hallahan et al. (2012) report that brain scans have revealed that a number of areas of the brain are affected and “many authorities now think that autism is better conceived as a disorder of neural networks rather than as being due to an abnormality in one specific part of the brain” (p. 240). Research has shown that the brain and head of children with ASD grow at a faster rate early in life and then even out to a normal size by adolescents, and that the rapid brain growth during the first two years of life when the brain is developing may contribute to the characteristics discussed (Hallahan et al., 2012).

Another theory being researched as a possible cause of ASD is elevated growth hormones, which could explain the rapid brain growth (Baron-Cohen, Auyeung, Ashwin & Knickmeyer, 2009). Researchers are also looking into elevated levels of androgen in the amniotic fluid as a possible cause of ASD (Baron-Cohen, Auyeung, Ashwin & Knickmeyer, 2009). Finally, genetic causes of ASD are being investigated as well. Kanner and Asperger both commented on the fact that they noticed a strong hereditary factor to autism and AS (Frith, 1991). Hallahan et al. (2012) reported that when one child is diagnosed with ASD there is a 15% chance that a younger sibling will also be diagnosed with ASD. Even if not diagnosed with ASD, family members of individuals with ASD tend to exhibit many ASD like characteristics. Researchers are looking into tiny genetic mutations that can cause ASD and can be passed down to children from one or both parents. Researchers continue to look for genes that may be involved “stating that no single ‘autism gene’ exists; multiple genes are involved, and the same genes are not implicated in all people with autism” (Hallahan et al., 2012, p.242). More research

needs to be done in the area of causes of ASD before we are able to state a definitive cause.

Academic achievement and students with ASD. Whitby and Mancil (2009) synthesized the research that had been conducted on the academic achievement of children with Asperger's syndrome (AS) and high functioning autism (HFA) from 1981 to 2008. They started their search in 1981 because that was the year Asperger's paper was translated from German into English by Wing (1981). Whitby and Mancil (2009) stated this was when the debate between the terms AS and HFA began. Whitby and Mancil (2009) identified six studies conducted between 1994 and 2008 that investigated the academic achievement of students diagnosed with AS who had an IQ score of 70 or greater. The mean age of participants in the six studies was 10.5 years with a range of three to 17 years of age and all participants met the criteria for AS based on DSM-IV-TR criteria.

Whitby and Mancil (2009) stated that understanding the academic needs of individuals with AS and HFA is important as more students are identified and provided services within the public schools, more specifically within the general education classroom. Teachers need to understand the strengths and weakness of these individuals they will be responsible for educating. According to NCES (2012), 37% of students serviced under the IDEA category of Autism spend less than 21% of the school day outside the general education classroom. Improving the academic performance of individuals with AS and HFA is important not only for success within the K-12 educational setting but also for post-secondary and employment success. While students

diagnosed with AS and HFA have the intellectual capacity to succeed, they need appropriate accommodations and interventions to reach their full potential (Myles, 2005).

Whitby and Mancil (2009) discussed the performance of individuals with AS and HFA in three academic areas, reading, writing and mathematics. Overall the results of the literature review indicated that “individuals with HFA/AS have deficits in comprehension, written expression, graphomotor skills, linguistically complex materials, complex processing across all domains and problem solving” (Whitby & Mancil, 2009, p. 557). These deficits may not be obvious early on while learning is comprised mainly of rote tasks, but they become obvious when tasks become abstract (Whitby & Mancil, 2009). In addition, Whitby and Mancil (2009) reported that reading, math and writing performance corresponded to IQ scores. Griffin et al. (2006) reported that students with AS tend to have difficulty with comprehension and abstract thinking.

According to Whitby and Mancil (2009), basic reading and decoding skills were not impacted in students with AS or HFA and that up until about the age of eight, students with AS or HFA performed at or above their same age peers. When reading moved from rote tasks to those that required comprehension of abstract concepts, such as main ideas, inferences, or cause and effect, students with AS or HFA began to struggle and fall behind their peers (Whitby& Mancil, 2009). Five out of the six studies reviewed by Whitby and Mancil (2009) identified comprehension deficits in students with AS or HFA.

According to Whitby and Mancil (2009), both written expression and graphomotor skills were weaknesses for students with AS or HFA. The graphomotor

weaknesses may be a result of motor difficulties (Whitby& Mancil, 2009). Organization and attention deficits may be the reason for weakness in written expression (Whitby& Mancil, 2009). Mayes and Calhoun (2003) reported that 60% of individuals with AS or HFA also had difficulties with writing.

Whitby and Mancil (2009) concluded from their literature review that students with AS or HFA had average mathematical abilities and computation skills. However, as problems became more complex and organizational and attention skills were needed to complete multistep problems, mathematical skills were impacted (Whitby& Mancil, 2009). In addition, reading problems appeared to affect a student's ability to complete word problems. Mayes and Calhoun (2003) reported that 23% of individuals with AS or HFA also had learning disabilities in mathematics.

It is important for researchers and teachers to have an understanding of the academic strengths and weaknesses of individuals with Asperger's syndrome. Whitby and Mancil (2009) stated that once researchers have an understanding of the academic functioning of students with AS, interventions can be identified and researched to determine their effectiveness for this population.

Writing instruction and students with ASD. Pennington and Delano (2012) conducted a review of literature from 1994 to 2011 that evaluated writing instruction strategies for students with ASD. Fifteen studies involving a total of 29 students ages four to 21 met the review's selection criteria. Of the 29 individuals, two were female, 22 were diagnosed with autism, six were diagnosed with AS and one with PDD-NOS. Four research questions were investigated: (a) what writing skills had been targeted for

investigation, (b) what interventions had been investigated and were they consistent with practices used for neurotypical students, (c) had the interventions been effective, and (d) what was the quality of the available research. Pennington and Delano (2012) identified four targeted writing skills in their research (use of adjectives, sentence construction, spelling, and narrative writing).

Adjectives. Rousseau, Krantz, Poulson, Kitson and McClannahan (1994) conducted the first writing intervention research involving students with autism. Three students (2 males, 1 female) with a diagnosis of autism and a mean age of 12.9 participated in the intervention. The three individuals had a mean full scale IQ of 59 based on the WISC (Rousseau, et al., 1994). The study examined if sentence-combing instruction increased the number of descriptive adjectives used by the participants. Students were taught to use adjectives to combine two short sentences into one more elaborate sentence using adjectives. Results indicated that sentence combining intervention did increase the number of adjectives used by the participants in writing samples and students were able to maintain these increases post intervention.

Sentence construction. Two studies looked at sentence construction in response to the use of pictures (Basil & Reyes, 2003; Yamamoto & Miya, 1999). Basil and Reyes (2003) used a multimedia software package to teach sentence construction to six students with significant cognitive delays in their native tongue of Castilian or Catalan Spanish. The study presented the individual data for two participants (1 male, 1 female) diagnosed with autism. The mean age of these two participants was 11.7 years. They had a mean mental age of 5 years 7 months as well as delayed expressive and receptive language

skills. During the learning activities the computer program allowed students to select any words or word groups on a computer screen to construct a meaningful sentence. Any selection of words would result in meaningful sentences. After the sentence was created, the computer read the sentence so the students could hear the sentence verbally. The computer also presented an animation of the sentence that students could watch. Students were then taught to create noun-verb-noun sentences initially, followed by instruction in prepositions and then how to produce more elaborate sentences using conjunctions and adjectives. Basil and Reyes (2003) reported that students were able to progress from producing sentences with three grammatical elements to sentences with more than seven grammatical elements, indicating that the computer based program was effective in increasing the sentence production through the use of pictures and words presented on a computer for students with autism.

Yamamoto and Miya (1999) taught three male Japanese students with autism to construct sentences through computer-assisted instruction (CAI). The three male participants ranged in age from 6 years, 0 months to 10 years, 11 months ($M = 8.07$). All three of the students were low functioning with a reported mean mental age of 5.3. Students were presented a picture on a computer display and required to write a sentence that contained five words. Results of the study found that the three students, after receiving the instruction could construct (subject, verb, object) sentences for 24 untrained stimuli. The students were then trained to use particles that specify the subject and object roles in the Japanese language and again students were able to learn these skills to create appropriate sentences.

Spelling. Pennington and Delano (2012) identified five studies that addressed spelling Schlosser & Blischak, 2004; Schlosser, Blischak, Beliore, Bartley & Barnett, 1998; Kinney, Vedora, & Stromer, (2003); Stromer, Mackay, Howell & McVay, 1996; Sugawara and Yamamoto, 2007). Schlosser et al. (1998) used voice output communication devices in a preliminary study to see if a student with autism could be taught to spell words under three different conditions. The three feedback methods were auditory-visual, visual only and auditory only along with a cover-copy-compare method. A 10-year-old male with a diagnosis of autism, an IQ score of 80, and a severe communication disorder participated in this study. His expressive and receptive language skills were reported to be in the 20-28 month range and it was reported that in addition to auditory processing delays he had oral apraxia that significantly impacted his expressive language ability. The copy-cover-compare method involved the researcher presenting a word on an index card, then pronouncing the word, finger spelling the word followed by asking the student to spell the word on a LightWRITER SL 35 device (Schlosser et al., 1998). The results of the study found that the student's spelling increased under all three conditions; however, they stated that verbal and auditory-visual methods were more effective than visual methods. Schlosser and Blischak (2004) replicated the Schlosser et al. (1998) study to teach spelling to four male students with autism and limited expressive language skills. The mean age of the participants was 10.25. In the auditory condition, students received synthetic speech feedback for each letter entered as well as the complete word, in the visual condition, students received print feedback based on the LCD display of the LightWRITER-SL35 and in the auditory-visual condition they

received both types of feedback (Schlosser & Blischak, 2004). Maintenance probes were administered one week after the end of the study and generalization probes were administered to see if participants could spell novel words. Results replicated those found in Schlosser et al. (1998) in that all three children were able to improve their spelling in all three conditions. All three participants reached criterion first in visual and auditory-visual conditions; however, one child demonstrated improved performance based on the auditory-visual and visual feedback. Generalization results were mixed with two students showing a lessening of their ability to spell novel words while two were able to spell novel words and appeared to have a basic knowledge of spelling rules.

Kinney et al. (2003) taught a 7-year-old first grade, female with ASD spelling through the use of computer video models. The student, Ana, watched a spelling video of one researcher writing a word she had been instructed to write by the other researcher; once she had written the word she stated “I wrote (target word)” (Kinney et al., 2003). The student imitated the researcher writing the word and then a video was played highlighting the target word that in a unique (i.e. an object (frog, duck) jumping over a rock) manner (Kinney et al., 2003). In phase I, Ana was instructed to write three words that ended in *-op*, *-ock*, and *-ore* as well as two high frequency words (*this* and *have*). During testing for phase I, Ana was able to spell all 15 words taught from dictation alone with no errors. In phase II, Ana’s spelling skills were assessed to see if the skills she learned in phase I increased her ability to spell new words. Ana was able to spell the five words learned in phase I but was unable to spell new words that contained the word ending she had learned in phase I. In phase III the researchers taught new beginning and

word endings using the same teaching as was used in phase I. After teaching sessions, Ana was able to correctly spell the five words taught and was able to generalize what she had learned to spell four novel words containing the word endings she had learned during the phase. In phase IV Ana was taught how to spell nine words with different word endings. She was able to learn the nine new words and generalize to 13 new words. The student was successful at generalization and maintenance tests conducted at home and school, indicating that she was able to maintain the skills she had been taught during the intervention and generalize the skill outside of the intervention setting. The results of the study demonstrated that there is potential benefit in using CAIs to teach spelling to students with ASD.

Stromer et al. (1996) taught one, 21-year-old male with autism, with a mental age equivalent score of 7 years 9 months to spell through use of CAI. The student was initially instructed to match a picture to a printed word, then to type a word based on a picture, to construct a word to a printed word sample and then to write a word based on a presented picture using paper and pencil. The results of this study revealed that teaching word construction via a computer program improved this participant's ability to write and spell when presented a picture.

Pennington and Delano (2012) also reviewed a Japanese study (Sugasawara and Yamamoto, 2007) that investigated the ability of students to identify Japanese characters. Although not an exact fit, they included the study under spelling because of the similarities in instructional techniques to teach use of characters and use of letters to form words. Sugawara and Yamamoto (2007) taught two students with developmental

disabilities, one student, a 4 year 3 month old male was identified as having PDD-NOS and a mental age of 2 years old. He was able to speak but was unable to read any characters or words. There were 36 2-character words and 2 3-character words used during the intervention. The student was presented with a picture on a computer screen and the Hiragana 2 or three-character for the picture. When the student chose the correct character the spoken syllable was presented by the computer as well as a visual reinforcement; however, when the word construction was incorrect a short beep was given. Results showed that the student learned word construction tasks and was able to generalize what he had learned in the intervention to read Hiragana characters without direct training (Sugasawara & Yamamoto, 2007).

Narrative writing. Pennington and Delano (2012) identified seven studies that involved instruction in narrative writing (Asaro & Sadler, 2009; Asaro-Saddler & Saddler, 2010; Bedrosian, Lasker, Speidel & Politsh, 2003; Delano, 2007a, 2007b; Pennington, Ault, & Schuster, 2011; Mason, Kubina, Valasa & Cramer, 2010). Bedrosian et al. (2003) used a typically speaking peer to assist in the story planning and writing instruction of the study's subject. Based on three standardized IQ tests, the typically speaking peer had an IQ range of 60-68 and was diagnosed with a mental impairment. The subject was a 14 year 10 month old male with autism, with a cognitive performance range from 55 to 81 who could not produce intelligible speech. The student with autism used an augmentative and alternative communication device (AAC) to communicate. The AAC device was programed to facilitate joint interaction between the two individuals during story planning, and writing. The student was taught to use story

grammar maps and storyboards and taught how to take turns interacting to complete the story grammar questions in order to jointly plan a story. This was followed by instruction in how to write a story based on the ideas on the story map. The results of the study revealed that the student with autism showed improvement in his ability to write a story. At post intervention, he had no spelling or grammatical errors, and minimal punctuation and capitalization errors. At the completion of the study, story grammar was assessed with results indicating 100% correct performance for the student with autism.

Pennington et al. (2011) evaluated the effects of simultaneous prompting (SP) and CAI to improve the story writing of three male students (mean age 8 years 3 months) with autism and if the students could generalize the skills learned through SP and CAI. Three story templates were used during the five to ten minute daily instructional sessions conducted by the classroom teacher. Students were provided subject, articles and verbs in word form along with object pictures in order to create sentences. The teacher provided SP to guide the student to the appropriate cells and to guide the student in choosing a word until the student had completed the story. Verbal praise was given following the construction of each sentence as well as at the completion of the story. Once the story was completed the computer read the story to the students. Maintenance and generalization measures were collected for two of the participants but were not analyzed because the third participant was unable to complete these phases before the end of the school year. Results indicated that SP and CAI were effective in improving the story-writing skills of the three participants.

Pennington and Delano (2012) reported five of the narrative writing studies demonstrated the effectiveness of SRSD for improving the writing ability of students with ASD (Asaro & Saddler, 2009; Asaro-Saddler & Saddler, 2010; Delano, 2007a, 2007b; Mason et al., 2010). Asaro & Saddler (2009) taught one 10 year-old male with AS to write stories using SRSD POW+WWW, and Asaro-Saddler & Saddler (2010) taught 3 males with an mean age of 7.37 in second and fourth grade to write stories using SRSD POW+WWW. Both studies showed increases in the number of essay parts, essay quality and number of words from baseline to post SRSD. Delano (2007a) used SRSD to teach one 12 year old male to increase the number of action and describing words as well as how to make revisions to his essays. Increases were noted in the essay quality and number of words written from baseline to post SRSD. Delano (2007b) used video-self modeling and SRSD POW+TREE to teach three high school males (mean age 15.4) with Asperger's syndrome to write persuasive essays with favorable results. Students' demonstrated increases in the number of essay parts and words written from baseline to post SRSD. Mason et al. (2010) used SRSD POW+TREE to teach five 7th and 8th grade males with EBD students to plan and write a persuasive essay in 10-minutes. Since one of the students in this study was identified as having autism, he was included in the Pennington and Delano (2012) review. All students along with the individual student with autism made gains from baseline to post SRSD in the number of essay parts, essay quality and number of words.

Pennington and Delano (2012) concluded that although the body of literature for students with ASD was limited, it indicated students with ASD benefit from writing

intervention. Based on their literature review, Pennington and Delano (2012) concluded that using multiple forms of modeling to instruct students with ASD in writing tasks was beneficial and that providing immediate reinforcement for students with ASD appeared to improve student performance. According to Pennington and Delano (2012) none of the studies reviewed met the minimum Horner et al. (2005) criteria for a quality study. They recommend “researchers should replicate the current investigations in the context of more robust research designs” (Pennington & Delano 2012, p 165). They went on to say that investigating strategies that have proven effective for teaching writing to students without disabilities should be evaluated to see if they are effective for students with ASD.

Writing and students with AS. Church, Alisanski and Amanullah (2000) found that students with AS had difficulty coming up with ideas in order to write essays. Church et al. (2000) discovered that students with AS were unable to organize their thoughts and draw on previous knowledge, affecting their ability to write an essay. Ozonoff and Jensen (1999) reported that students with AS have difficulty planning what to write.

Myles et al. (2003) looked at written language samples of children with AS and found that, compared to their peers, the students with AS used smaller words, shorter sentences, and overall wrote fewer words. In addition, they found that the writing performance of students with AS had greater variability than did the performance of their typical peers (Myles et al., 2003).

Griswold et al. (2002) found that even though there was variability in participants’ scores, written components fell within the average range while written

expression, numerical operations, and listening comprehension obtained the lowest achievement scores. Mayes and Calhoun (2003) investigated the performance of students with autism on the written expression subtest of the Wechsler Individual Achievement Test, 2nd edition (WIAT-II; Wechsler, 2001a). The results revealed that students who had a higher IQ tended to score lower on written expression subtests. They also found that 63% of the students had a specific learning disability in writing (Mayes & Calhoun, 2003). In the same study, students with autism who had a lower IQ were unable to complete the written expression subtest.

Finally, Losh and Capps (2003) investigated the ability of students with AS to create stories. They found that students did not include the cause of events, emotions, or any verbal interactions between characters in their writing. They found that the students with AS wrote compositions that had fewer story elements and were not as complex. In addition, teachers needed to provide students with AS more prompts to clarify or elaborate on their ideas, and remind them to avoid including irrelevant ideas (Losh & Capps, 2003).

These studies illustrated that while the writing performance of students with autism is varied, these students struggle with written expression. Specifically, students with AS can have difficulty coming up with ideas, have fewer story elements in their writing, and write less than their typical peers. None of the referenced studies identified any strategies to help improve the written expression of students with AS.

Writing is an important skill for students to develop, as it is a means for them to demonstrate their understanding and knowledge of what they are learning. Writing is a

measure used on the SAT; therefore, the ability to write well aids in college admission. In addition, the ability to write well is not a skill only used in school; it is important for individuals throughout life. As email and texting replace the telephone for communication purposes within the workforce, those who struggle to communicate in writing will fall further behind. Knowing that students with AS struggle with writing and that the number of students identified with AS is growing, it is imperative to find effective evidence-based practices for teaching students to facilitate their academic success.

Writing Research

Written expression is a skill that can be difficult for many students to master. Writing is a skill needed for students to demonstrate success in school as well as later in life. Writing allows for communication across a variety of contexts and is the primary means for communicating knowledge of content in educational contexts (Mercer & Mercer, 1998). Lacking adequate written language skills puts students at a disadvantage if the means of assessment involves written expression. Rogers and Graham (2008) reported that students who experience difficulties with writing are less likely to use writing to support and extend learning. Mason and Graham (2008) found that early delays in writing intensify as students' progress through school. Lienemann, Graham, Leader-Janssen and Reid (2006) stated that a way to prevent writing disabilities is to provide effective early instruction to at risk students in order to maximize their writing development. Lienemann et al. (2006) found that addressing writing problems early reduced the number of students who developed long-term writing problems.

Writing is defined as a three-stage process, by Hayes and Flowers (1980), which includes planning, drafting, and revising. According to Hayes and Flowers (1980) successful writers are able to move fluidly between these stages. Once Hayes and Flowers (1980) identified the stages of writing, focus shifted to developing strategies to teach writing. The National Commission on Writing (NCW) recommended that writing become a central focus in the schools because students' educational and occupational success will be affected if they do not learn to write well (Lienemann et al., 2006). Scardamalia and Bereiter (1986) stated that teachers play an important role in the process of instructing and assisting students by using explicit procedures to facilitate the cognitive process of writing. Lienemann et al. (2006) stated that explicit writing instruction, based on evidence-based research, is needed to improve writing skills of students with disabilities.

Meta-analysis research. Meta-analysis is a quantitative statistical analysis of several separate but similar experiments or studies to test the pooled data for statistical significance (Merriam-Webster, 2013). It is a technique that enables researchers to compile and compare data from numerous studies to determine if significant conclusions can be drawn. Procedures and processes used to conduct the meta-analysis plus all relevant data, to include descriptive information and effect sizes for dependent variables, must be clearly stated so the study can be replicated. Replication is important so the results and conclusions can be verified.

Single subject research and group experimental or quasi-experimental research have different ways of presenting effect sizes reported in meta-analysis research. In

single subject designs, the percent of non-overlapping data (PND) is the most reported effect size (Scruggs, Mastropieri, & Castro, 1987). Scruggs et al. (1987) developed guidelines for reporting PNDs using visual analysis of data to determine the effect size. A PND < 50% would indicate an ineffective intervention; a PND range of 50 – 70% would be considered a small effect; a moderate effect would be a PND range of 70 – 90%; while a PND > 90% would be considered a large effect (Scruggs et al., 1987).

For group experimental or quasi-experimental research, Lipsey and Wilson (2001) developed guidelines for reporting effect sizes of interventions based on Cohen's *d*. An effect size (*ES*) of $d = 0.20$ is considered to have a small effect; a $d > 0.50$ is considered to have a moderate effect; and a $d > 0.80$ is considered to have a large effect (Lipsey & Wilson, 2001).

Meta-analysis of writing research for typically developing students. After the seminal work of Hayes and Flower (1980) focus has been placed on the importance of teaching the writing process not the individual isolated tasks of writing such as grammar instruction. Over the last 30 years, seven meta-analyses have reviewed the results of writing research conducted on students without disabilities (Bangert-Drowns, 1993; Bangert-Drowns, Hurley, & Wilkinson, 2004; Goldberg, Russell, & Cook, 2002; Graham & Hebert, 2010; Graham & Perin, 2007a, 2007b; Hillocks, 1986). These studies identified the most effective writing strategies for students from preschool through college. Five of the meta-analysis focused on learning-to-write strategies (Bangert-Drowns, 1993; Goldberg et al., 2002; Graham & Perin, 2007a, 2007b; Hillocks, 1986),

while the other two focused on writing-to-learn across grade levels and content areas (Bangert-Drowns et al., 2004; Graham & Hebert, 2010).

Hillocks (1986) conducted the first learning-to-write meta-analysis, looking at writing research involving students in the third grade through college. He looked at both the way in which writing was presented as well as the specific focus of the writing instruction. Hillocks (1986) found that the most effective mode ($ES = 0.44$) was environmental presentation, in which students were cooperatively engaged in the writing process in order to meet a specific goal. Instruction in the environmental mode includes (a) clear and explicit objectives, (b) materials and problems chosen so students will be engaged with each other as well as the writing, (c) activities that encourage high levels of peer interaction. Hillocks (1986) reported that activities in which students developed ideas for writing after analyzing data on a topic had the greatest effect size ($ES = 0.56$), which is a moderate effect according to guidelines developed by Lipsey and Wilson (2001). Student evaluation of writing using a scale provided by the teacher had an effect size of $ES = 0.36$, while sentence combining instruction where students made simple sentences more complex had an effect size of $ES = 0.35$. Both effect sizes were considered to have low to moderate effect based on Lipsey and Wilson (2001) guidelines.

Two meta-analyses examined the impact of word-processing on the learning-to-write process. The first study conducted by Bangert-Drowns (1993) reviewed experimental and quasi-experimental studies in which the same writing instruction was provided to all students in two groups; however, only one group of students was allowed to use word processors. The use of a word processor turned out to have a small effect

size ($ES = 0.27$). Bangert-Drowns (1993) did discover that weaker writers benefited more than strong writers from the use of a word processor displaying a moderate effect size ($ES = 0.49$). Bangert-Drowns (1993) concluded that the use of a word processor for writing had a motivational impact on weak writers.

Goldberg et al. (2002) conducted a second meta-analysis on the impact of word processing on the writing skills of students in kindergarten to 12th grade over a 10-year period. Goldberg et al. (2002) reported that the use of technology did have a moderate effect on the quantity ($ES = 0.50$) and quality ($ES = 0.41$) of students writing. The results indicated that the use of a word processor did not have a significant effect on students writing ability.

Graham and Perin (2007a, 2007b) conducted two meta-analysis focused on writing interventions for students in grades four through twelve. The first study, Graham and Perin (2007a), included only experimental and quasi-experimental studies. This study was a report to the Carnegie Corporation entitled *Writing Next* (Graham & Perin, 2007a). Eleven recommendations for writing instruction, based on the results of the meta-analysis, were presented; findings were given weighted analyses of variance and regression. Writing strategies ($ES = 0.82$), and summarization ($ES = 0.82$) were shown to have a large or strong effect on improving student writing. Collaborative writing ($ES = 0.75$), specific product goals ($ES = 0.70$), word processing ($ES = 0.55$), and sentence combining ($ES = 0.50$) were shown to have a moderate effect on improving student writing. Prewriting ($ES = 0.32$), inquiry activities ($ES = 0.32$), process writing approach ($ES = 0.32$), study of models ($ES = 0.25$) and writing for content learning ($ES = 0.23$)

were shown to have a small effect on improving student writing. Of particular interest to the current study, self-regulated strategy development (SRSD) was reported to be an effective approach in teaching students to write with a strong weighted effect size ($ES = 1.14$) compared to non-SRSD studies ($ES = 0.62$). Graham and Perin (2007a) reported that strategy instruction was well supported as an effective intervention to improve writing performance and “its effects appear to be more dramatic for lower achieving writers than for those across the full range of ability” (Graham & Perin, 2007a, p. 16). A surprising result of this study was that grammar instruction, which is a traditional writing-to-learn intervention, actually had a negative effect size ($ES = -0.32$).

The second meta-analysis conducted by Graham and Perin, (2007b) also focused on writing interventions for students in grades four through twelve. This study looked at single subject and qualitative studies, so percent of nonoverlapping data was used to present results (Graham & Perin, 2007b). As with the results of the first Graham and Perin (2007a) study, strategy instruction had a large effect with 91% PND reported. The use of word processing had a moderate effect size with 77% PND. Small effect sizes were reported for self-monitoring (67% PND), and direct instruction (62% PND). Based on these two meta-analyses, strategy instruction was the most effective intervention for students in grades four through twelve.

Writing-to-learn strategies across content areas was the focus of Bangert-Drowns et al. (2004) and Graham and Hebert (2010), both of which focused on students in general education without disabilities. Bangert-Drowns et al. (2004) focused on the writing skills of students in elementary through college. Bangert-Drowns et al. (2004)

found the effects of writing-to-learn strategies on academic achievement were small but positive ($ES = 0.26$). Student achievement improved with an increase in the length of the intervention as well as inclusion of meta-cognitive prompts across all grade levels except for students in grades six through eight. An interesting finding was longer writing assignments were ineffective in improving students' outcomes.

Graham and Hebert (2010) recently conducted a meta-analysis to review research on use of writing to improve reading for students in 1st through 12th grade. They only reviewed quasi-experimental studies in which one group received a writing treatment and the other group did not. The results of the meta-analysis revealed that having students write about what they read improved their reading abilities, especially when students were required to write personal responses to the reading ($ES = 0.77$).

Meta-analysis of writing research for students with learning disabilities. The meta-analyses discussed so far focused on students in the general education population. Findings from meta-analyses of writing research involving students with learning disabilities, the largest group of students in special education, are presented next. To date meta-analysis research of students with ASD has not been conducted. Whitby and Mancil (2009) stated that, as a result, teachers are left to use strategies found effective for individuals with learning disabilities (LD) to instruct students with high functioning autisms and Asperger's syndrome. Therefore reviewing meta-analysis research for LD students is important to see if strategies that have been effective in improving their writing might improve the writing performance of students with ASD.

There are five meta-analysis studies (Gersten & Baker, 2001; Graham, 2006; Graham & Harris, 2003; Mason & Graham, 2008; Rogers & Graham, 2008) to date investigating writing instruction for students with LD. The findings from the meta-analysis studies for students with LD have been relatively similar to the meta-analysis results for students without disabilities. Gersten and Baker (2001) included 13 studies in their meta-analysis of expressive writing for students with LD in first through ninth grade. They found that writing instruction had an overall strong effect for students with LD ($ES = 0.81$). Writing interventions were shown to have a large impact on students' inclusion of structural text elements ($ES = 1.11$) in their writing. In addition, large effects were noted for the use of rubrics to measure student achievement and provide feedback ($ES = 0.98$). Moderate effects were noted in the holistic quality of the writing ($ES = 0.67$), students' metacognitive understanding of the writing process ($ES = 0.64$) and self-efficacy for writing ($ES = 0.61$). Results showed that instruction had little effect on students' attitudes towards writing tasks ($ES = 0.40$).

Graham and Harris (2003) conducted a meta-analysis of 18 studies over a period of 17 years that investigated both group and single subject research in which writing instruction using SRSD was taught to students in second through eight grades. Students in the study had to be diagnosed with one or more of the following disabilities: LD, dysgraphia, mild mental retardation, LD/gifted or had poor writing skills. Graham and Harris had conducted 14 of the 18 studies included in the meta-analysis. Students with LD were able to maintain and generalize the strategies learned to new writing genres and settings. Graham and Harris (2003) reported that SRSD was effective regardless of

whether the researcher or the regular classroom teacher taught the intervention. The overall mean effect size for children with and without LD was significant. Results of writing quality were found to have large effect sizes for LD students ($ES = 1.14$) and students overall ($ES = 1.47$). The number of elements included in essays was found to increase with SRSD instruction with large effect sizes seen for LD students ($ES = 2.15$) as well as students overall ($ES = 1.87$). The effect sizes for the length of the writing were also large for LD students ($ES = 1.86$) as well as students overall ($ES = 2.07$). The results of this meta-analysis indicated that SRSD interventions were as effective at improving the writing performance of students with LD as they were for traditional students who were poor writers.

Graham (2006) conducted a meta-analysis of group experimental, quasi-experimental and single subject designs that used multiple baseline designs, looking exclusively at strategy instruction. Included in the meta-analysis were 39 studies, 20 of which used group comparisons with the other 19 studies being single-subject designs. Strategy instruction was defined as a process that included a model for planning, drafting or revising. In addition, the strategy instruction had to be modeled and conducted over a minimum of three days with the student working toward independent use of the strategy. Results reported a large effect ($ES = 1.15$; 89% PND) for strategy instruction across grade levels with and without disabilities. Gains were also reported in ability to maintain improved performance over time and ability to generalize the strategy to other writing assignments. The strategy used most often in the 39 studies was SRSD (45% of group experiments, 68% of single subject designs). Further analysis revealed that SRSD

instruction had significantly higher effects sizes for group designs than in other approaches. This was not the case with single subject research where there was no significance difference between the strategy types.

Mason and Graham (2008) conducted a meta-analysis of 40 writing research studies which focused on fourth through twelfth grade students with LD. Their criteria included experimental and quasi-experimental group studies as well as single-subject research designs. Effect sizes were reported for group studies, while PNDs were reported for single subject studies. Four strategies showed effective results with instructional programs that focused on strategy instruction outperforming other writing interventions. The four strategies that showed effective results included (a) strategic instruction model (SIM) with an effective PND (83-100%) as well as a large effect size ($ES = 1.69$); (b) cognitive strategy instruction for writing (CSIW) with a large effect size ($ES = 0.93$); (c) interactive dialogues with a large effect size ($ES = 2.51$); and (d) self-regulated strategy development with an effective PND (92-100%) and a large effect size ($ES = 0.72$ to 1.32). Other writing instruction programs such as goal setting ($ES = 0.76$) and using computers for writing ($ES = 0.79$) were moderately effective.

Rogers and Graham (2008) conducted a meta-analysis of single-subject design studies extending the Graham and Harris (2003), Graham (2006) and Graham and Perin (2007a) studies in order to determine which writing practices were the most effective in instructing students with LD or struggling writers in first through twelfth grade. Eighty-eight single-subject research studies were identified. Rogers and Graham (2008) identified studies that focused on strategy instruction for planning, drafting, revising and

paragraph construction; teaching grammar; goal setting; word processing; prewriting activities; sentence construction; and self-monitoring. Thirty of the studies looked at strategy instruction, specifically 25 looked at planning, drafting and revising and five looked at paragraph construction. Rogers and Graham (2008) reported that strategy instruction was effective in increasing the number of elements (96% PND) and improving both the written output (91% PND) and quality (99% PND) of students' writing. In addition, students were able to transfer the skills learned during the intervention to another genre with moderate effectiveness (85% PND). Strategy instruction for paragraph construction had a 97% PND for the number of structural elements included while strategy instruction for editing had a moderate effectiveness (84% PND). Rogers and Graham (2008) reported that providing reinforcement through praise, public recognition or tangible rewards was highly effective (96% PND) in improving students' writing performance. Goal setting for productivity was moderately effective (79% PND). Rogers and Graham (2008) reported that prewriting activities such as the use of graphic organizers or outlines for generating ideas prior to writing only had a small effect on improving students' writing (52% PND). Self-monitoring in which students monitored their on-task behavior, writing productivity or writing quality also had only a small effect on the improvement of students' writing (51% PND).

The results of meta-analyses of writing instruction for students with LD demonstrated that strategy instruction was the most effective method for improving students writing skills. If the Whitby and Mancil (2009) statement that researchers investigating strategies for students with ASD should review research conducted on

students with LD is correct; it would appear that strategy instruction should be an effective method to improve the writing ability of students with ASD. Strategy instruction, specifically the SRSD method, will be discussed below.

Strategy Instruction

Strategy instruction is a type of instructional practice used to teach writing. Strategy instruction involves explicitly and systematically teaching students strategies for planning, revising, and editing text (Graham, 2006). Instruction follows a scaffolding process that progresses from modeling of the strategy by the teacher, to guided practice, to independent work. Graham and Perin (2007a, 2007b) reported that strategy instruction was the most effective method for teaching writing to students. A strategy instruction technique that has been found to be effective with struggling writers, as well as students with disabilities, is self-regulated strategy development (SRSD). SRSD is a specific strategy instruction recognized by the Office of Special Education Programs (OSEP) as an evidence-based practice to teach writing to students with learning disabilities.

Self-regulated strategy development. Self-regulated strategy development (SRSD) is a validated, evidenced-based strategy that has been researched for over twenty years. SRSD was developed by Dr. Steve Graham and Dr. Karen Harris in the 1980's to help struggling writers by combining strategy instruction with explicit instruction and self-regulation procedures. While developed to help students with LD who were struggling writers, the strategy has been extended to teach reading (Mason, Snyder, Sukhram, & Kedem, 2006) and math (Case, Harris, & Graham, 1992), as well as writing to students without disabilities. SRSD has also recently been used to teach writing to

students with different disabilities, such as EBD (Cerar, 2012; Cuenca-Sanchez, Mastropieri, Scruggs & Kidd, 2012; Hauth, 2012; Mason, Kubina, Valasa, & Cramer, 2010; and Mastropieri, et al., 2009; 2010; 2012; Mills, 2012), ADHD (Reid & Lienemann, 2006), and ASD (Asaro & Saddler, 2009; Delano, 2007a, 2007b; Asaro-Saddler & Saddler, 2010). Students in all of these studies have shown improvements in their writing.

SRSD is divided into six stages of instruction, which teach students to (a) develop and activate background knowledge, (b) discuss it, (c) model it, (d) memorize it, (e) support it, and (f) practice it. Imbedded within SRSD are four self-regulation strategies (a) goal setting, (b) self-instruction, (c) self-monitoring and (d) self-regulation. Students are taught this strategy through explicit instruction, modeling, and practice (Graham & Harris, 2003).

Through research, Graham and Harris (2003) found that good writers spend time planning, monitoring their progress, evaluating, and revising their work. On the other hand, they found that poor writers struggle or skip any number of these steps. The SRSD strategy systematically teaches students the important steps needed to become a good writer. No matter what genre of writing is being taught—narrative, story writing, or persuasive essays—students learn to plan, organize ideas and notes, set goals, and monitor their progress.

SRSD meta-analysis for upper elementary and middle school students. A number of meta-analyses have been conducted to summarize all the SRSD research. A 2003 meta-analysis conducted by Graham and Harris looked at 18 studies (which took

place over the course of 17 years) that used SRSD to teach writing to students with LD in grades two through eight. The results of the meta-analysis indicated that SRSD was highly effective in teaching writing to students with learning disabilities ($ES = 1.14$). Harris, Graham and Mason (2002) wrote that one of the benefits of SRSD was it taught students to generalize the knowledge they gained to other areas. In addition, SRSD incorporated self-regulation strategies such as self-monitoring and self-reinforcement into the instruction of a specific strategy.

Two large meta-analyses conducted by Graham and Perin (2007a, 2007b) looked at writing interventions for students in grades four through twelve. The first meta-analysis (2007a) gathered writing intervention research that used experimental or quasi-experimental designs. The studies in this analysis focused on both struggling and nonstruggling writers. One finding pertinent to this study was that the overall effect size for writing studies implementing SRSD ($ES = 1.15$) was higher than for other writing interventions that focused on different methods of strategy instruction ($ES = 0.82$). In addition, the analysis found that incorporating strategy instruction, whether SRSD or another method, into writing instruction was very beneficial to struggling writers ($ES = 1.02$). Graham and Perin (2007a) discussed the importance of explicitly teaching all students, and especially struggling writers, “strategies for planning, revising, and/or editing” because these strategies had a strong impact on the quality of their writing (p. 446).

The second meta-analysis conducted by Graham and Perin (2007b) combined the results from their first meta-analysis (2007a) with a meta-analysis of single subject

writing research and an “analysis of reoccurring themes from qualitative studies looking at effective teachers and schools” (p. 313). Again, the goal of this analysis, which included more struggling writers, was to identify effective strategies for teaching writing to students in grades four through twelve. In the 2007a meta-analysis, only 23% of the studies focused on struggling writers, whereas almost all of the single subject studies in 2007b focused on struggling writers who were in regular education settings. Results from this analysis were similar to the 2007a analysis in that the average PND for strategy instruction was 91%. Within strategy instruction, SRSD instruction had the highest average PND among the six interventions (2007b).

Graham and Perin (2007b) made two recommendations based on their meta-analysis for experimental and quasi-experimental design studies. The first recommendation was “explicit and systematic instruction should be an integral part of a writing program” (Graham & Perin, 2007b, p. 320). Teaching students these skills had a “strong impact on a student’s writing” (Graham & Perin, 2007b, p. 320). The second recommendation was that scaffolding instruction, where students receive some help and then gradually learn how to work independently, is very effective. Both of these recommendations are incorporated in the SRSD process.

SRSD strategy and students with EBD. Nelson, Benner, and Lane (2004) found that students with EBD performed below same age peers in all academic areas. According to Nelson et al. (2004) four out of five students with EBD performed below peers in reading, writing, and mathematics. While a great deal of research has examined the effectiveness of writing intervention strategies for students with LD, a much more

limited number of studies have focused on students with EBD (Cerar, 2012; Cuenca-Sanchez et al., 2012; Hauth, 2012; Little et al., 2010; Harris et al., 2002; Mason & Shriner, 2008; Mastropieri et al., 2009; 2010; 2012; Mills, 2012). These studies have shown the effectiveness of SRSD in improving the writing skills of students with EBD. While these studies have demonstrated the effectiveness of SRSD for students with EBD, a meta-analysis of writing interventions for students with EBD has not been conducted to date. Because students with ASD exhibit writing delays similar to those experienced by students with EBD, results of writing intervention research involving students with EBD may provide potential strategies to assist students with ASD.

Cerar (2012) taught six middle school students with EBD to write persuasive essays using SRSD POW+TREE, one student also had a diagnosis of autism. POW+TREE stands for: POW - Pick your idea, Organize your notes, and Write and say more; plus TREE - Topic, Reasons (and counter reason), Ending, and Examine (to make sure all of the parts of a persuasive essay are included). Participants were first taught a fluency phase where they planned and wrote a single paragraph essay in 10 minutes, followed by multiple paragraph essay instruction in three small groups. Participants were instructed by the researcher or by one of two graduate students who had extensive experience implementing the SRSD strategy with students with EBD. Instruction was delivered initially three days a week over two months and then four days a week for two months, with each session lasting 40 minutes. There was an overall average of 33 instructional sessions (range 26 to 39 sessions). Phase one, fluency instruction, lasted an average of 26.71 days (range 22 – 32 days) and phase two, multi-paragraph instruction,

lasted an average of 6.67 days (range 4 – 8 days). All participants also received one day of generalization instruction. Maintenance and generalization testing occurred five weeks after the completion of the second phase of the intervention. There was significant improvement in participant's ability to write single paragraph and multiple paragraph essays after receiving SRSD persuasive writing instruction. Participant performance at maintenance and generalization testing was slightly lower than post-intervention testing; however, it remained above baseline performance across all writing measures.

Hauth (2012) conducted a multiprobe multiple baseline study to teach eight eighth grade students with EBD to write persuasive essays. Two of the students were autistic. The persuasive writing instruction was conducted using SRSD POW+TREE and then the writing strategy was applied to a content area, civics. Planning and writing times were evaluated to determine if students spent more time planning and writing after receiving SRSD POW+TREE instruction. In this study, classroom teachers at the school implemented the intervention to small groups of students over 20 school days, with an average of 6.7 sessions per group and a mean of 5.4 hours for the first phase of SRSD instruction. The SRSD + Content phase took place over an additional nine days with an average of three sessions per group and a mean of 2.25 hours of instruction. Maintenance and generalization testing occurred 33 calendar days after post-testing. Findings revealed that all students improved on all evaluated essay measures, length, quality, number of essay parts, sentences, transition words and paragraphs, from baseline to post-SRSD. Performance between post-SRSD and post-SRSD + Content increased on all essay measures except transition words; however, performance on this area remained higher

than at baseline. There was a slight increase in performance from post-SRSD to maintenance on the number of paragraphs and essay parts written as well as overall holistic quality of the essays. There was a slight decrease in participant performance on number of words, sentences, and transition words written; however, performance remained higher than baseline. Between post-SRSD + Content and generalization, there was a decrease on all essay measures except holistic quality which increased slightly. Performance on all essay measures remained higher than at baseline.

The amount of time students spent planning increased significantly from baseline ($M = 0:00$) to post-SRSD ($M = 6:38$) and continued to increase to SRSD + Content instruction ($M = 8:39$). The amount of time spent planning at maintenance ($M = 6:31$) was slightly below the post-SRSD mean; however, it remained higher than baseline. The amount of time students wrote also increased significantly from baseline ($M = 3:05$) to post-SRSD ($M = 14:35$) but decreased slightly at SRSD + Content ($M = 12:16$). The amount of time spent writing at maintenance ($M = 11:50$) decreased from post-SRSD but remained significantly higher than baseline.

Lane et al. (2008) taught six elementary students at risk for EBD, who were above average writers, to use SRSD for story writing. The students in this study received 10 to 15, 30-minute one-on-one instructional lessons with the teacher on how to use SRSD for story writing. Results showed that all of the students increased the number of story elements written as well as improved essay quality and length from baseline to post-testing as noted by 100% PND. In addition, all students were able to maintain gains at

maintenance testing. Lane et al. (2008) reported that both students and teachers were pleased with the outcomes of the SRSD instruction.

Little et al., (2010) taught 13 second grade students with behavior problems at risk for EBD and poor writing skills to write persuasive essays using the POW+TREE strategy within the context of a school wide positive support system. Three of the students in this study had IQ scores that were below average, two in the internalizing group and one in the externalizing group. Students were grouped based on whether they exhibited externalizing or internalizing behaviors. Graduate students instructed participants individually for 30 minutes three to four times a week to write persuasive essays using the POW+TREE strategy over seven to 15 sessions. The students in this study showed increases in the number of persuasive essay elements written as well as an increase in essay length and quality across both groups of students. Students were able to maintain gains over baseline at maintenance testing. There were no differences in performance between the two groups of students.

Using the SRSD POW+TREE writing strategy, Mason et al. (2010) taught five seventh and eighth grade public day school students with EBD to plan and write 10-minute persuasive essays. Instruction was conducted over five 30-minute sessions and three 10-minute sessions. In the Mason et al. (2010) study, the quality of response and number of parts written on student's essays increased in level and trend from baseline. The number of words written by two students decreased from baseline to post-instruction. Also reported by Mason et al. (2010) was a statistically significant improvement on the Woodcock Johnson III (WJIII) writing fluency subtest between baseline and post-

instruction. One of the participants, an eighth grade 14.5 year-old male (Dudley) received services for EBD and autism. Dudley's performance increased in essay quality from baseline to post-instruction and remained above baseline at maintenance. There was a slight decrease in his essay quality between post-instruction and maintenance. The number of essay parts written by Dudley increased from baseline to post-instruction and decreased slightly from post instruction to maintenance. The number of words written by Dudley increased from baseline to post-instruction and increased slightly from post-instruction to maintenance. In addition, there was a slight increase in Dudley's pretest WJIII writing fluency score from baseline to post-instruction.

Mason and Shriner (2008) instructed six students in second through fifth grade with EBD in the SRSD persuasive writing strategy POW+TREE. Participants were taught to mastery and received 11 to 13 individual 30-minute instructional sessions from two graduate students. Mastery for this study required participants to write a persuasive essay with at least five persuasive essay parts. Five of the six participants demonstrated increases in the number of persuasive essay parts, total number of words and the total number of transition words written. An improvement in the overall quality of participant's writing was noted as well. Maintenance and generalization scores varied across students, which the authors attributed to the variations in individual student behavior not their skill levels.

Mastropieri et al. (2010; 2012) conducted studies using SRSD POW+TREE to teach persuasive writing to middle school students with EBD. Twelve students participated in the Mastropieri et al. (2010) design study at a public day school for

students with severe EBD. One of the students also received services under the special education disability category of ASD. Students were taught to write a five-paragraph persuasive essay during the first phase of instruction. During the second phase of instruction, students were taught, using the POW+TREE strategy, how to write a one-paragraph persuasive essay in 10 minutes. All students, including the student with autism, made significant improvement on their persuasive writing skills from baseline to posttesting on all essay-scoring measures. Significant gains were made from baseline to post-fluency; however, performance was lower at post-fluency compared to posttesting performance. Gains were also maintained through maintenance testing 12 weeks after the completion of instruction.

Mastropieri et al. (2012) taught twelve middle school students with EBD, four of whom also had a diagnosis of ASD, to write persuasive essays using POW+TREE while also including a counter argument in the essay. A fluency component was included in this study, where students were taught to use the POW+TREE strategy to write a one-paragraph essay in 10 minutes. All students, including those with ASD mastered the components of effective persuasive essay writing, including counterarguments. All students showed improvement in essay length and quality from baseline to post-instruction and post-fluency phases (Mastropieri et al, 2012). Student performance decreased slightly at surprise maintenance and generalization sessions; however, overall performance was higher than baseline.

Mills, (2012) investigated the effects of SRSD and peer-revision instruction on the persuasive essay writing of 10 eighth grade students with EBD. Students were

instructed in small groups and received eight to nine, 50-minute SRSD POW+TREE instructional sessions. Participants received an additional seven to ten, 50-minute sessions for revision instruction. “During the revision sessions, participants were required to provide peer partners feedback on four aspects of their essay: (a) What did the author do well?; (b) Does the essay have all the parts of a good persuasive essay?; (c) Is the essay clearly written?; and (d) Is the essay persuasive?” (Mills, 2012). Results showed that participants writing improved on essay measures of content, quality and length after receiving SRSD POW+TREE instruction. Participants were able to maintain these gains over time. In addition, revision instruction decreased the mechanical errors in students’ essays but did not further improve the content, quality or length of essays.

SRSD writing research involving children with ASD. There is a need for more research on the use of SRSD writing instruction for students with ASD. Currently, only four studies have been published using SRSD instruction for students with ASD (Asaro & Saddler, 2009; Delano, 2007a, 2007b; Asaro-Saddler & Saddler, 2010). Only eight students, ranging in age from 6 years, 10 months (second grade) to 17 years, 4 months (tenth grade), were involved in these studies and various SRSD strategies were investigated. The SRSD strategies used were (a) POW + WWW (Asaro & Saddler, 2009; Asaro-Saddler & Saddler, 2010); (b) vocabulary instruction for increasing the number of action and describing words used in writing a story (Delano, 2007a); and (c) POW + TREE using video self-modeling (Delano 2007b). Delano (2007b) was the only published study that taught three adolescent students with ASD to use SRSD to write persuasive essays.

Delano (2007a) conducted an exploratory study investigating the effects of the SRSD approach for (a) vocabulary instruction of action and describing words, and (b) revision on the writing performance of one male sixth grade student with ASD. The participant had average intelligence but difficulty writing. This study consisted of three strategy instruction phases. Strategy one and strategy two consisted of the researcher explaining the meaning of the target words (action and describing words, respectively) and instructing the student that adding these types of words made the story more interesting and longer. The researcher brainstormed words with the student, based on a picture, and then they wrote a story together that included these words. After the story was written, the researcher and student reviewed the story and identified places where better words could be added and revised the story. This process, which consisted of five 60-minute sessions for strategy one and two 60-minute sessions for strategy two, continued with the researcher fading support until the student could complete the strategy without any prompts.

Strategy three was then introduced, in one 45-minute session, to teach revision. The examiner discussed how adding information to a first draft can make the story better and more interesting for the reader. The examiner suggested the student add at least three things to a story in order to make it better. The session began with the examiner and student brainstorming five or six ways to improve a story, followed by determining how to incorporate these ideas, then actually adding the ideas to the draft. This practice lasted until the student could use the strategy without prompts from the examiner. A follow-up

maintenance session was conducted two weeks after the last post-instruction prompt was administered.

The student in this study had a percentage of non-overlapping data (PND) of 100% for all three phases, indicating that these strategies were very effective for him. However, a limitation to this study was it only involved one participant. Further studies utilizing this approach with multiple participants are required to develop the basis for an evidence-based strategy to instruct students with ASD how to write effectively.

Delano (2007b) conducted another exploratory study to look at the effects of SRSD for persuasive writing for three male participants, using video self-modeling. The participants in this study were in eighth and tenth grade in both public and private schools and ranged in age from 13.6 to 17.4 years. All students had a diagnosis of ASD and all had reported difficulties in writing.

In this study, participants met individually with the researcher for 30 minutes to create a video of the student modeling a self-monitoring strategy that addressed increasing the number of words written. The student modeled (a) reading an essay, (b) counting the number of words written, (c) recording the number of words written on a bar chart and determining if he had met the goal, and (d) setting a new goal for the following session to increase the number of words written by 10%. The experimenter provided prompts as the video was made but edited out the prompts for the final video. At the beginning of each session the student would view the video about self-monitoring and then engage in the behaviors that had been taught. Once the student was able to demonstrate a 10% increase in the total number of words written for three consecutive

sessions, he moved on to the second phase. The first phase lasted nine sessions for each student.

In the second phase, which lasted five sessions for each student, the students participated in a 60-minute session with the experimenter to create a video using the TREE mnemonic (Topic sentence, Reasons, Explain reasons, Ending) to plan and write a persuasive essay. The students again followed a script and the experimenter provided prompts throughout the videotaping. The videotape was then edited to remove the experimenter prompts. At the beginning of each session the students watched their videos about writing a persuasive essay and then composed a persuasive essay. The experimenter recorded the duration each participant spent writing during the session; however, the duration of each instructional session was not provided. Generalization probes were conducted during each phase of the study and follow-up probes were conducted one week and three months after the final intervention sessions.

All three students showed gains in the number of words written, as well as for the number of persuasive writing elements (topic, reasons, explanations, and ending) included in their essay from baseline through intervention. At the three-month maintenance probe, participants 1 and 2 maintained gains for number of words written while participant 3 wrote fewer words. The performance for all three was higher at maintenance than at baseline. All three students increased the number of persuasive essay parts written from baseline through intervention but experienced a decrease at both the one-week and three-month maintenance probes. However, the overall number of persuasive parts written at the three-month maintenance probe was higher than at

baseline. In addition, two of the three students increased the duration of time they spent writing in each session.

Asaro and Saddler (2009) investigated the use of SRSD strategy to teach story writing to one 10-year-old male, fourth grade student with ASD. The participant was identified as a poor writer and his stories were short, poorly organized and lacked detail. This was the first published study using the POW + WWW, What = 2, How = 2 strategy to investigate the planning and story writing abilities of an elementary grade student with ASD.

The researcher and student met for 30 minutes, three days a week for five weeks to cover the seven lessons of the SRSD strategy. The lessons incorporated all six stages of the SRSD strategy with scaffolding being faded until the child could work independently. Each essay that the student wrote was scored for the number of basic story elements (seven items) and the overall essay quality (eight-point scale).

Black and white line drawings were used for story prompts. The student was given two pictures to choose from to write a story. After the intervention the student's stories contained more story elements and his overall holistic writing quality had improved. Though his writing continued to be brief, he wrote more complete stories of a higher quality. One finding Asaro and Saddler (2009) reported was that the student continued to utilize the mnemonic during the planning process, at maintenance and incorporated self-talk as he wrote, saying, "That's the where," or "That's what happens next" after writing various elements of his story.

The final study conducted by Asaro-Saddler and Saddler (2010) involved three male students with an ASD diagnosis and used SRSD for story writing (POW + WWW, What=2, How=2). This was an extension to previous work conducted by Asaro and Saddler (2009) to address some of the limitations reported in that study. The 2010 study involved three male elementary students in second and fourth grade who ranged in age from 6 years 10 months to 9 years old. All had reported writing difficulties or were at risk for writing difficulties. The students did not have any comorbid diagnosis and they had the ability to write independently with a pen or pencil.

The students worked one-on-one with the first author for six to nine 30-minute sessions to progress through the six lessons. As in the earlier Asaro and Saddler (2009) study, black and white line drawings were used for prompts. In addition, personal narrative prompts were given in all three phases of the intervention to determine if students with ASD could transfer the story writing strategy to writing a story about themselves. The essays written by participants were scored for the number of story elements, essay quality, and number of words. In addition, data were collected on the planning time each student spent prior to writing. This was calculated as the time period between the instructor telling the student to begin writing and the student actually starting to write.

All three students increased the number of story elements they used in writing fictional stories. The PND was 100% for all three students for this dependent measure. On the essay quality measure, all three had improved scores. However, only two students had a PND of 100%. Participant 2 received a slightly lower overall holistic score at

maintenance, which brought his PND down to 75%. All three students increased the number of words written from baseline to post-intervention. The ability of the three students to transfer the skills learned in story writing to personal narratives increased for number of story elements, essay quality, and planning time. As for the number of words used in writing the personal narrative, participant 1 remained static while the other two increased from baseline. During the social validity interview all the students mentioned that they felt they were better writers since learning the strategy.

The studies focused on students with ASD are summarized in Table 1. A total of eight males, in 2nd through 10th grade, with ASD participated in four different studies investigating SRSD writing intervention across three different genres (POW+TREE, POW+WWW, and vocabulary instruction). The results of these four studies have suggested that SRSD instruction is effective in increasing the writing performance of students with a primary diagnosis of ASD. All students showed significant increases from baseline to post-intervention.

Table 1
SRSD Writing Studies Involving Students with ASD

Author (Yr)	Focus	Sample	Intensity/Duration	Results
Delano (2007a)	SRSD for vocabulary instruction of action and describing words, and revisions.	1 - 12-year-old male 6 th grade, ASD, average intelligence, difficulty writing.	Strategy 1 – 5 (1-hour sessions) Strategy 2 – 2 (1-hour sessions) Strategy 3 – 1 (45-minute session)	Increase in the number of words, action words, describing words, and revisions after each strategy instruction. Gains were maintained in the 2-week follow-up from baseline.
Delano (2007b)	SRSD POW+TREE using video self-modeling.	3 male participants 13.6 years, 8 th grade; 15.11 years and 17.4 years, 10 th grade; ASD, difficulty writing.	Phase 1: Students met with researcher for 1 30-min session to create video. Students watched video till 10% increase in number of words written (9 sessions.). Phase 2: 1 60-min. session to create TREE video. Watched video (5 sessions).	Each student showed gains in the number of words written. The duration of each session increased from baseline. Students wrote more functional elements. Students remained above baseline at generalization and follow-up.
Asaro & Saddler (2009)	SRSD for story writing POW+WWW.	1 – 10-year-old male 4 th grade, ASD, difficulty in writing.	1-to-1 sessions for 30 minutes, 3 days a week for 5 weeks (total of 7 lessons, criterion-based).	Scores increased from baseline in holistic and story elements. At maintenance, scores for story elements were high, but scores for holistic dropped.
Asaro-Saddler & Saddler (2010)	SRSD for story writing POW+WWW with generalization to narratives.	3 – male students in 2 nd - 4 th grade (6.10, 7, 9 yrs), ASD, writing difficulty or at risk.	1-to-1 sessions 6 lessons that lasted between 6-9 days	All students increased in number of story elements in fictional stories. Holistic improved for all 3. Number of words increased. Transfer to personal narrative increased in the number of elements, essay quality improved, number of words increased for 2, static for 1. Planning time increased.

Fluency instruction. Fluency is a term used to describe one's ability to complete a task smoothly, effortlessly, and without hesitation, thereby demonstrating mastery of a skill. Fluency comes through repeated practice and is particularly important in reading, writing, and math, as it enables students to complete tasks automatically, without having to think about each step in the process. It is expected that as students increase their fluency, they will be better able to increase their knowledge and skills.

In order for students to progress in the area of writing fluency, they must first know the shapes of letters and be able to form these letters using a writing instrument and paper. In addition, they have to know how letters go together to form words. The mechanical aspects of writing which include grammar, usage, and proper punctuation must be mastered. Once students demonstrate an ability to write multiple sentences, they can be taught to use sentences to form paragraphs.

As with reading and math, it has been demonstrated that fluency in writing has important implications for educational success. In school, the timed writing exercise has been a useful tool to improve students' writing fluency. Students able to write fluently can focus on higher order writing skills to write more coherent, fully developed essays within the allotted time.

Currently only four studies have been conducted that combine SRSD with fluency instruction or timed writing. Mastropieri et al. (2009; 2012) implemented fluency instruction during the second phase of the intervention after students were taught how to write untimed persuasive essays. In Mastropieri, et al. (2009) all students demonstrated growth in the overall essay quality of their essays between post-testing and post-fluency.

In addition, three of the students wrote more words between post-SRSD and post-fluency, while one student's essays contained more persuasive essay parts between the two phases. An interesting finding in this study was the fact that the overall essay quality was higher at post-fluency than at post-SRSD for a number of students. In Mastropieri et al. (2012) all twelve students made statistically significant increases on all essay measures from baseline to post-SRSD. In the third study reviewed (Mason et al., 2010), the focus of the intervention was on writing persuasive essays fluently. In this study results revealed an increase in performance above baseline for the overall essay quality of students' essays. Finally, in the fourth study reviewed (Cerar, 2012), all seven participants significantly improved on all essay measures (number of words, sentences, paragraphs, transition words, essay parts and the overall essay quality of the essay) from baseline to post-fluency.

Extending Current Research

Whitby and Mancil (2009) stated that research in the area of academic achievement for students with high functioning autism or Asperger's syndrome is in the infancy stage. As a result, teachers must adapt strategies that were evaluated using individuals with learning disabilities (LD) to instruct students with high functioning autism and Asperger's syndrome (Whitby & Mancil, 2009). Neither the effectiveness nor potential implications of having to rely on this work around have been adequately addressed (Whitby & Mancil, 2009). SRSD has been found to be an effective research intervention for students with LD. Therefore the Whitby and Mancil (2009)

recommendation, to expand SRSD writing intervention research to students with ASD is a logical next step.

Writing is an important skill that enables students to demonstrate knowledge and share their thoughts and ideas. Students with ASD have difficulty developing and organizing ideas in their writing. Students with ASD write less than their typically developing peers and their writing contains fewer story elements. Writing is a communication tool between a writer and their audience. Individuals with ASD have difficulty understanding that other people have perspectives different than their own, which can make writing persuasive essays difficult (Pennington & Delano, 2012). With the increase in the number of children being found eligible under the ASD category and the rise of students with autism being served in schools, it is imperative that evidence-based research practices be identified to provide teachers with the tools to help these children succeed. SRSD is an evidence-based practice that has been effective in helping to improve the writing of students with learning, as well as emotional and behavior disabilities. In a few studies with students with ASD, promising results have been reported. Additional research is needed to develop evidence-based practices that facilitate academic success for students with ASD.

3. METHODS

This chapter presents the methods employed including the research design, participants, materials and the procedures for the research study. First the design is described followed by an overview of the setting and participants. In addition a description of the materials, independent and dependent variables, procedures for baseline untimed, baseline timed fluency, intervention, maintenance untimed, maintenance timed fluency, generalization untimed, generalization timed fluency, data collection, observer training, fidelity of treatment, on-task and off-task behavior observation are discussed.

Research Design

A multiprobe multiple baseline design across participants was used in order to assess the effects of SRSD instruction for persuasive writing of one-paragraph essays across students (Kennedy, 2005). With this design, treatment was systematically and sequentially introduced to one student at a time. This study used the following Horner et al. (2005) quality indicators—description of participants and settings, dependent variables, baseline, and validity for single subject research.

Quality single-subject research design. Horner et al. (2005) identified a number of indicators for single subject research to be considered high quality. To begin, there needs to be a thorough description of the participants and the setting. Participants in the

study need to be described with enough detail to allow other researchers to select participants with similar characteristics when replicating the study. In addition the process for selecting participants must be described in order to allow for replication. Finally, critical features of the setting need to be described in detail in order to allow for replication.

The second quality indicator that needs to be addressed is the dependent variable. The dependent variables must be described in detail and clearly defined. The procedures for measuring the dependent variables must be included and the dependent variable must be measured repeatedly over time. In addition, information about interobserver reliability for scoring dependent variables must be provided.

The third indicator identified by Horner et al. (2005) relates to the independent variable. The independent variable in a high quality research study needs to be described in detail to allow replication. In addition, the researcher must systematically manipulate the independent variable. It is highly desirable that the fidelity of treatment is measured.

The fourth indicator relates to baseline. The baseline conditions need to be described in detail to allow for replication. There needs to be repeated measurement of a dependent variable during the baseline phase in order to compare future performance. A stable baseline needs to be established for each participant prior to entering into intervention.

The fifth indicator requires experimental control and internal validity. To achieve this, the design must provide at least three demonstrations of experimental control at

three different points of time within the study. The design of the study must control for common threats to internal validity.

The sixth indicator relates to external validity. External validity is important to establish in order for the results to be generalizable to other situations and individuals. In order to establish external validity, the effects of the experiment must be replicated across participants, settings or materials.

The seventh and final indicator is social validity. The dependent variable in the study must be socially important. The magnitude of change in the dependent variable as a result of the intervention must be socially important. In addition, the implementation of the independent variable must be cost effective and practical. Horner et al. (2005) states that the social validity of a study is enhanced by implementing the independent variable over an extended period of time by typical intervention agents. This study will address how all quality indicators are met in this study later in this document.

Current study. A multiprobe multiple baseline design across participants was used in the current study. There were six students in grades four through six with high functioning autism (HA) included in this study. Students were seen individually, at their home or at mutually agreed upon locations, three days a week for 45 minutes, resulting in six replications of the instructional procedures. Participant's entrance into the intervention was staggered with the lowest performing students beginning the intervention first and subsequent students entering intervention, as outlined in single subject methodology (Kennedy, 2005). Due to some scheduling issues some participants were on identical schedules for a few days of baseline testing and then due to absences,

scheduling conflicts or rate of completion of the intervention phases, some participants overlapped in the testing phases.

Participants

Students. In order to be included in this study participants must have had: (a) a documented diagnosis on the Autism Spectrum and be high functioning, (b) average intellectual functioning, (c) difficulty with written language, and (d) the ability to write a sentence with a subject and a verb. The participants had additional disabilities such as speech and language delays, learning disabilities, and hearing impairments. Participants in this study included eight students in the fourth through sixth grade that met state and federal definitions for Autism. Students were selected to participate following parental and individual informed consent procedures. Two students did not complete the study. Attrition was due to baseline untimed performance, which indicated no delays in their writing ability. The students were able to write a multi-paragraph response to the prompt resulting in a high essay quality and number of essay parts. Overall five Caucasian males and one Caucasian female participated in the study, with an average age of 11.93 ($SD = 1.06$). Demographic data for the students who participated in the study was tabulated and included in Table 2. Interviews with parents were used in order to obtain information regarding academic achievement, ethnicity, disability category, and age.

Table 2
Student Characteristics

Name	Gender	Ethnicity	Age (yrs. mos.)	Grade Level	Medical Diagnosis	Special Education Categories	IEP goal areas	1 st /2 nd qtr. Writing grades
Jason	Male	Caucasian	13.0	6	PDD-NOS	Autism, HI, SLD	Writing, math, science, social studies, reading	C, C
Drew	Male	Caucasian	12.3	4	PDD-NOS	Autism, SLD	Reading, Writing	C, C
Carter	Male	Caucasian	10.6	4	Asperger's	Autism, LD	English	C, C
Sandy	Female	Caucasian	12.7	6	PDD-NOS	Autism, SLI	Writing, science, social studies, reading, math	B, B
Rocky	Male	Caucasian	10.6	4	Asperger's	Autism, ADHD	Writing, organizing	B, C
Neil	Male	Caucasian	12.4	6	Asperger's	Autism, ADHD	Writing, math, science, social studies, reading	A, A

Note. ADHD = attention deficit hyperactivity disorder; HI = hearing impairment; IEP = Individualized Education Program; LD = learning disability; OHI = other health impairment; PDD/NOS = pervasive developmental disorder not otherwise specified; SLD = specific learning disability; SLI = speech language impairment.

A narrative description of each participant was developed, followed by researcher and staff descriptions. Pseudonyms were used to protect the identity of each participant.

Jason was a 6th grade, 13 year-old Caucasian male. He was a very talkative, athletic young man, as well as a motivated and eager learner. His area of eligibility was Autism (AUT), Specific Learning Disability (SLD) and Hearing Impairment (HI). Jason had a neurological sensory hearing loss in his right ear and a diagnosis of PDD-NOS, which he received at the age of four from a neurologist. Jason was adopted at age two from Russia. He received services in the general education classroom for part of the day and received all academic instruction in a resource room setting. Jason had difficulty with writing, oral communication, articulation and hearing. Jason's parents reported prior to the start of intervention that he had a negative attitude towards writing. Jason received a C in writing on his first and second quarter report cards prior to the start of intervention.

Drew was a 4th grade, 11 year-old Caucasian male. He was a quiet young man who was diagnosed with PDD-NOS at age four by a pediatric neurologist. Drew did not talk until he was three-years-old and had limited eye contact. Drew received services due to his primary disability of Autism (AUT) as well as Specific Learning Disability (SLD). He received pull out services at his public elementary school for writing and reading. Drew's parents reported that he did not like writing and they felt that this held him back from performing at the level he could. Prior to the start of intervention, Drew received a C on his first and second quarter grades in writing.

Carter was a 4th grade, 10 year-old Caucasian male. He was a very talkative, easy going young man who enjoyed learning facts. His mother reported that he was very anxious about writing and tried to avoid it as much as possible. Carter was diagnosed with Asperger's Syndrome when he was eight by a pediatric neurologist. He was receiving services at his local public elementary school for Autism (AUT) and Learning Disabilities (LD). Carter received daily pull out services for English. He received a C for writing on both the first and second quarter report card grades prior to the start of intervention.

Sandy was a 6th grade, 12 year-old Caucasian female. She was a reserved, quiet young lady and a hard worker, but did not like group activities. Sandy was diagnosed with PDD-NOS by a child psychiatrist when she was five years old. She received services at her local public elementary school under the Autism (AUT) category as well as Speech and Language Impairment services (SLI). Sandy spent the majority of her day in her general education classroom, where she received support for writing, science, social studies and reading. She received pull out services for math. In addition Sandy participated in a lunch bunch at school to work on her social skills. Her mother reported that writing had always been overwhelming for Sandy. Prior to the start of intervention, she received a B for both her first and second quarter report card grades.

Rocky was a 4th grade, 10 year-old Caucasian male. He was a bright young man with a vivid imagination and an extensive expressive vocabulary. A child psychologist diagnosed Rocky with Asperger's Syndrome and Attention Deficit Hyperactivity Disorder (ADHD) at the age of eight. He received services at his local public school

under the Autism (AUT) category. Rocky received special education services in his general education classroom, specifically addressing organization and writing. His teacher reported that Rocky's organizational skills for writing were poor and that he needed prompting to begin work as well as to include details. In addition she stated that Rocky's progress in the general education classroom was impacted by his weakness in expressing himself in a written format in all content areas. Rocky received a B and C in writing on his first and second quarter report cards respectively prior to the start of intervention.

Neil was a 6th grade, 12 year-old Caucasian male. He was a polite, curious, articulate and very social young man. When Neil was three-years-old, he was diagnosed with PDD-NOS by a child psychologists and developmental pediatrician. When he was in kindergarten, he was diagnosed with ADHD and then in first grade, his diagnosis was changed from PDD-NOS to Asperger's Syndrome by the neurologist. When the intervention began, Neil was enrolled in his local public school and received services under the Autism (AUT) category. He received special education services in his general education classroom for all academics; however, he received pull out services for math, speech and counseling. Shortly after intervention started, Neil was transferred to a private day school for students with Autism. His parents reported that Neil did not like to write and that it was difficult to get him to write. Neil received an A in writing on his first and second report cards prior to the start of intervention; however, baseline untimed testing indicated that he did indeed have some difficulty with writing.

Researcher. The primary researcher, a Hispanic female, has a bachelor and master's degree in communication sciences and disorders and has worked as a speech pathologist for 15 years both in the public schools and in private practice. She has five years of experience working as an early childhood special education teacher in a home resource program. In addition, she has three years of teaching experience with SRSD instruction for students with EBD and implemented all SRSD instruction provided to the participants.

Project staff. A female Caucasian graduate student from the same local university who is enrolled in the doctoral program and has had four years of previous experience with SRSD instruction was trained on the data scoring procedures to assist with the scoring of essays. Another female Caucasian special education graduate student from another university with no experience with SRSD was trained on SRSD instruction to assist in the data analysis for fidelity of treatment implementation. Finally, two female Caucasians (one undergraduate student and one office administrator) who both had four years of prior experience with coding on-task behavior data during SRSD intervention were retrained on the coding procedures and coded all behavior data, including reliability on 36 percent of the video recordings.

Setting

The study took place in the mid-Atlantic region of the United States. All students attended various schools within a large diverse school district on the East Coast. Of the population in this school district, 10.40% of the students were African American, 22.10% were Hispanic, 19.30% were Asian, and 43.10% of the students were White. In addition,

26.18% of the school age population received free or reduced priced meals and 7.85% of the students received special education services (Fairfax County Public Schools, 2011). The intervention took place in a variety of settings for each student based on parental request. The majority of the students were seen in their homes; however, one student was seen at the end of the academic day, at school; and another student was seen at the after school program location. The study took place after school hours at mutually agreed upon times between the researcher and the parents.

Materials

Most of materials for this study were based on the SRSD model used in previous research (Mason et al., 2010; Mastropieri et al., 2009; 2010; 2012). The original materials for the study were based on the materials created by Harris et al. (2008) and used by Mason and Shriner (2008). The previous studies taught persuasive writing to students with EBD, or at risk for EBD, in second through eighth grade. SRSD, an empirically validated, evidence-based model (Baker et al., 2009) has been demonstrated as an effective method for teaching students to write using a strategy that incorporates goal setting, positive self-talk, self-instruction, and self-monitoring of progress (Harris & Graham, 2003). The mnemonic POW + TREE, was developed to help students remember to (P) pick your idea, (O) organize your notes, (W) write and say more, plus (T) topic sentence, (R) reasons - three or more, (E) explain reasons, and (E) ending and examine was used in this study to teach persuasive writing in combination with SRSD instruction (Harris et al., 2008).

Two separate sets of material were used in the study. Participant materials described immediately below will be followed by a description of teacher materials.

Student materials. Participants were given an individual folder that contained the materials described below as well as blank loose-leaf paper and all essays the teacher and student wrote (for student reference).

Student learning contract. Students were asked to sign a learning contract from Mastropieri et al., (2009; 2010; 2012) committing to learn the POW+TREE strategy. There was a section of the learning contract completed at the beginning of the intervention and a section completed at the end of the intervention. The contract stated the purpose of the instruction, the short and long term goals of participating in the lessons, and the target completion date. The short-term goals included (a) the student memorizing the strategy, (b) practicing writing essays using the strategy, and (c) monitoring their progress. The long-term goals included (a) writing good persuasive essays using the POW+TREE strategy and (b) applying the strategy in other settings. The learning contract contained a place for the participant to sign the contract. The learning contract also contained a section for the teacher to sign committing to teach the strategy to the student. The final section of the learning contract contained a place for the teacher and student to complete upon completion of the intervention. This section of the contract allowed the student and teacher to review the learning contract and record the date that the intervention was successfully completed. In addition, the contract contained a section for the student to record what setting they planned to use the POW+TREE strategy (see Appendix A).

POW+TREE chart. A graphic chart depicting the persuasive writing strategy adapted from Mastropieri et al. (2009; 2010; 2012) was used. The chart had the mnemonic POW at the top half of the page with the reminder that P = Pick my idea; O = organize my notes; and W = Write and say more. The bottom part of the page had a picture of a tree with the mnemonic TREE and the strategy reminder T = Topic sentence, with an arrow pointed to the trunk of a tree; R = Reasons (3 or more) and counter reasons (1 or more), with an arrow pointed to the roots of the tree; E = Explain reasons, with an arrow pointed to the earth; and E = Ending and examine, with a bracket pointed to the whole tree (see Appendix B).

Graphic organizer. The graphic organizer, which allowed students to write down their ideas for their essay, was adapted from Mastropieri et al. (2012) to include a space for students to write a counter reason and explanation. The graphic organizer contained the mnemonic POW+TREE on the top right corner and broke each section of TREE down individually with spaces for the student to write down their ideas in note format prior to writing their essay. Included in the graphic organizer was a space for participants to write down transition words they would use prior to writing about a topic, a counter reason and the ending of the essay (see Appendix C).

Transition words chart. This chart, adapted from Mastropieri et al. (2009; 2010; 2012) contained words students could use while writing to indicate a transition to the reader. The chart contained transition words that could be used for reasons, counter reasons and endings. Besides the words provided to the student, there were blank spaces

under each category for students to brainstorm additional transition words they could use in each category (see Appendix D).

Self-statements chart. Students were taught the importance of speaking to themselves in a positive manner while writing. This chart was adapted from previous SRSD studies (Mason & Shriner, 2008, Mastropieri et al. 2009; 2010; 2012). The chart provided students a space to write down statements they could say to themselves to get started on writing, while they worked, and to check their work. Prior to writing students were asked to take out their self-statements chart to serve as a reminder to talk to themselves in positive ways during the writing process (see Appendix E).

Persuasive essay examples. During instruction, three examples of good persuasive essays adapted from Mastropieri et al., (2009; 2010; 2012) were reviewed with students. There were essays for and against allowing skateboards at the mall, wearing a uniform to school as well as attending school year round. All of these essays were one-paragraph and were used during lesson 2 to identify the parts of persuasive essays. These essays contained all the essay parts a good persuasive essay should contain in order to provide a good model to the students. Students were able to refer to these essays while writing, if needed, as a reminder of a good essay (see Appendix F).

Persuasive essay writing prompts. During instruction and independent writing, students wrote essays in response to a variety of writing prompts. Writing prompts from previous studies (Mastropieri et al, 2009; 2010; 2012) along with a list of persuasive essay prompts developed by the researcher were presented to elementary school special and general education teachers and researchers with experience with SRSD instruction in

order to compile a list of persuasive essay prompts to use during the study (see Appendix G). Some essay prompts used during the lessons were “Is it better to have a bird or a fish as a pet?” or “Should parents restrict what type of music you listen to?”

POW+TREE daily record sheet. This sheet was used to help students evaluate their writing performance daily, adapted from (Mastropieri et al., 2009; 2010; 2012). The daily record sheet contained a series of boxes where students could track their daily writing performance. The first box asked the students to rate their performance for that day, 3 = good day, 2 = ok day, or a 1 = bad day. The following boxes contained places to indicate the essay parts completed for that day. There was a box to indicate if a graphic organizer was completed, if the essay contained a topic sentence, the number of reasons and counter reasons written, as well as explanations. There was a box to indicate the number of transition words used as well as a place to indicate if they had used self-statements and whether or not they examined their essay. See Appendix H for a sample of the daily record sheet.

Student parts record sheet. Adapted from Mastropieri et al. (2009; 2010; 2012) this sheet enabled students to track the number of essay parts they included in each essay they wrote. The essay parts included a topic, reasons, counter reasons, explanations, and an ending. Students were instructed to attempt to include at least eight parts in each essay they wrote during the intervention (see Appendix I). Students colored in one grid square for each persuasive essay part the essay contained. Participants then wrote the total number of essay parts at the bottom of each column. This record sheet provided

students a way to track their progress visually and to see what they needed to do to improve the quality of their essays.

Teacher materials. As stated earlier, the researcher was the teacher for all the participants. The teacher had a binder that included detailed lesson plans, copies of student materials, essay prompts, parts probe interview questions, as well as an attendance sheet. The teacher also had each participant's folder and extra materials such as pencils, pencil sharpener, eraser, and loose-leaf paper. Loose-leaf paper was also included for the students as well as for the teacher to take notes during each lesson and to reflect on each lesson at the end of each daily session. In addition, the teacher had a video camera and tripod to record each session with participants, a digital voice recorder to record interview responses, and a timer to record the session length. Teacher materials are described below.

Lesson plans. The teacher had a master binder that contained all of the lessons and material for the intervention. Lesson plans (see Appendix J) were adapted from Harris, Graham, Mason and Frielander (2008), and Mastropieri et al., (2009; 2010; 2012). There were a total of seven lessons for the intervention, which are described in more detail later in this chapter under SRSD instructional procedures. The teacher binder was divided into sections for each lesson, which were placed in a plastic protective sheet. In addition, the materials needed for each lesson were placed in pocket folders behind the lesson. The lesson plans were detailed and scripted so that each participant received the same instruction. In order to facilitate the instruction, the lesson plans were color coded to help the teacher know what materials were needed as well as the exact words to say to

each participant. For instance, black text was used for the lesson purpose and objectives, blue text indicated the dialogue that was to be used during instruction, and red text indicated the agenda and reminders of important points for each lesson. Finally, each lesson plan had a materials list for quick reference.

Dependent Measures

The dependent measures described in this section were used to evaluate each student's writing ability. The dependent measures selected for this study were: (a) writing performance, (b) on-task behavior, (c) knowledge of persuasive essay parts, (d) self-efficacy, (e) attitudes measure, (f) social validity, including student and parent interviews, (g) standardized writing measures and, (h) fidelity of treatment.

Writing performance. Essay prompts were administered throughout the study at baseline untimed and timed fluency, post-SRSD, post-fluency, and during maintenance untimed and timed fluency and generalization untimed and timed fluency (see Appendix G). A standard set of directions was used throughout the test (see Appendix K). Baseline consisted of three untimed essay probes and one 10-minute timed fluency essay probe. Participants were administered three untimed essay probes at post-SRSD as well. Post-fluency consisted of three timed essay probes in which participants had to plan and write a persuasive essay in 10 minutes. Maintenance consisted of participants writing one untimed and one 10-minute timed fluency essay. Generalization consisted of participant's writing one untimed and one 10-minute timed fluency essay. During all testing phases, participants were given two essay prompts from which to choose. For the fluency essays, students were given 10 minutes to plan and write their essay. A digital

timer, set in front of the student, which counted down the time was used for all participants. At the end of the 10 minutes students were asked to put down their pencil. If they had additional time left with which to write they had been instructed during intervention to review the essay and add any additional reasons or explanations to the paragraph in order to make it stronger. For the untimed essay prompts, participants were given the full 45-minute session to write an essay. Participants were asked to write three essays at baseline untimed and post-SRSD, as well as one essay during maintenance untimed and generalization untimed.

Once the participant finished writing an essay, the researcher read the essay in order to make sure each word was readable. If there was ever a question about what had been written, the researcher went over the area in question with the participant immediately and made notes on the essay to help with typing and scoring. The researcher typed each participant's essays without making any corrections to spelling or grammar. If there was a word in question on the written essay, the researcher would type the word in parenthesis to aid in the scoring process. Each essay was evaluated based on the following scoring conventions, number of words, sentences, paragraphs, transition words, parts, and the overall essay quality. In order for participants to move between the various phases of the intervention, they had to successfully complete two essays with an essay quality of at least eight.

On-task behavior. Time sampling procedures were used to collect on-task behavioral data on 100% of the 69 instructional videos (SRSD instruction, fluency instructions and generalization lesson). Trained observers watched videos of lessons and

coded student's on- and off-task behavior, recorded at 30-second intervals for a duration of 15 minutes for an average of 11.50 ($SD = 1.97$) intervention and fluency sessions. On-task behavior for instruction was operationally defined according to Agrawal, Allen-Bronaugh, and Mastropieri (2011) as "looking at the teacher, staying in seat, listening to teacher, and answering questions" (p. 100). For work time on-task behavior was defined as "working actively during the writing process, including using the planning and organizing sheets, writing essays, and generally compliant behavior, such as keeping hands and feet to self, and talking only when appropriate" (Agrawal et al., p. 100). Interrater reliability for time on-task was 99%.

Knowledge of persuasive essay parts. Participants were asked by the researcher to verbally state the parts of a good persuasive essay (see Appendix L); once during baseline untimed, post-SRSD and during maintenance untimed and generalization untimed. In addition, students were administered the parts probe one time a week during intervention. The strategy probe was administered orally to the participants while the researcher recorded participant's responses on the parts probe sheet. Responses were awarded one point for every component of the POW + TREE strategy identified. There were a total of eight points possible to be awarded for the components that needed to be identified in the parts probe. Total score was calculated for each probe administered.

Self-efficacy. A self-efficacy measure created by Cerar, Mills and Mastropieri (2011) to align specifically to the SRSD POW+TREE strategy was administered in order to help validate this measure. The measure, which was connected to specific writing prompts, was administered during baseline untimed, post-SRSD, and maintenance

untimed phases of the study. After reading the essay prompts, the participants chose one prompt on which to write an essay. Each participant then answered thirteen questions using a five-point Likert scale to rate how confident they were that they could actually plan and write a persuasive essay on the prompt from 0% confident (1) to 100% confident (5) (see Appendix M).

Attitudes measure. Students were asked to rate their attitudes about writing during baseline untimed and post-SRSD (Mastropieri, 2009; 2010; 2012) (see Appendix N). This measure asked students questions using a four-point Likert scale on their attitudes about writing. Students were presented with four practice questions at each administration of the attitudes and self-efficacy survey prior to being administered the twelve questions. A variety of questions were presented to participants such as, “When I write, it is easy for me to get ideas for my paper.” “I write whenever I can.” to “When writing a paper, it is hard for me to keep thinking of things to say.” Students were asked to tell whether the statement was “a lot like them,” “like them,” “different from them,” or “very different from them.”

Social validity. Both participants and parents were interviewed to determine the social validity of the SRSD and fluency interventions. Participants and parents were interviewed at baseline untimed and at the completion of the study.

Student interviews. Participants were asked if they liked to write and how they felt when asked to write a paper. They were asked to talk about any recent writing assignments they had completed and any tools they used to complete an assignment. Finally they were asked to discuss if they saw themselves as good writers (see Appendix

O). At the completion of the study, the researcher asked participants about their perceptions of themselves as a writer, the instruction they received and about the knowledge gained through the intervention. In addition the final interview asked participants if they had used the strategy for writing assignments in school, to see if they were generalizing the strategy (see Appendix P). After the study was completed, participants were interviewed to assess their knowledge of the strategy, their perceptions of instruction, and to report any knowledge they gained from participating in the intervention. Participants were also asked if they had used the persuasive writing POW+TREE strategy in any of their other classes. Mastropieri et al. (2009; 2010; 2012) used a social validity interview to ask questions about the specific writing strategy the students were taught (see Appendix Q). Participants were asked to talk about the writing strategy they learned, to discuss what they liked about the strategy, to draw a picture of the graphic organizer used in the study and how this strategy could help other students. A variation added to this interview from the previous studies by Mastropieri et al. (2009; 2010; 2012) was a question asking the students to discuss which method of writing they preferred more, the untimed sessions or the 10-minute writing sessions. These interviews were audio recorded in order to accurately record student's responses and transcribed verbatim. Transcriptions were checked against student's responses in order to verify that the audio recording had been transcribed correctly and then categories of responses were grouped by themes.

Parent interviews. At least one parent for each student was interviewed prior to the start of the intervention and at the completion of the study. Parents were asked about

their child's diagnosis, at what age their child was diagnosed and by whom, as well as their child's strengths and weaknesses. Parents were asked to address their child's written expression abilities as well as concerns they had with their child's ability in this area. In addition they were asked to discuss their child's attitudes towards writing and if they noticed any changes in the student's attitude since participating in the intervention. Parents were also asked to discuss the services their child received in school and grades they had received in writing over the previous two quarters. See Appendix R for a full list of the initial parent interview questions. At the completion of the study parents were asked to discuss whether they thought the intervention was helpful for their child and whether they had noticed any changes in their child's attitudes towards writing since participating in this study. Parents were also asked how they planned on reinforcing what their child had learned in the study. See Appendix S for a full list of the final parent interview questions. The interviews with parents were audio recorded in order to accurately record the interview. Audio recordings were transcribed and read in order to code first for general categories of responses that were then combined into major ideas and themes.

Standardized Writing Measure

Writing fluency of all participants was assessed with the Woodcock-Johnson III (W-J III) Writing Fluency subtest (Woodcock, McGrew, & Mather, 2001) at baseline untimed and post-SRSD intervention (see Appendix T). The test was administered according to the directions developed for this measure. The participants were given seven minutes to complete as many of the 40 items on the subtest as possible.

Participants were required to write short sentences about pictures using the three words provided, without changing the words, while adding any additional words in order to produce a grammatically correct sentence. Each correct sentence was awarded 1 point when the item was scored. If a participant changed a word in any way (i.e. big to biggest), did not use a word or wrote a sentence that was not grammatically correct, then the item was awarded 0 points when scored. For example, one of the practice items showed a picture of a pig with the three words “pig”, “fat”, “is” and the participants were asked to write a short sentence about the picture and use the three words provided, without modifying the words in any way. A correct answer would have been “The pig is fat.” or “The pink pig is fat.” not “The pig is the fattest.” Test-retest reliability intervals extending from less than one year to ten years for students ages 7-11 (mean age of 9.21 years) were 0.76 (Schrunk, McGrew & Woodcock, 2001).

Fidelity of Treatment

In order to make sure that SRSD instruction was delivered as intended, fidelity of treatment was measured. Fidelity of treatment was measured on the SRSD instruction (lessons 1 – 4), fluency (lesson 6), and generalization (lesson 7). As stated earlier, the researcher implemented the instruction and had three years prior experience implementing SRSD instruction to middle school students with emotional and behavioral disorders (EBD). A trained observer watched 69 videos to make sure the components of each of the lessons were completed with fidelity. The observer used a fidelity checklist that matched the lesson plans for each lesson to make sure each lesson was implemented with consistency. The researcher and the trained observer conducted the observations

independently and the checklists were compared to calculate the percentage of agreement.

Procedures

Permission to conduct the research was obtained from the Institutional Review Board (IRB) prior to the start of the study. Participants were recruited through a Parent Resource Center, as well as a large state Autism Society listserv (see Appendix U). In addition, parents who expressed interest in the study shared the recruitment material with other parents whose children met the recruitment criteria. The researcher met with each participant as well as at least one parent to discuss the study and answer any questions. Once all questions were answered, consent was obtained from the parent (see Appendix V) and assent from the participant (See Appendix W). Parents were provided a copy of the signed consent and assent forms. Also at this time, the researcher and parent determined the student's availability as well as the location for the intervention to occur. All of the interventions occurred after school hours for 45 minutes. Intervention occurred at the participant's home for four of the students. For one participant the intervention occurred at the end of the day, at school in the special education resource room and the other participant received the intervention at an after school care facility. The parent or parents were interviewed at this time regarding their child's disability and diagnosis as well as their child's written expression abilities and concerns they (the parents) had with their child's ability in the area of writing. In addition, they were asked to discuss their child's attitudes towards writing. Students were also interviewed at this time about their feelings about writing.

Students were instructed individually and were assigned intervention start dates based on performance on the initial baseline untimed essay and Woodcock-Johnson III Writing Fluency subtest. Once the participant obtained a stable untimed baseline, a timed fluency baseline essay prompt was administered followed by SRSD intervention on how to write a persuasive essay. These procedures were then replicated and staggered over time for the remaining groups. Once the participant mastered writing two persuasive essays—containing eight parts, independently—they moved on to post-SRSD testing in the following session, which consisted of writing three essays untimed. Immediately following post-SRSD, fluency instruction was initiated and participants learned how to use the POW+TREE strategy where they were taught to write an essay in 10 minutes that contained at least eight parts. Once a participant reached criterion of writing two essays containing eight parts independently in 10 minutes they moved into the post-fluency testing phase.

Throughout the study, 45 minutes were allocated three days a week for instruction. Participants received a mean of 9.17 days ($SD = 8.82$) of SRSD instruction to reach mastery, during the first phase of the study, ranging from 6 - 13 days per student. This resulted in an average of 6.9 hours ($SD = 2.34$) with a range of 4.5 to 9.75 hours of instruction. Participants received a mean of 4.67 days ($SD = 2.34$) with a range of two to nine days of fluency instruction to reach mastery. This resulted in an average of 3.5 hours ($SD = 1.75$) with a range of 1.5 to 6.75 hours of instruction. Each participant received one day of generalization instruction lasting 45 minutes. Maintenance timed

fluency and generalization timed fluency were assessed three weeks after the administration of the third post-fluency essay prompt.

Test administration procedures. Each measure was administered to participants individually by the researcher. The testing administration procedures are described next.

Baseline. Baseline consisted of three untimed essays and one 10-minute fluency timed essay in order to evaluate participant's writing performance. At each presentation, participants were presented with two essay prompts to choose between. Participants were read and asked to read the two essay prompts and to choose one on which to write their essay. For the three untimed essay prompts (the first three administered), participants were given as much time as they needed to complete their essay. For the fluency essay prompt (prompt four), students were given 10 minutes to read the essay prompts, plan and write an essay. Having both timed fluency and untimed essay prompts allowed the researcher to have data points both timed fluency and untimed in which to compare the essays between baseline untimed and both post-SRSD and post-fluency.

On the first baseline untimed day, after writing the essay based on the prompt, participants were administered the Woodcock-Johnson III Writing Fluency subtest, the attitude and self-efficacy measure, and they completed the initial interview with the researcher. On the second baseline untimed day, the participants were presented with the essay prompts along with the self-efficacy measure. Once they finished writing they were administered the strategy probe. On the third day of baseline untimed, participants were provided, as much time as they needed to read the two essay prompts and choose

the one on which they wanted to write their essay. On the final day of baseline timed fluency, participants were given 10 minutes to plan and write the essay.

SRSD instructional procedures. The intervention sessions took place three days a week for 45 minutes for a mean of 9.17 days ($SD = 8.82$, range of six to 13) of SRSD instruction per student for a mean of 6.9 hours ($SD = 2.34$, range of 4.5 to 9.75) of instruction, in order for participants to reach criterion performance. Sessions took place individually and were timed to ensure that sessions lasted the full 45 minutes. Prior to starting the sessions, the video camera was set up, all the material was taken out and the researcher talked with the participant about their day. Four of the participants received the intervention in their home; one received the intervention in a classroom at the school; and one received the intervention at an after school care facility. The researcher delivered instruction to each participant until the participant reached mastery. Mastery for this study was two well-written persuasive essays containing a minimum of eight parts, using the strategy that was taught during intervention without any assistance from the researcher.

The lesson plans were adapted from Mastropieri et al., (2012). Each lesson followed the SRSD framework of systematically and explicitly teaching the participants to write powerful persuasive essays. The lessons taught over the course of the intervention included the six stages: (a) develop and activate background knowledge, (b) discuss the strategy, (c) model the strategy, (d) memorize the strategy, (e) support the student in writing using the strategy, and (f) independent practice. Lessons one through three took a day or less to complete. During lesson four participants were allowed to

write essays with support, while lesson five required students to write essays independently. Participants did not move on from lesson five until they had reached the criterion of writing two persuasive essays with eight parts. Lesson six was introduced to participants after they had completed three days of post-SRSD testing. The lesson six requirement was for participants to write a persuasive essay in 10 minutes. The criterion for mastery of this lesson was independently writing two persuasive essays containing eight parts. Lesson seven was completed in one day at the end of the third day of post-fluency testing. Following is a description of the instruction provided to participants for each stage of SRSD.

Stage 1 - lesson 1 – develop and activate background knowledge. The purpose of this lesson was to develop the student’s background knowledge of persuasive writing, to sign the learning contract and to introduce the persuasive essay mnemonic. The lesson began by going over the agenda or goals for the day. The participants then signed the learning contract, which stated the purpose of the intervention, the short and long-term goals, and the target completion date. By signing the contract, participants were committing to learning the writing strategy. The researcher also signed the contract committing to teach the strategy.

In this lesson the students were introduced to vocabulary terms they would need to know in order to understand the type of essays they would be learning to write. Next the students were introduced to the first half of the strategy POW + TREE mnemonic chart and were given a copy of the chart to keep in their folder for reference during the intervention. Each letter of the POW + TREE mnemonic and what it stood for was

discussed with the student as well as the importance of each part when writing a good persuasive essay. The student, with the researcher, then read a sample persuasive essay and identified the persuasive essay parts. Students were then introduced to the graphic organizer.

The researcher discussed with the student how the graphic organizer would help them include all the parts they needed in order to write a powerful persuasive essay. With the help of the student, the researcher modeled how to fill in the graphic organizer based on the parts identified in the essay in note format. Transition words were introduced and shown where they should be placed in the graphic organizer. The student and researcher verbally reviewed the mnemonic POW + TREE and checked off the daily agenda.

Stage 2 - lesson 2 – discuss it. The researcher began the lesson by introducing the agenda for the day. The purpose of this lesson was to review the persuasive writing mnemonic, to identify parts of an essay, and to introduce the student record sheet. This was followed by a verbal review of the term *persuade*, the POW + TREE strategy, as well as a discussion of what makes a persuasive essay powerful. The concept of counter reasons was introduced and the researcher discussed with the student why it is important to consider another person's point of view. Transition words and how to use them were also discussed in more detail during this lesson. This was followed by a discussion about the graphic organizer and how it was a helpful tool to use in order to organize ideas prior to writing. The student and researcher read some more sample essays together in order to practice identifying the parts of a good persuasive essay. The researcher modeled how to

fill out the graphic organizer and then the students practiced filling out at least one graphic organizer. Before the conclusion of this lesson, each student read an essay they wrote during baseline untimed, identified the parts in their essay, and wrote them in note format in a graphic organizer. This was followed by a discussion about their essay and what parts if any were missing. The student was then introduced to the student parts record sheet where they were taught how to graph the total number of parts they wrote in their essay. The lesson concluded with a verbal review of the mnemonic POW + TREE and the daily agenda was checked off to verify all parts of the lesson were completed.

Stage 3 and 4 - lesson 3 – model it/memorize it. The purpose of this lesson was to review the persuasive writing strategy and to model how to write a powerful persuasive essay. The daily agenda was discussed to begin the lesson, followed by a verbal review of the parts of a good persuasive essay. The researcher reviewed the graphic organizer, counter reasons, and transition words with the student. The researcher then modeled how to use the POW + TREE strategy to write an essay from the planning stage through examining the completed essay to make sure it contained all the essay parts. The student was asked to listen for positive phrases or self-statements the researcher said aloud while progressing through the steps of POW + TREE. Students were actively engaged by helping the researcher generate ideas for the essay. Once the essay was written, the researcher discussed self-statements with the student and why it was important for them to say positive things to themselves when writing. Students were asked to write down some self-statements on their self-statement chart that they could say to themselves while writing. The student then helped the researcher graph the essay as a

way to examine the essay and make sure all essay parts were included. The student's daily record sheet was introduced as a way for students to rate how well they performed on a given day as well as monitor their progress towards writing an essay. Finally the daily agenda was reviewed to verify that all components of the lesson were completed. This lesson was completed in one day.

Stage 5 - lesson 4 – support it. The purpose of this lesson was for students to practice writing persuasive essays with little to no guidance from the researcher. The daily agenda was discussed and students were asked to verbally tell the researcher the parts of a persuasive essay. The students were then given two minutes to write as many transition words as they could remember on a piece of paper. This list was then compared to the transition list in the student's folder.

The researcher then collaborated, as needed, with the student on ideas, reasons, and explanations for the essay on, which they were working, as the student filled out the graphic organizer. Once the graphic organizer was completed, the student was encouraged to write an essay independently, with support as needed. Once the essay was finished, the researcher reminded the student to check work, graph the essay and complete the student record sheet. The researcher then discussed setting goals each day in order for the student to achieve writing a good persuasive essay with at least eight parts. This lesson was repeated until the student could write two essays that each contained at least eight parts with no assistance from the researcher. The mnemonic POW + TREE was reviewed and the daily agenda reviewed and checked off at the end of each session.

Stage 6 - lesson 5 – independent performance. At this point, students were able to write a persuasive essay containing at least eight parts with support, so the purpose of this lesson was for students to write powerful persuasive essays independently and to wean off support materials. After the agenda for the day was discussed, the student reviewed the parts of a good persuasive essay. Students were weaned off the graphic organizer and shown how to write a good persuasive essay by jotting down quick notes on a separate sheet of paper. Once the students wrote an essay, they graphed the essay to track the number of parts written. Once students were able to write two essays independently containing at least eight parts, they moved on to post testing. The students stayed on lesson 5 until they were able to reach criterion. At the end of the day, the agenda was checked off in order to verify that all parts of the lesson were completed. Once students were able to write two persuasive essays containing at least eight parts independently, they proceeded on to three days of post testing. Lessons 1 - 5 lasted for an average of 9.17 days ($SD = 3.13$, range 6 – 13 days) for an average of 6.9 hours ($SD = 2.34$, range 4.5 to 9.75 hours). Once each participant had reached mastery, writing two persuasive essays independently with at least eight persuasive essay parts, they moved on to the post-SRSD phase of the study.

Post-SRSD. Participants were asked to write three persuasive essays based on one of two prompts provided. Participants were given as much time as they wanted to write the essay. On the first day of post-SRSD testing, participants were asked to complete the parts probe identifying the elements of a persuasive essay. Participants were then given seven minutes to complete the Woodcock-Johnson Test of Achievement

(W-J III). They then were required to complete the attitudes measure (Mastropieri et al., 2009; 2010; & 2012), which is untimed. On the second day of post-SRSD testing, students were administered the prompts along with the self-efficacy measure. On the final day of post-SRSD testing, participants were given as much time as they needed to write a persuasive essay on one of two essay prompts.

After completing the post-SRSD phase of the study, participants moved on to Lesson 6, the fluency instruction phase, in which they were instructed on how to write a good persuasive essay fluently. During this phase participants learned how to write a persuasive essay that contained at least eight essay parts in 10 minutes.

Lesson 6 – fluency lesson. The purpose of this lesson was to plan and write a powerful persuasive essay in 10 minutes. A review of the parts of a persuasive essay was conducted after discussing the agenda and goals for the day's lesson. The researcher modeled and talked through the process of writing an essay that contains all the essay parts in a short amount of time. The student was then given an opportunity to practice writing an essay in 10 minutes. After the essay was written, the student graphed the essay on the parts fluency record sheet to record the number of essay parts written. This lesson was repeated until the student could reach the criterion of writing two essays independently in 10 minutes with at least eight parts. Lesson 6 lasted for an average of 4.67 days ($SD = 2.34$, range 2 – 9 days) for an average of 3.5 hours ($SD = 1.75$, range 1.5 to 6.75 hours). Once students could write two persuasive essays that contained eight persuasive essay parts, independently in 10 minutes, they moved into the post-fluency phase of the study.

Post-fluency. Participants were asked to plan and write three persuasive essays based on one of two prompts provided during the three post-fluency sessions. Participants were given 10 minutes to write each essay. On the second day of post-fluency testing, participants were asked to complete the parts probe identifying the elements of a persuasive essay.

Lesson 7 - generalization lesson. This lesson took place after post-fluency testing was complete. The focus of this lesson was to instruct students about other areas in which they could utilize the persuasive essay strategy. After the agenda and goals for the day were discussed the student was asked to identify the parts of a good persuasive essay. The researcher worked with each student to write a persuasive essay on a current event topic related to whether or not schools should require students to purchase school lunches instead of bringing a lunch from home. Students brainstormed with the researcher all the parts of a persuasive essay and helped to write down ideas in the graphic organizer. Students then assisted the researcher in writing a letter to the superintendent of schools persuading him to either enact or not enact this idea, based on their opinions. Each participant received one 45-minute session to complete lesson 7. Following the completion of this lesson the students were not seen for three weeks when maintenance and generalization testing occurred.

Maintenance and generalization testing. During maintenance and generalization testing participants wrote a total of four essays. Participants wrote one timed fluency and one untimed essay for maintenance and one timed fluency and one untimed essay for generalization. Generalization essay topics were based on social

studies content and were unrelated to the topics practiced during the generalization lesson. Participants were presented with the untimed essays first, followed by the timed fluency essays. On the first day of maintenance testing, participants were also given a strategy probe. The untimed generalization essay was presented along with the self-efficacy measure, where students rated their confidence level on thirteen questions (see Appendix M). On the final day of maintenance and generalization testing, the learning contract, which was signed on the first day of intervention, was presented to the participants to review and sign. The date the intervention was completed was filled out and students were asked to indicate in what setting they planned to use the POW+TREE strategy. Finally, students were administered the final student interview (see Appendix P) as well as the social validity interview (see Appendix Q). In addition, the researcher interviewed the parents using the final parent interview (see Appendix S).

Reliability and Scoring

Following is a discussion of the various scoring procedures used throughout the study as well as a discussion on the reliability measures. Scoring procedures for (a) essays, (b) self-efficacy, (c) attitudes measure (d) Woodcock Johnson III writing fluency, (e) on-task behavior, (f) student interview, (g) parent interview, (h) parts probe, and (i) fidelity of treatment follow.

Essay scoring procedures. Participants were administered three untimed and one timed fluency baseline persuasive essay prompts, three post-SRSD instruction prompts, three post-SRSD fluency instruction prompts and one untimed maintenance and generalization prompt and one timed fluency maintenance and generalization prompt (for

a total of 14 essays across testing phases). The following procedures were used to score all essays written by participants, during all phases of the study.

Number of persuasive essay parts. Each essay was scored for the total number of persuasive essay parts written. One point was awarded for topic sentence, reasons, explanations, counter reasons, and an ending sentence. Points were totaled to calculate the total number of persuasive parts used.

Essay quality score. Each essay was scored using a holistic rubric (see Appendix X) to determine the overall quality of the essay. The holistic rubric has been used in other SRSD studies (Mason & Shriner, 2008; Mastropieri et al. 2009; 2010; 2012). A scale of 0-10 was used; where a score of zero indicated no essay parts and a score of 10 indicated that the participant's essay contained all parts. In order to obtain a score of 10, an essay had to contain the following parts: a topic sentence; more than three reasons, with at least three explanations; and an ending sentence; more than one counter argument; and the essays must have been written in a logical sequence that strengthened the writer's argument.

Total words. The total number of words written for each essay was tabulated by hand and double-checked with the computer using the word count function. Spelling errors were not counted.

Sentences. In order for a sentence to be counted, participant's writing needed to include a subject, verb and an ending punctuation mark.

Number of transition words. The number of transition words contained in the essay was tabulated. The scorer read the essay looking for transition words such as "my

first reason,” “another reason,” “second,” “third,” “in addition,” “my final reason,” and so on. Each transition word used by the participant in the essay was awarded one point and a total was computed by tallying the number of transition words used. See Appendix L for a list of transition words taught to participants.

Paragraphs. The number of paragraphs was calculated by counting the number of sentence groups. In order for a group of sentences to be counted as a paragraph, there needed to be at least three sentences together. In addition the sentences had to meet the above criteria of having a subject, verb and an ending punctuation mark.

The researcher and an independent scorer scored the essays. Prior to scoring essays, the independent scorer was trained until 90% reliability was obtained between the researcher and the scorer. Interrater reliability was calculated for 33% of the essays during each phase; at baseline untimed, post-SRSD, post-fluency, maintenance untimed and timed fluency and generalization untimed and timed fluency. Calculating reliability provided the study more validity (Cohen & Spence, 2010).

Self-efficacy scoring. Participants were administered the self-efficacy scale three times during the study. It was administered during baseline untimed, post-SRSD, and during maintenance. The self-efficacy scale contained 13 questions in which participants were asked to rate their response to the questions on a 5 point Likert scale, with 1 indicating 0% confidence and 5 indicating 100% confidence. Student’s responses were summed to obtain a total score for each administration of the measure. The total number of items on the scale were summed and divided by the total number of items (13) to calculate a composite self-efficacy score for each student. Composite self-efficacy scores

ranged from 1, indicating the student did not have confidence in his persuasive writing ability, to 5 indicating that the student was 100% confident in his ability to write persuasive essays. All of the self-efficacy measures (total of 18) were scored by the researcher and a second scorer in order to verify the total score in order to ensure 100% agreement.

Attitudes measure scoring. Participants were administered a rating scale during baseline untimed and post-SRSD instruction, in which they were asked to rate their attitudes about writing. The attitudes scale contained 12 questions, which were rated on a 1-4 point Likert type scale with 1 representing “very different from me” and 4 representing “a lot like me.” Student’s ratings on all twelve items were summed and divided by the total number of items on the scale to calculate a composite attitudes score for each student. All of the attitude measures (total of 12) were scored by the researcher and a second scorer in order to verify the total score in order to ensure 100% agreement.

Woodcock Johnson III writing fluency subtest scoring. Participants were administered the writing fluency subtest during baseline untimed and after SRSD instruction. The writing fluency subtest required students to write, in seven minutes, as many complete sentences as they could to the 40 items possible on the subtest using the three words provided and a stimulus picture.

This measure was administered and scored according to the Woodcock Johnson III manual (Woodcock, McGrew, & Mather, 2001a). The researcher and a second scorer, familiar with the writing fluency subtest, scored the tests and the percentage of interrater agreement was 100%. Correctly written sentences that contained the three words,

unchanged and any other words to make a grammatically correct sentence were awarded one point. If the sentence did not contain all three words, if the words were altered in any way, or the sentence was not complete no points were awarded. The raw score was calculated by adding up the points earned for a composite score. Then the raw scores were converted to standard scores using the software provided with the testing material.

On-task behavior coding. A recording sheet was created using Microsoft Excel to collect time-sampling data (see Appendix Y). Using time sampling procedures, trained observers watched videos of lessons and coded student's on- and off-task behavior, recorded at 30-second intervals for a duration of 15 minutes for an average of 11.5 ($SD = 1.97$) intervention and fluency sessions. In addition to collecting on- and off-task behavior data, the observers recorded qualitative notes about the classroom, lessons, and student behaviors. On-task behavior for instruction was operationally defined according to Agrawal, Allen-Bronaugh, and Mastropieri (2011) as "looking at the teacher, staying in seat, listening to teacher, and answering questions" (p. 100). Time on-task behavior was defined as "working actively during the writing process, including using the planning and organizing sheets, writing essays, and generally compliant behavior, such as keeping hands and feet to self, and talking only when appropriate" (Agrawal et al., p. 100). Interrater reliability for time on-task was 99%.

Coders recorded a "1" if the participant was on-task during and a "0" if the participant was off-task during each 30-second interval during the 15-minute observation period. A percentage of on-task behavior was calculated each day by totaling the number

of on-task behavior points for the day and dividing by 30, the total data points for each day.

Student interviews. Individual interviews were conducted with students prior to baseline and at the completion of the study. Participants were asked if they like to write, if they thought they were a good writer, and to discuss any recent writing assignments. All interviews were transcribed by verbatim and double checked by the researcher and an independent scorer to verify that all information was transcribed. Student's responses were compared between the two administrations to identify if there were any changes in student's responses between baseline and the completion of the study in whether they liked to write or thought of themselves as a good writer.

Parent interviews. At least one parent for every participant was interviewed prior to baseline untimed and at the completion of the study. All interviews were transcribed by verbatim and double-checked by the researcher and an independent scorer to verify that all information was transcribed. Initial parent interviews were transcribed and used to provide demographic information about each participant. Parent responses were compared between the two interview sessions to determine major themes and ideas regarding parents' perspectives on their students' attitudes toward writing.

Parts probe scoring. The parts probe was administered to participants during baseline untimed, post-SRSD, post-fluency and during the maintenance untimed and generalization untimed phases of the study. In addition, participants were administered the measure weekly during the instructional phase to measure student's knowledge of the parts of a persuasive essay. The researcher scored all the parts probes. The measure was

scored by awarding one point for each of the following parts identified: (a) pick my idea, (b) organize my notes, (c) write and say more, (d) topic sentence, (e) reasons, (f) explanations, (g) counter reason(s), (h) ending and examine, for a total of eight possible points. An independent scorer verified the scores on all parts probes for each participant with 100% agreement.

Fidelity of treatment scoring. An observer was trained to watch all of the videotaped lessons and complete fidelity of treatment checklists. The checklists were developed from the lesson plans used by the instructor to indicate which lesson components were completed. The researcher and the trained observer conducted the observations independently and the checklists were compared to calculate the percentage of agreement. The percentage of components completed was calculated by summing all the instructional components completed during each lesson divided by the total number of lesson components. For 33% of the instructional sessions a second scorer assessed the fidelity of treatment in order to ensure fidelity of treatment.

4. RESULTS

This chapter presents the results of the research study. This study investigated the effectiveness of Self-Regulated Strategy Development (SRSD) instruction on the written language performance for elementary age students in fourth through sixth grade with high functioning autism. Results are presented by data analysis and by the following research questions:

1. Will SRSD instruction for POW + TREE persuasive writing strategy increase the number of essay parts, quality, number of words, sentences, and transition words of persuasive essays on immediate and maintenance measures for students with ASD?
2. Will students be able to learn to write fluently following mastery of the skills learned in writing an untimed one-paragraph essay to planning and writing essays in 10-minutes on immediate and maintenance measures?
3. Will students be able to generalize the use of the POW + TREE strategy to other academic content areas?
4. What levels of on-task behavior do students demonstrate during SRSD instruction, fluency instruction and generalization instruction?
5. Will student perceptions and attitudes of themselves as a writer change as a result of the intervention?

6. Will parents report a change in their children's attitudes about writing as a result of the intervention?

Data Analysis

Several data analysis methods were used to evaluate the effectiveness of the intervention. First, visual analysis was used to investigate the level, variability, and trends in student performance on essays collected during (a) baseline untimed and fluency timed, (b) post-SRSD, (c) post-fluency, (d) maintenance and generalization untimed, (e) maintenance and generalization fluency timed (Kennedy, 2005). Second, the percent of non-overlapping data (PND) between baseline and each of the phases of the study – post-SRSD testing, post-fluency testing, untimed maintenance and generalization, and timed fluency maintenance and generalization – was calculated to show the outcome effects (Scruggs, Mastropieri, & Castro, 1987). Third, results were reported by means and standard deviations and nonparametric analysis for the (a) Woodcock-Johnson III writing fluency measure, (b) on-task behavior, (c) essay performance, (d) self-efficacy, and (e) attitudes measures. In addition, Wilcoxon (1945) was used to analyze the mean changes between (a) baseline, post-SRSD, post-fluency, untimed and timed fluency maintenance and generalization written essays, (b) baseline and post-SRSD attitudes measure responses, (c) baseline and post-SRSD Woodcock-Johnson III writing fluency measure; and (d) baseline, post-SRSD and maintenance self-efficacy measure responses. Finally, interviews were analyzed and compared for any common themes across participants.

Visual analysis. Kennedy (2005) described visual inspection techniques, which were used to analyze the number of words, sentences, paragraphs, transition words, parts and essay quality of the essay data. Data points were graphed (plotting the score on the y-axis and the time of measure on the x-axis), and were connected within each phase for each participant. The level, trend, and variability of the data, within phases, were analyzed first. The first part of visual analysis is looking at the average of the data within a phase to determine the level of the data (Kennedy, 2005). The mean or median is used to calculate the level (Kennedy, 2005). The second part of visual analysis is to analyze the trend or the best-fit straight line of the data (Kennedy, 2005). In addition, the slope and magnitude of the data is judged. The magnitude of the data can be described as high, medium, or low (Kennedy, 2005). The third and final within-phase analysis that took place was to look at the variability of the data (Kennedy, 2005). Then, the immediacy of effect and the overlap of data points were analyzed between phases. Immediacy of effect allowed participant performance, between phases, to be analyzed to determine how quickly performance changed between phases. Overlap of data is described in more detail in the next section on PND.

PND. The percent of non-overlapping data (PND) was calculated in order to evaluate the magnitude of effectiveness of the SRSD intervention (Scruggs & Mastropieri, 2001). The number of non-overlapping data points between two phases were tabulated and divided by the total number of data points in order to calculate the PND. Scruggs and Mastropieri (2001) provide guidelines that suggest a PND value greater than 90% indicates a very effective intervention. PND values between 70% and

90% indicate an effective intervention, and PND values between 50% and 70% indicate interventions that are uncertain. PND values less than 50% indicate ineffective interventions. PND was calculated across all phases of the study for all essay measures.

Statistical tests. Results across phases were compared using nonparametric statistics. Nonparametric statistics were used because they do not require homogeneity of variance or a normal distribution that parametric statistics require. The Wilcoxon Matched-Pairs, Signed Ranks test was used to analyze the results between phases. The significance level was set at 0.05 for all analyses. While the means and standard deviations were not used in the calculation of the Wilcoxon Matched-Pairs, Signed Ranks test, those descriptive data were presented along with nonparametric statistical test data.

Participants' pre- and posttest Woodcock-Johnson III (WJIII) writing fluency subtest scores were analyzed using a paired *t*-test. A parametric statistical test was used because the WJIII is a standardized test and therefore meets the assumptions required of a parametric test (normality, independence of scores, and homogeneity of variance).

Qualitative analysis. Information from participants' and parents' interviews was analyzed using qualitative analysis. Interviews were recorded and data was transcribed from the audio recordings of the interview sessions. Responses were reviewed individually to understand participants' perceptions of the intervention by comparing and connecting student responses across questions and students (Maxwell, 2005). Next, participant responses were organized by interview question in order to look at themes in participant responses. Participants responses were compile by interview questions to look at similarities and differences across participants. Similarities were

grouped for reporting and differences were further analyzed to determine why some participants responded differently to the instruction provided. In addition, parents' interview responses were transcribed and major identified issues were categorized in order to compare and connect across questions to develop themes in parental responses about perceptions regarding their child's writing ability.

Persuasive essays. Means for each untimed essay's characteristics are provided in Table 3 and the means for each timed fluency essay's characteristics are provided in Table 4, with individual participant scores on Table 5. Participants' performances for each essay were organized by phases. Overall results were presented for each phase, followed by results for individual participants. In order to enter into intervention, participants needed to have a stable baseline for the number of essay parts and the essay quality. In order to determine that a stable baseline had been achieved, the number of essay parts and the essay quality needed to be within two to three points of each other across the three untimed essay.

Dependent Measures

Following presentation of data in Tables 3, 4, and 5, results are reported for the following dependent measures: (a) fidelity of treatment is presented, (b) writing performance, (c) on-task behavior, (d) knowledge of persuasive essay parts, (e) self-efficacy, (f) attitudes measure, (g) social validity, including student and parent interviews, and, (h) standardized writing measures.

Fidelity of treatment. Fidelity of treatment was measured to ensure that SRSD and fluency instruction were delivered as intended. Measurement was conducted on the

SRSD instruction (lessons 1 – 5), fluency instruction (lesson 6), and generalization instruction (lesson 7). Overall fidelity of treatment was calculated on 69 of 69 videos for 100% of the instructional sessions. One coder coded 27 instructional videos individually while the second coder coded 18 instructional videos individually. Both coders coded a total of 24 videos for reliability. Interrater reliability for time on-task was 99%. Based on the results of the fidelity of treatment analysis, instruction was delivered with a high degree of fidelity ($M = 99$, range 98- 100%).

Essay writing and performance. Each participant's writing performance was evaluated at baseline, post-SRSD instruction, post-fluency instruction, maintenance, and generalization. Lessons 1 – 5 lasted an average of 9.17 days (range 6 – 13 days), for an average of 6.9 hours (range 4.5 to 9.75 hours) in order to reach mastery (writing two essays that contained eight essay parts without assistance from the instructor). Lesson 6 lasted an average of 4.67 days (range 2 to 9 days), for an average of 3.5 hours (range 1.5 to 6.75 hours). Each participant received one generalization lesson lasting 45 minutes at the completion of post-fluency testing. Essays were scored for the total number of essay parts, essay quality, number of words, sentences, transition words, and paragraphs. In order for students to receive credit for writing a sentence, for the purposes of this study, they had to write a sentence that contained a subject, verb and a punctuation mark. This was different from the criteria to be included in the study, which only required participants to write a sentence with a subject and a verb.

An independent scorer, with four years of SRSD experience, scored each essay as the researcher provided all interventions. The researcher scored one-third of the essays

for reliability. Scorers discussed disagreements, after scoring individually until 100% agreement across all phases was reached.

Results were organized by phase, then by individual participant results. Figure 1 displays the mean number of essay parts and number of written by participants for each phase as well as the number of persuasive essay parts participants identified on the knowledge probe. Figure 2 displays the mean essay quality of participant's essays across phases. Figure 3 displays the mean number of words written by participants across phases, while Figure 4 displays the mean number of sentences written. Figure 5 visually displays the mean number of transition words and Figure 6 displays the mean number of paragraphs written by participants across the intervention phases. Descriptive statistics and nonparametric test results are presented in Table 3 for untimed and Table 4 for the timed fluency essays by phase. Table 5 displays the mean essay score for each phase by participant. In addition, graphic representations of the data are displayed by essay measures for participants.

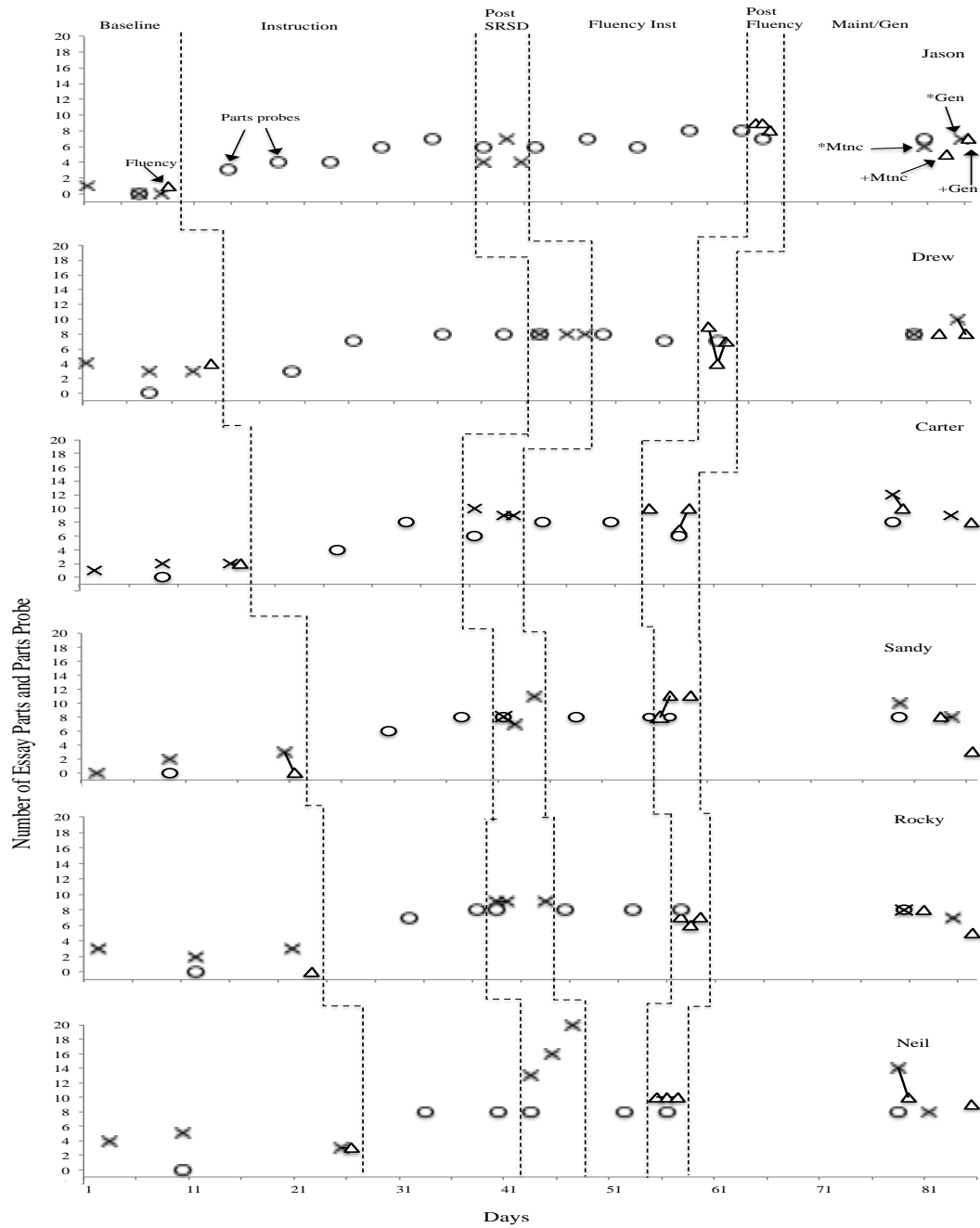


Figure 1. Mean number of essay parts written by individuals and parts probe scores by phase: baseline, post-SRSD, post-fluency, maintenance and generalization. X indicates untimed essay performance; O indicates parts probe; \triangle Fluency timed 10-minute essays; * Untimed Maintenance and Generalization; + Fluency timed 10-minute Maintenance and Generalization.

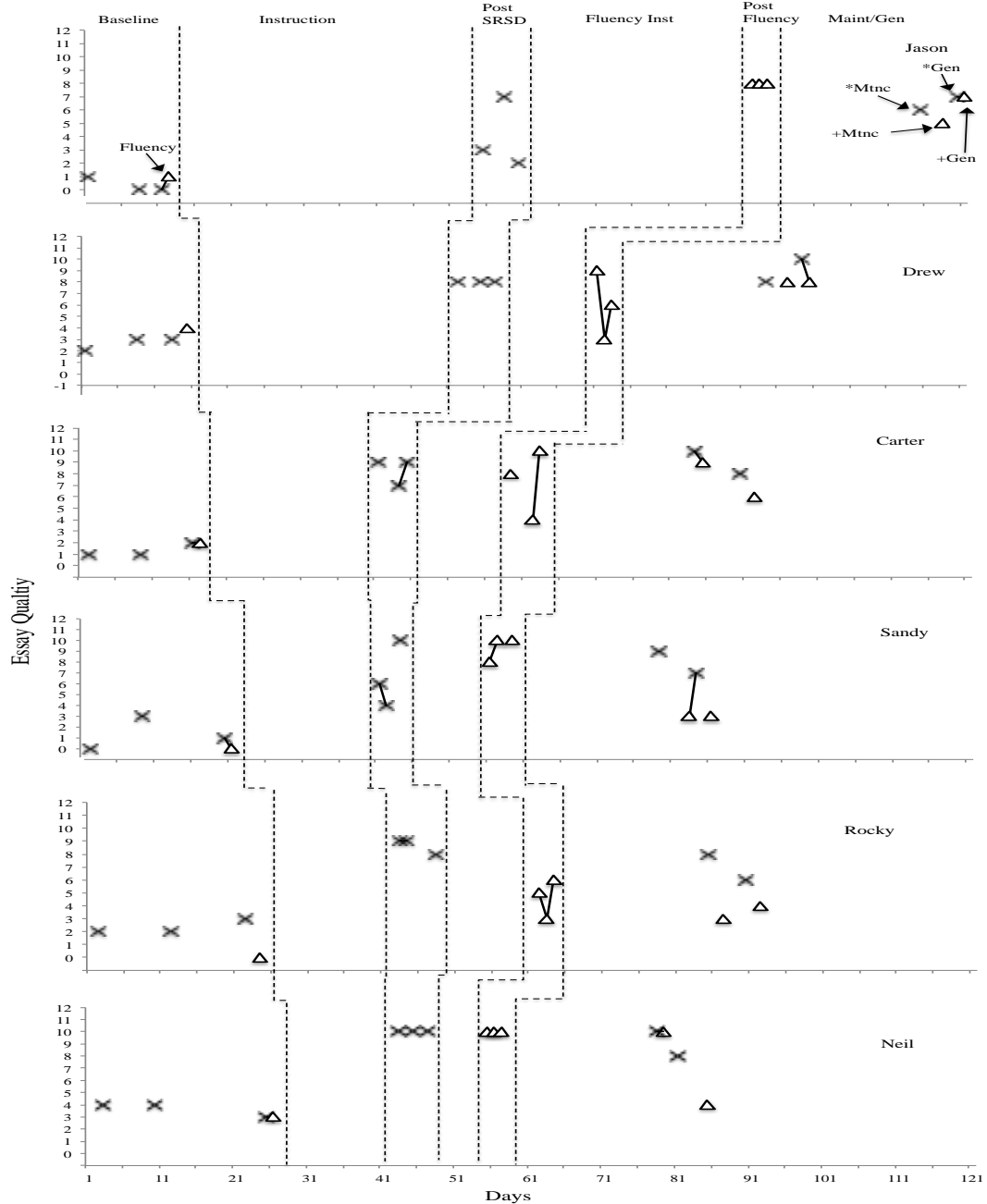


Figure 2. Mean essay quality score per essay written by individuals by phase: baseline, post-SRSD, post-fluency, maintenance and generalization. X indicates untimed essay performance; \triangle Fluency timed 10-minute essays; * Untimed Maintenance and Generalization; + Fluency timed 10-minute Maintenance and Generalization.

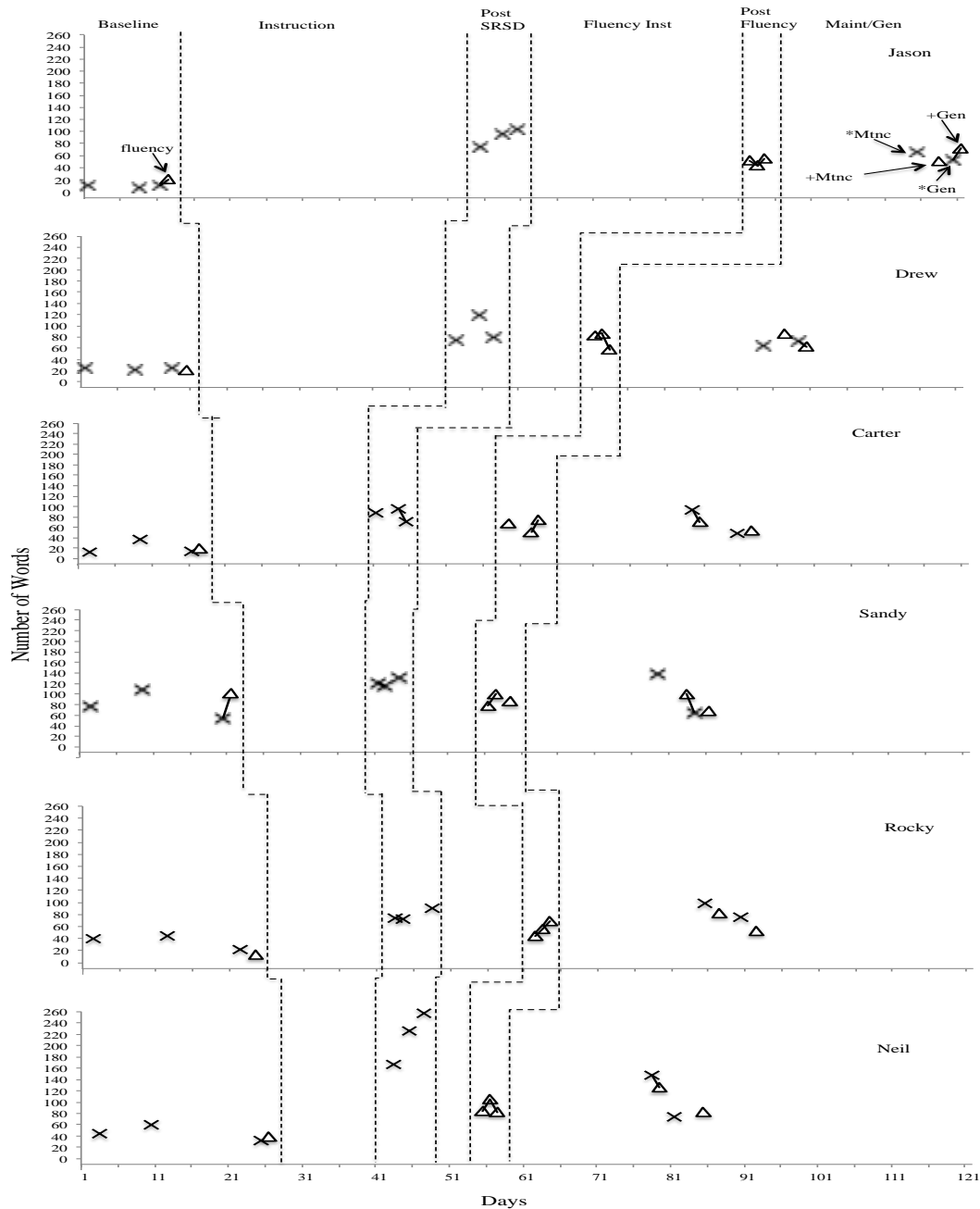


Figure 3. Mean number of words written per essay by individuals by phase: baseline, post-SRSD, post-fluency, maintenance and generalization. X indicates untimed essay performance; \triangle Fluency timed 10-minute essays; * Untimed Maintenance and Generalization; + Fluency timed 10-minute Maintenance and Generalization.

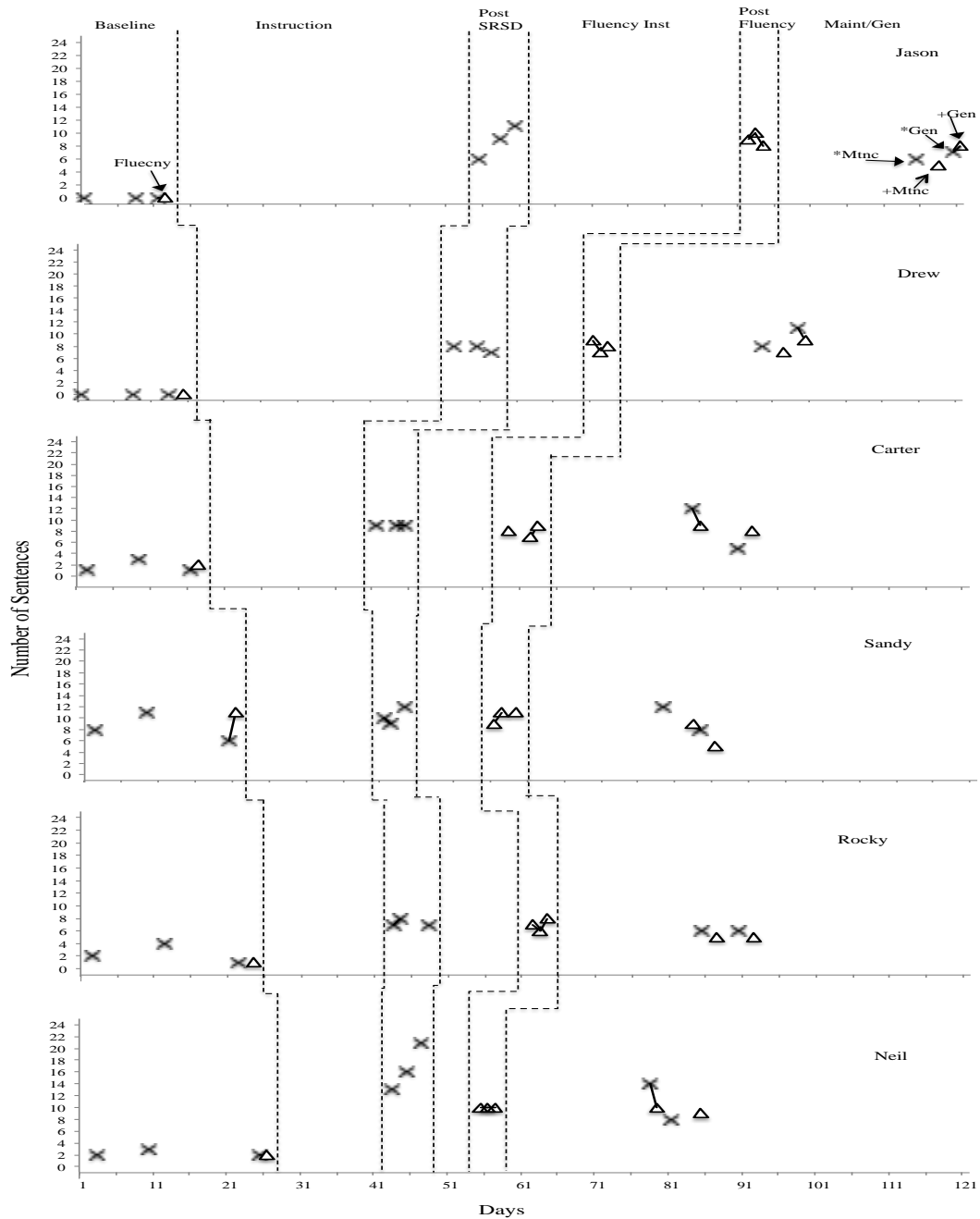


Figure 4. Mean number of sentences written per essay by individuals by phase: baseline, post-SRSD, post-fluency, maintenance and generalization. X indicates untimed essay performance; \triangle Fluency timed 10-minute essays; * Untimed Maintenance and Generalization; + Fluency timed 10-minute Maintenance and Generalization.

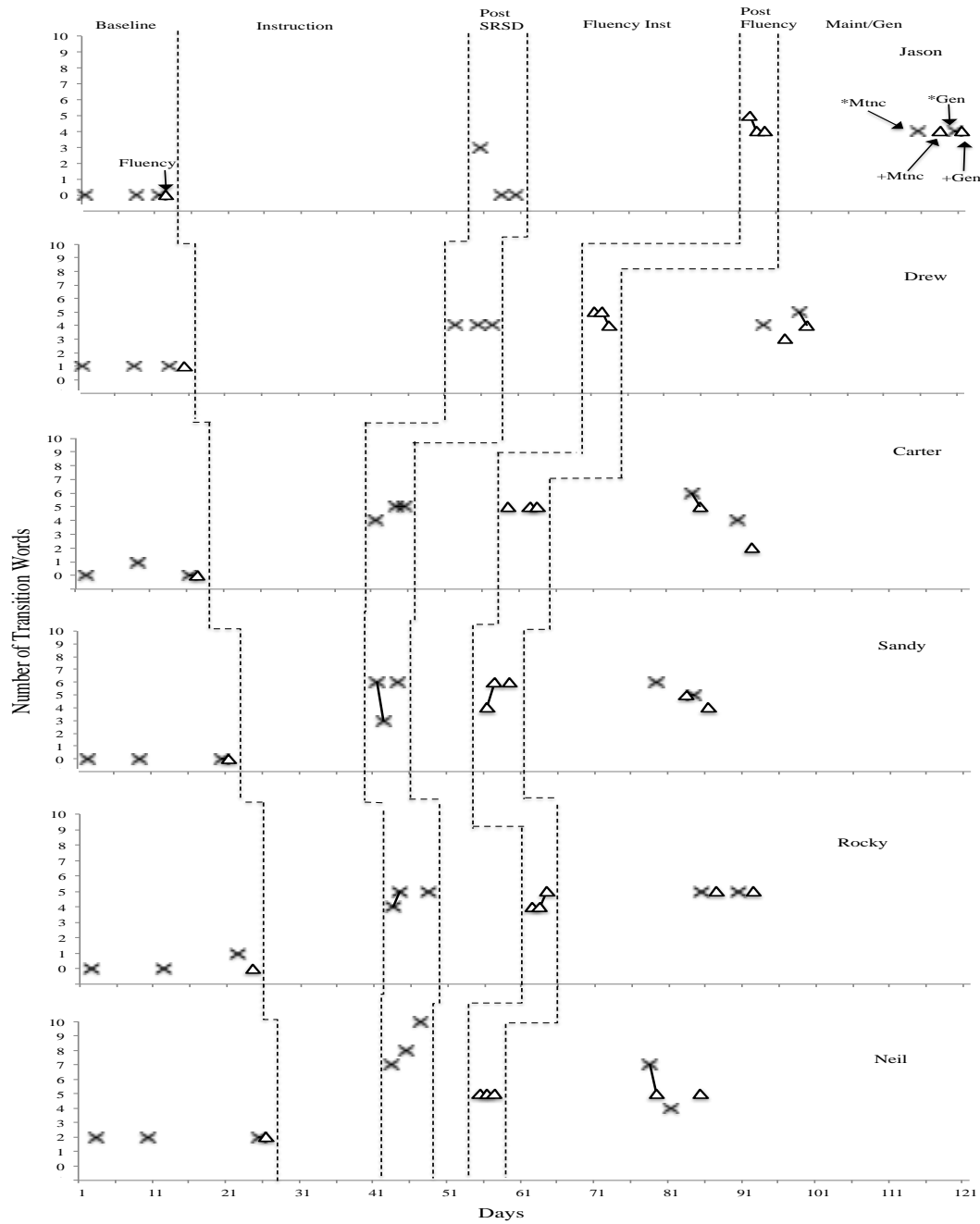


Figure 5. Mean number of transition words written per essay by individuals by phase: baseline, post-SRSD, post-fluency, maintenance and generalization. X indicates untimed essay performance; \triangle Fluency timed 10-minute essays; * Untimed Maintenance and Generalization; + Fluency timed 10-minute Maintenance and Generalization.

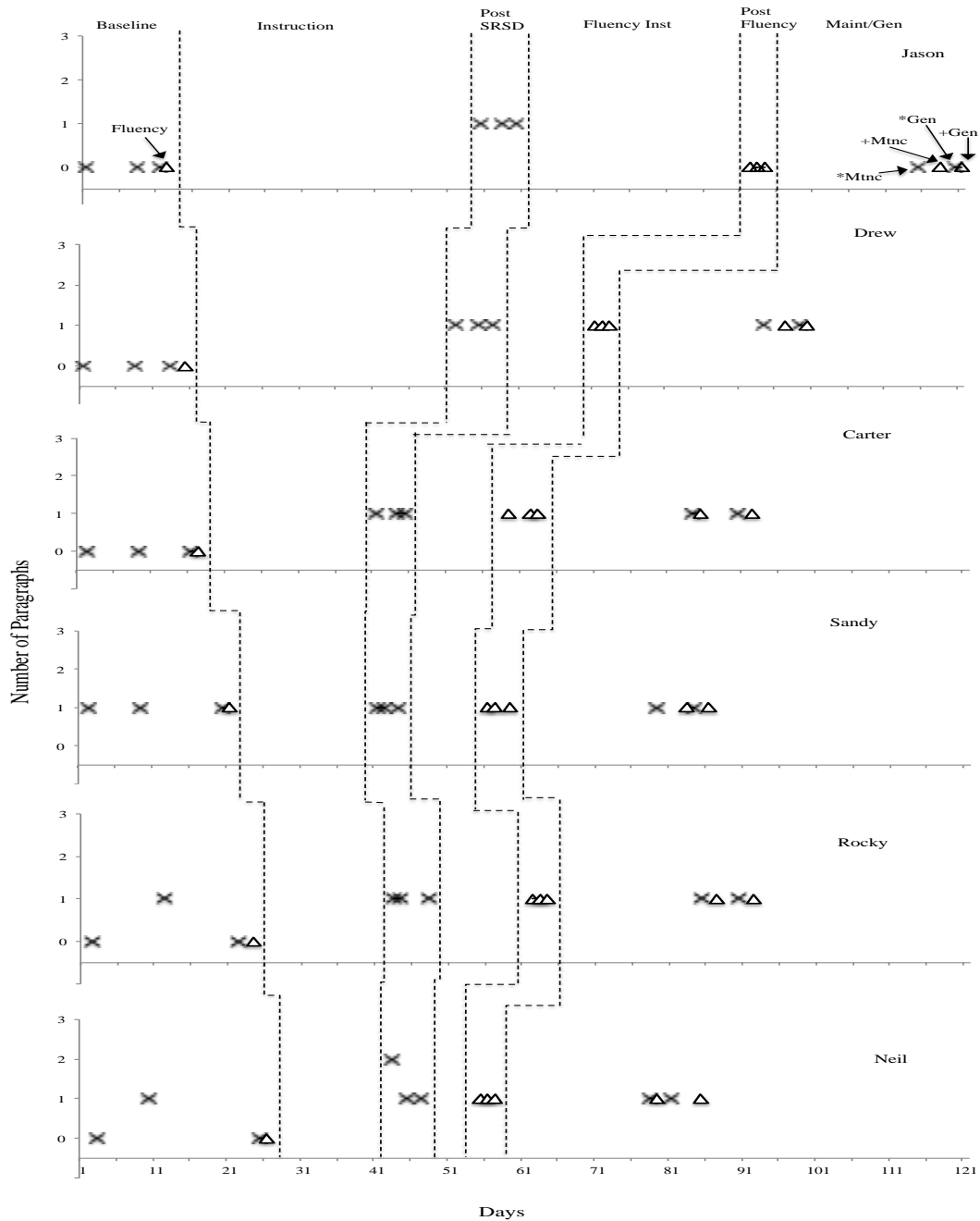


Figure 6. Mean number of paragraphs written per essay by individuals by phase: baseline, post-SRSD, post-fluency, maintenance and generalization. X indicates untimed essay performance; Δ Fluency timed 10-minute essays; * Untimed Maintenance and Generalization; + Fluency timed 10-minute Maintenance and Generalization.

Table 3
Overall Results on Total Characteristics of Untimed Essays by Phase

	Baseline (<i>n</i> =6)		Post-SRSD (<i>n</i> = 6)		Maintenance (<i>n</i> = 6)		Generalization (<i>n</i> = 6)	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Parts	2.28	1.36	8.61 ^a	2.34	9.67 ^a	2.94	8.17 ^a	1.83
			<i>ES</i> > 3 ^b		<i>ES</i> = 2.04		<i>ES</i> > 3 ^b	
Essay Quality	2.05	1.14	7.72 ^a	2.13	8.50 ^a	1.52	7.33 ^a	1.97
			<i>ES</i> > 3 ^b		<i>ES</i> > 3 ^b		<i>ES</i> > 3 ^b	
Words	35.17	23.72	110.72 ^a	55.50	101.17 ^a	35.34	85.83 ^a	25.66
			<i>ES</i> = 1.91		<i>ES</i> = 2.24		<i>ES</i> = 2.05	
Sentences	2.44	3.07	9.95 ^a	3.46	9.67 ^a	3.44	7.50 ^a	2.17
			<i>ES</i> = 2.30		<i>ES</i> = 2.22		<i>ES</i> = 1.93	
Transition Words	0.72	0.86	4.67 ^a	2.35	5.33 ^a	1.21	4.50 ^a	0.84
			<i>ES</i> = 2.45		<i>ES</i> > 3 ^b		<i>ES</i> > 3 ^b	
Paragraphs	0.27	0.39	1.06 ^a	0.14	0.83	0.41	0.83	0.41
			<i>ES</i> = 2.93		<i>ES</i> = 1.40		<i>ES</i> = 1.40	

Note. Effect sizes were calculated using all relevant post measures standard deviations due to apparent floor effect in baseline measure.

^a Significantly greater than baseline, $p < .05$, according to the Wilcoxon Matched-Pairs, Signed Rank test.

^b When effect sizes are larger than 3, they are reported as greater than 3.

Table 4
Overall Results on Total Characteristics of Timed Fluency Essays by Phase

	Baseline (n=6)		Post-fluency (n = 6)		Maintenance (n = 6)		Generalization (n = 6)	
	M	SD	M	SD	M	SD	M	SD
Parts	1.50	1.76	8.67 ^a	2.28	8.17 ^a	1.17	6.83 ^a	2.14
			ES > 3 ^b		ES > 3 ^b		ES =2.73	
Essay Quality	1.50	1.76	7.56 ^a	2.01	7.67 ^a	1.37	5.50 ^a	1.87
			ES > 3 ^b		ES > 3 ^b		ES =2.20	
Words	33.83	34.42	70.78	16.54	64.83	11.36	65.17	11.32
			ES =1.45		ES = 1.35		ES =1.37	
Sentences	2.67	4.18	8.83	1.24	7.50	2.07	7.33	1.86
			ES =2.26		ES =1.54		ES =1.54	
Transition Words	0.50	0.87	5.11 ^a	0.59	4.50 ^a	0.55	4.00 ^a	1.10
			ES >3 ^b		ES > 3 ^b		ES > 3 ^b	
Paragraphs	0.17	0.41	0.83	0.41	0.83	0.41	0.83	0.41
			ES =1.61		ES =1.61		ES = 1.61	

Note. Effect sizes were calculated using all relevant post measures standard deviations due to apparent floor effect in baseline measure .
^aSignificantly greater than baseline, $p < .05$, according to the Wilcoxon matched-pairs, signed rank test.
^b When effect sizes are larger than 3, they are reported as greater than 3.

Table 5

Individual Participant Total Scores for Essays Written by Phase

Students	Testing Phase	Parts Mean (SD)	Essay Quality Mean (SD)	Words Mean (SD)	Sentences Mean (SD)	Transition Words Mean (SD)	Paragraphs Mean (SD)
Jason	Baseline-untimed	0.00 (-)	0.33 (0.58)	13.00 (7.00)	0.00 (-)	0.33 (0.58)	0.00 (-)
	Baseline fluency	0.00 (-)	0.00 (-)	21.00 (-)	0.00 (-)	0.00 (-)	0.00 (-)
	Post-SRSD	5.00 (1.73)	4.00 (2.64)	91.33 (14.57)	8.67 (2.52)	1.00 (1.73)	1.00 (-)
	Post-fluency	8.67 (0.58)	8.00 (-)	50.33 (5.69)	9.00 (1.00)	4.33(0.58)	0.00 (-)
	Main. untimed	6.00 (-)	6.00 (-)	66.00 (-)	6.00 (-)	4.00 (-)	0.00 (-)
	Main. fluency	7.00 (-)	7.00 (-)	53.00 (-)	7.00 (-)	4.00 (-)	0.00 (-)
	Gen. untimed	5.00 (-)	5.00 (-)	51.00 (-)	5.00 (-)	4.00 (-)	0.00
	Gen. fluency	7.00 (-)	7.00 (-)	72.00 (-)	8.00 (-)	4.00 (-)	0.00 (-)
Drew	Baseline-untimed	3.33 (0.58)	2.66 (0.58)	24.00 (1.73)	0.00 (-)	1.00 (-)	0.00 (-)
	Baseline fluency	4.00 (-)	4.00 (-)	21.00 (-)	0.00 (-)	1.00 (-)	0.00 (-)
	Post-SRSD	8.00 (-)	8.00 (-)	91.33 (24.09)	7.67 (0.58)	4.00 (-)	1.00 (-)
	Post-fluency	6.67 (2.52)	6.00 (3.00)	75.33 (15.95)	8.00 (1.00)	4.67 (0.58)	1.00 (-)
	Main. untimed	8.00 (-)	8.00 (-)	64.00 (-)	8.00 (-)	4.00 (-)	1.00 (-)
	Main. fluency	10.00 (-)	10.00 (-)	73.00	11.00 (-)	5.00	1.00 (-)
	Gen. untimed	8.00 (-)	8.00 (-)	86.00 (-)	7.00 (-)	3.00 (-)	1.00 (-)
	Gen. fluency	8.00 (-)	8.00 (-)	63.00 (-)	9.00 (-)	4.00 (-)	1.00 (-)
Carter	Baseline-untimed	2.33 (1.53)	2.00 (1.00)	21.33 (13.58)	1.66 (1.15)	0.33 (0.58)	0.00 (-)
	Baseline fluency	2.00 (-)	2.00 (-)	19.00 (-)	2.00 (-)	0.00 (-)	0.00 (-)
	Post-SRSD	8.67 (0.58)	9.00 (-)	63.33 (48.91)	9.00 (-)	5.00 (-)	8.67 (0.58)
	Post-fluency	9.00 (1.73)	7.33 (3.06)	64.33 (11.93)	8.67 (1.53)	5.00 (-)	9.00 (1.73)
	Main. untimed	12.00 (-)	10.00 (-)	93.00 (-)	12.00 (-)	6.00 (-)	12.00 (-)
	Main. fluency	9.00 (-)	8.00 (-)	49.00 (-)	5.00 (-)	4.00 (-)	9.00 (-)
	Gen. untimed	10.00 (-)	9.00 (-)	70.00 (-)	9.00 (-)	5.00 (-)	10.00 (-)
	Gen. fluency	8.00 (-)	6.00 (-)	54.00 (-)	8.00 (-)	2.00 (-)	8.00 (-)

Note. Standard deviations of 0.00 or when standard deviations are not possible due to only one data point are displayed as (-)

Students	Testing Phase	Parts Mean (<i>SD</i>)	Essay Quality Mean (<i>SD</i>)	Words Mean (<i>SD</i>)	Sentences Mean (<i>SD</i>)	Transition Words Mean (<i>SD</i>)	Paragraphs Mean (<i>SD</i>)
Sandy	Baseline-untimed	1.67 (2.08)	1.33 (1.53)	80.33 (27.15)	8.33 (2.52)	0.00 (-)	1.00 (-)
	Baseline fluency	0.00 (-)	0.00 (-)	101.00 (-)	11.00 (-)	0.00 (-)	1.00 (-)
	Post-SRSD	8.67 (2.08)	6.67 (3.06)	123.00 (7.55)	10.33 (1.53)	5.00 (1.73)	1.00 (-)
	Post-fluency	10.00 (1.73)	9.33 (1.15)	88.00 (11.14)	10.33 (1.15)	5.33 (1.15)	1.00 (-)
	Main. untimed	10.00 (-)	9.00 (-)	138.00 (-)	12.00 (-)	6.00 (-)	1.00 (-)
	Main. fluency	8.00 (-)	7.00 (-)	65.00 (-)	8.00 (-)	5.00 (-)	1.00 (-)
	Gen. untimed	8.00 (-)	6.00 (-)	100.00 (-)	9.00 (-)	5.00 (-)	1.00 (-)
	Gen. fluency	3.00 (-)	3.00 (-)	68.00 (-)	5.00 (-)	4.00 (-)	1.00 (-)
Rocky	Baseline-untimed	2.67 (0.58)	2.33 (0.58)	35.33 (11.72)	2.33 (1.53)	0.33 (0.58)	0.33 (0.53)
	Baseline fluency	0.00 (-)	0.00 (-)	13.00 (-)	1.00 (-)	0.00 (-)	0.00 (-)
	Post-SRSD	9.00 (-)	8.67 (0.58)	78.67 (9.87)	7.33 (0.58)	4.67 (0.58)	1.00 (-)
	Post-fluency	5.67 (1.53)	4.67 (1.53)	56.33 (12.50)	7.00 (1.00)	5.33 (1.53)	1.00 (-)
	Main. untimed	8.00 (-)	8.00 (-)	98.00 (-)	6.00 (-)	5.00 (-)	1.00 (-)
	Main. fluency	7.00 (-)	6.00 (-)	75.00 (-)	6.00 (-)	5.00 (-)	1.00 (-)
	Gen. untimed	8.00 (-)	6.00 (-)	82.00 (-)	5.00 (-)	5.00 (-)	1.00 (-)
	Gen. fluency	6.00 (-)	5.00 (-)	52.00 (-)	5.00 (-)	5.00 (-)	1.00 (-)
Neil	Baseline-untimed	4.00 (1.00)	3.67 (0.58)	35.33 (29.96)	2.33 (0.58)	2.34 (0.58)	0.33 (0.58)
	Baseline fluency	3.00 (-)	3.00 (-)	39.00 (-)	2.00 (-)	2.00 (-)	0.00 (-)
	Post-SRSD	12.33 (10.02)	10.00 (-)	216.67 (45.72)	16.67 (4.04)	8.34 (1.53)	1.34 (0.58)
	Post-fluency	10.00 (0.00)	10.00 (-)	90.33 (12.74)	10.00 (-)	5.00 (0.00)	1.00 (-)
	Main. untimed	14.00 (-)	10.00 (-)	148.00 (-)	14.00 (-)	7.00 (-)	1.00 (-)
	Main. fluency	8.00 (-)	8.00 (-)	74.00 (-)	8.00 (-)	4.00 (-)	1.00 (-)
	Gen. untimed	10.00 (-)	10.00 (-)	126.00 (-)	10.00 (-)	5.00 (-)	1.00 (-)
	Gen. fluency	9.00 (-)	4.00 (-)	82.00 (-)	9.00 (-)	5.00 (-)	1.00 (-)

Note. Standard deviations of 0.00 or when standard deviations are not possible due to only one data point are displayed as (-)

Baseline untimed and timed. Participants were administered three untimed essays and one timed fluency essay at baseline over a four-week period. Essays and standardized writing measures were scored immediately in order to determine when a stable baseline on parts and quality measures had been established for each participant. Stability needed to be reached for each participant during baseline untimed prior to moving on to intervention for number of essay parts and essay quality. The number of essay parts written, as well as the essay quality of the essays, needed to be within three points across the three untimed essays in order for baseline to determine that stable baseline had been achieved.

Jason started intervention first after obtaining a stable untimed baseline for essay parts and quality. Drew was the second participant to enter intervention after establishing a stable untimed baseline for essay parts and quality four days after Jason began intervention. Carter was the third participant to enter intervention after establishing a stable untimed baseline for essay parts and quality seven days after Jason began intervention and three days after Drew began intervention. Sandy was the fourth participant to enter intervention after obtaining a stable untimed baseline. She entered intervention 10 days after Jason, six days after Drew and three days after Carter began intervention. Rocky was the fifth participant to enter intervention after obtaining a stable untimed baseline. He entered intervention 14 days after Jason, 10 days after Drew, seven days after Carter and four days after Sandy entered intervention. Neil was the final participant to enter intervention after obtaining a stable untimed baseline. He entered the intervention 18 days after Jason, 14 days after Drew, 11 days after Carter, eight days after

Sandy and four days after Rocky began intervention. Baseline scores for individuals students can be seen in figure 1 for essay part and parts probe, figure 2 for essay quality, figure 3 for number of words, figure 4 for number of sentences, figure 5 for number of transition words and figure 6 for number of paragraphs. Individual participant mean scores for each essay element can be seen in table 5.

For all testing phases participants were provided with lined paper and pencils and were given two essay prompts to choose between. Participants were asked to write on one of the two prompts, and were told that they had as much time as they needed to complete the essay. For the timed fluency essay, participants were given the same materials however they were told that they had to write their essay in 10-minutes. Visual analysis results across participants can be seen in Figures 1 -6 and individual results for participants can be seen in Table 5. Overall descriptive statistics for baseline untimed performance are presented in Table 3. Overall descriptive statistics for baseline timed performance are presented in Table 4.

Essay parts. At baseline participants ($N = 6$) obtained a mean of 2.28 for essay parts used in their essays ($SD = 1.36$, range of 0.00 to 4.00 for the total number of essay parts written. The mean number of essay parts written at baseline fluency timed was 1.50 ($SD = 1.76$) with a range of zero to four.

Essay quality. Participants received a mean of 2.05 points ($SD = 1.14$, range = 0.33 to 3.67) on the essay quality score at baseline. At baseline fluency timed, participants earned a mean of 1.50 points ($SD = 1.76$) for the essay quality score, with a range of zero to four.

Number of words. Participants obtained a mean of 35.17 ($SD = 23.72$, range of 13.00 to 80.33) for total number of words written at baseline. At baseline fluency timed participants ($N = 6$), obtained a mean of 33.83 ($SD = 34.42$) for total number of words written with a range of 10.00 to 101.00.

Number of sentences. The mean for total number of sentences written at baseline was 2.44 ($SD = 3.07$, range of 0.00 to 8.33). The mean for total number of sentences at baseline fluency timed was 2.67 ($SD = 4.18$) with a range of zero to 11.00.

Number of transition words. At baseline participants used a mean of 0.72 transition words in their essays ($SD = 0.86$, range of 0.00 to 2.40). Participants used a mean of 0.50 transition words ($SD = 0.87$), with a range of 0.00 to 2.00, in their baseline fluency timed essay.

Number of paragraphs. The total number of paragraphs written during baseline resulted in a mean score of 0.27 ($SD = 0.39$, range of 0.00 to 1.00). The total number of paragraphs written during baseline fluency timed resulted in a mean score of 0.17 ($SD = 0.41$) with a range of zero to one.

Visual analysis of baseline performance on for number of essay parts and quality for participants indicates a low level of performance with stability within the range set for the study. Performance at baseline fluency timed for essay writing indicates an overall low level of performance for the number of parts written and essay quality.

Individual participants' performance during baseline. Baseline untimed persuasive essay writing performance was low for all participants. Each participant completed three untimed essay during this phase. Participants were given 45 minutes to

plan and write a persuasive essay baseline untimed. At baseline fluency timed, participants were given 10 minutes to plan and write a persuasive essay. Essays were analyzed for the number of essay parts, essay quality, number of words, sentences, transition words, and paragraphs. See Figures 1 – 6 for visual analysis of baseline untimed and timed results for each participant on all essay scoring measures.

Jason. Jason was the first participant to start the study. He completed three baseline essays over the course of a week. It was noted that Jason's performance was consistently low on all measures of writing performance. His baseline essays contained no essay parts ($M = 0.00$, $SD = 0.00$). Visual analysis for indicate a stable, low level of performance, with no trend, and he was unable to identify any parts of a persuasive essay. (See Figure 1 for number of essay parts written). Jason had an essay quality mean of 0.33 ($SD = 0.58$, range of 0 to 1). Visual analysis indicates a stable, low level of performance, with no trend (see Figure 2). He wrote a mean of 9.33 ($SD = 1.15$) words, with a range of eight to ten words, indicating a stable, low level of performance and no trend (see Figure 3 for the number of words written). At baseline untimed, Jason did not write any sentences ($M = 0.00$, $SD = 0.00$). While he met the inclusion factor for being in the study because he could write a sentence that contained a noun and a verb, in order to receive points in the study for writing a sentence, participants had to include a punctuation mark, which Jason did not do during baseline. Visual analysis indicate a stable, low level of performance for the number of sentences written at baseline untimed for Jason with no trend (see Figure 4 for the number of sentences written). For transition words at baseline untimed Jason had a mean of 0.33 ($SD = 0.58$, range = 0-1), indicating

a stable, low level of performance and no trend (see Figure 5 for the number of transition words written. Finally, he did not write any paragraphs ($M = 0.00$, $SD = 0.00$), indicating a stable, low level with no trend upon visual analysis (see Figure 6 for number of paragraphs written).

Jason completed one baseline fluency timed essay before beginning intervention. His performance was very low and his essay contained no essay parts and he received a score of zero for the overall quality of his writing. He wrote 21 words, and did not write any sentences. In addition, he did not write any transition words and his essay did not contain a paragraph (see Figures 1 – 6).

Drew. Drew was the second participant to start the study. He completed three baseline untimed essays and one baseline fluency essay before beginning intervention in just under the course of two weeks. For number of essay parts, Drew had a mean of 3.33 ($SD = 0.58$) with a range of three to four, representing a stable, low level of performance with no trend (see Figure 1). Drew's essay quality mean of 2.66 ($SD = 0.58$), with a range of two to three, representing a stable, low level of performance with a slightly increasing trend across all baseline essays (see Figure 2). He wrote a mean of 24.00 ($SD = 1.73$) words, with a range of 22 to 25, a stable, mid-level of performance and no trend (see Figure 3). Drew did not write any sentences at baseline untimed ($M = 0.00$, $SD = 0.00$), resulting in a stable low performance level, and no trend (see Figure 4). For transition words at baseline untimed, Drew wrote a mean of 1.00 ($SD = 0.00$), representing a stable, low level of performance with no trend (see Figure 5). Finally,

Drew did not write any paragraphs at baseline untimed ($M = 0.00$, $SD = 0.00$), resulting in a stable, low performance level, with no trend (see Figure 6).

Drew wrote one baseline fluency timed essay before beginning intervention. His essay contained four essay parts and received an essay quality score of four. He wrote 21 words, however he did not write any sentences. He wrote one transition word and his essay did not contain a paragraph (see Figures 1 – 6).

Carter. Carter was the third participant to start the study. He completed three baseline untimed essays over the course of two weeks. Carter wrote a mean 2.33 ($SD = 1.53$, range of one to four), for essay parts, representing a stable, low level of performance and no trend (see Figure 1). His essay quality mean score was 2.00 ($SD = 1.00$, range of one to two) denoting a stable, low level of performance, with a slight increasing trend but within the parameters set for stability within baseline (see Figure 2). He wrote a mean of 21.33 words ($SD = 13.58$, range of 13 to 37) representing a stable, low level, variable performance level with no trend (see Figure 3). Carter had a mean of 1.66 ($SD = 1.15$, range of one to three) for sentences, representing a stable, low level and no trend (see Figure 4). For transition words, he wrote a mean of 0.33 ($SD = 0.58$, range of zero to one) displaying a stable, low level and no trend (see Figure 5). Carter did not write any paragraphs at baseline untimed ($M = 0.00$, $SD = 0.00$), exhibiting a stable, low level and no trend (see Figure 6).

At baseline fluency timed, Carter's essay contained two essay parts and he received an essay quality rating of two (see Figures 1 and 2). Carter wrote 19 words at baseline timed and his essay contained two sentences (see Figures 3 and 4). Finally at

baseline fluency timed Carter's essay contained zero transition words and no paragraphs (see Figures 5 and 6)

Sandy. Sandy was the fourth participant to start the study. She completed three baseline untimed essays in slightly under three weeks. She had a mean of 1.67 essay parts ($SD = 2.08$, ranging from zero to three) representing a stable, low level of performance with a slightly increasing trend, however her performance remained within the parameters set for baseline stability (see Figure 1). Sandy's mean essay quality score for the three baseline untimed essays was 1.33 ($SD = 1.53$, range of zero to three) represent a stable, low level with and a decreasing trend prior to entering intervention (see Figure 2). She wrote a mean of 80.33 words ($SD = 27.15$, range of 55 to 109) representing a mid to high level, with some variability with a decreasing trend prior to entering intervention (see Figure 3). Sandy wrote a mean of 8.33 sentences ($SD = 2.52$, range of six to 11) depicting a mid to high level, a slight decreasing trend prior to entering intervention and a slight amount of variability between essay performances (see Figure 4). She did not write any transition words at baseline untimed ($M = 0.00$, $SD = 0.00$), indicating a stable, low level and no trend (see Figure 5). She wrote a mean of 1.00 paragraph ($SD = 0.00$), indicating a stable, low level, and no trend (see Figure 6).

At baseline fluency timed, Sandy's essay contained no essay parts and had an essay quality score of zero, which was within the range of her baseline timed performance (see Figures 1 and 2). Her baseline fluency timed essay contained 101.00 words, which was an increase from her baseline untimed essay performance (see Figure 3). Even though her essay contained a high number of words, Sandy wrote off topic,

which is why her essay contained no essay parts and had a quality rating of zero Sandy's fluency timed essay contained 11 sentences, which was higher than her baseline untimed performance (see Figure 4). Her essay contained zero transition words and one paragraphs, which was no change from her baseline untimed performance (see Figures 5 and 6)

Rocky. Rocky was the fifth participant to start the study. He completed three baseline untimed essays over a three-week period. Rocky wrote a mean of 2.67 essay parts ($SD = 0.58$, range of two to three) in his baseline untimed essays, indicating a stable, low level of performance and no trend (see Figure 1). Rocky's essay quality mean score of 2.33 ($SD = 0.58$, range of two to three), indicating a stable, low level of performance with a slightly increasing trend, however the increase was only one point, which was within the parameters set for baseline stability (see Figure 2). He wrote a mean of 35.33 words ($SD = 11.72$, range of 22 to 44) representing a stable, mid-level of performance, with a slightly decreasing trend prior to entering intervention (see Figure 3). For sentences, Rocky wrote a mean of 2.33 ($SD = 1.53$, range of one to four) representing a stable, low level of performance, with a slightly decreasing trend prior to entering intervention (see Figure 4). For transition words at baseline untimed he had a mean of 0.33 ($SD = 0.58$, range of zero to one), representing both a stable, low level of performance with a slight increasing trend prior to entering intervention. He wrote a mean of 0.33 paragraphs ($SD = 0.53$, range of zero to one), representing a low level of performance, slight variability and no trend (see Figure 6).

At baseline fluency timed, Rocky's essay contained no essay parts and had a holistic quality score of zero a slight decrease from baseline untimed performance (see Figures 1 and 2). His essay contained 13 words and one sentence, a decrease from baseline untimed performance (see Figures 3 and 4). Rocky's baseline fluency timed essay contained no transition words or paragraphs, which was within the range of his baseline untimed performance.

Neil. Neil was the sixth and final participant to start the study. He completed three baseline untimed essays in just over a three-week period. For essay parts he wrote a mean of 4.00 ($SD = 1.00$, range of three to five) representing stable, mid-level of performance, with a slightly decreasing trend prior to entering intervention (see Figure 1). Neil had an essay quality mean of 3.67 ($SD = 0.58$, range of three to four), representing a stable, mid to low level, and a slight decreasing trend prior to entering intervention (see Figure 2). He wrote a mean of 35.33 words ($SD = 29.96$, range of 32 to 60) over the three essays. Visual analysis indicates a stable, mid-level of performance with a slightly decreasing trend prior to entering intervention (see Figure 3). Neil wrote a mean of 2.33 sentences ($SD = 0.58$, range of two to three) representing a stable, low level of performance and no trend (see Figure 4). For transition words at baseline, Neil wrote a mean of 2.34 ($SD = 0.58$, range of two to three), representing a stable, low level of performance and no trend (see Figure 5). He wrote a mean of 0.33 ($SD = 0.58$, range of zero to one) paragraphs over the three essays, again representing both a stable, low level of performance no trend (see Figure 6).

Neil wrote one baseline timed essay before beginning intervention. His essay contained three essay parts and received a quality rating of three (see Figures 1 and 2), which is similar to his baseline untimed performance. He wrote 39 words and two sentences, which is similar to his baseline untimed performance (see Figures 3 and 4). His baseline fluency timed essay contained two transition words, however he did not write a paragraph (see Figures 5 and 6), which was very similar to his baseline untimed performance.

Post-SRSD instruction performance. Participants ($N = 6$) were each administered three untimed post-SRSD instruction essays. Prior to entering the post-SRSD phase, participants were required to reach mastery criteria performance, which included successfully completing two essays containing a minimum of eight essay parts independently. Essays were administered using the same procedures as outlined in baseline for the untimed essays over three testing sessions. Participants had the entire 45-minute instructional period to plan and write an essay. Visual analysis indicate 55.50 - 100% PND between baseline and post-SRSD on all writing measures and all post intervention data were higher than all baseline data for each participant. Based on the Wilcoxon Matched-Pairs, Signed Ranks test, improvements on all essay measures were significant (all p 's $< .05$) from baseline to post-SRSD testing, as displayed in Table 3.

Essay parts. The mean number of essay parts written at post-SRSD was 8.61 ($SD = 2.34$, range of 5.00 to 12.33), was a significant improvement ($ES > 3$) from the baseline performance mean of 2.28 ($SD = 1.36$, range 0.00 to 4.00). The results of the Wilcoxon Matched Pairs, Signed Ranks test comparing baseline and post-SRSD for the

number of essay parts written were statistically significant ($p = 0.03$). The number of essay parts included in participant's essays increased 278% from baseline to post-SRSD. Visual analysis indicate 100% PND between baseline and post-SRSD on for the number of essay parts written.

Essay quality. At post-SRSD instruction, participants received a mean of 7.72 ($SD = 2.13$, range of 4.00 to 10.00) on the essay quality measure. This was a significant improvement ($ES = 3.32$) from baseline performance ($M = 2.05$, $SD = 1.14$, range of 0.33 to 3.67). There was a 277% increase in the holistic score of essays for participants from baseline to post-SRSD. The results of the Wilcoxon Matched Pairs, Signed Ranks test comparing baseline and post-SRSD were statistically significant ($p = 0.03$) for the essay quality of essays written. Visual analysis indicated 100% PND between baseline and post-SRSD for the essay quality of essays.

Number of words. Participants post-SRSD instruction scores for number of words written were significantly improved from baseline performance ($ES = 1.77$). The number of words written by participants' post-SRSD instruction ($M = 110.72$, $SD = 55.50$, range of 63.33 to 216.67) increased 215% from their baseline performance ($M = 35.17$, $SD = 23.72$, range of 13.00 to 80.33). The results of the Wilcoxon Matched Pairs, Signed Ranks test comparing baseline and post-SRSD for the number of words written were statistically significant ($p = 0.03$). Visual analysis indicates 100% PND comparing number of words written at baseline to the number of words written at post-SRSD testing (see Table 6).

Table 6.

Percentage of Non-overlapping Data for Participants by Testing Phase: Baseline Untimed Compared to Post-SRSD, Maintenance and Generalization Untimed and Baseline Fluency Timed Compared to Maintenance and Generalization Fluency Timed

Student	Testing Phase	Essay Measures					
		Essay Parts	Essay quality	Words	Sentences	Transition words	Paragraphs
Jason	Post-SRSD	100%	100%	100%	100%	33%	100%
	Post-fluency	100%	100%	100%	100%	100%	0% ^a
	Main. Untimed	100%	100%	100%	100%	100%	0% ^a
	Gen. Untimed	100%	100%	100%	100%	100%	0% ^a
	Main. Timed	100%	100%	100%	100%	100%	0% ^a
	Gen. Timed	100%	100%	100%	100%	100%	0% ^a
Drew	Post-SRSD	100%	100%	100%	100%	100%	100%
	Post-fluency	66%	66%	100%	100%	100%	100%
	Main. Untimed	100%	100%	100%	100%	100%	100%
	Gen. Untimed	100%	100%	100%	100%	100%	100%
	Main. Timed	100%	100%	100%	100%	100%	100%
	Gen. Timed	100%	100%	100%	100%	100%	100%
Carter	Post-SRSD	100%	100%	100%	100%	100%	100%
	Post-fluency	100%	100%	100%	100%	100%	100%
	Main. Untimed	100%	100%	100%	100%	100%	100%
	Gen. Untimed	100%	100%	100%	100%	100%	100%
	Main. Timed	100%	100%	100%	100%	100%	100%
	Gen. Timed	100%	100%	100%	100%	100%	100%
Sandy	Post-SRSD	100%	100%	100%	33%	100%	0% ^b
	Post-fluency	100%	100%	0%	0%	100%	0% ^b
	Main. Untimed	100%	100%	100%	100%	100%	0% ^b
	Gen. Untimed	100%	100%	0%	0%	100%	0% ^b
	Main. Timed	100%	100%	0%	0%	100%	0% ^b
	Gen. Timed	100%	100%	0%	0%	100%	0% ^b

Students	Testing Phase	Essay Measures					
		Essay Parts	Essay quality	Words	Sentences	Transition words	Paragraphs
Rocky	Post-SRSD	100%	100%	100%	100%	100%	0% ^b
	Post-fluency	100%	100%	100%	100%	100%	100%
	Main. Untimed	100%	100%	100%	100%	100%	0% ^b
	Gen. Untimed	100%	100%	100%	100%	100%	0% ^b
	Main. Timed	100%	100%	100%	100%	100%	100%
	Gen. Timed	100%	100%	100%	100%	100%	100%
Neil	Post-SRSD	100%	100%	100%	100%	100%	33%
	Post-fluency	100%	100%	100%	100%	100%	100%
	Main. Untimed	100%	100%	100%	100%	100%	0% ^b
	Gen. Untimed	100%	100%	100%	100%	100%	0% ^b
	Main. Timed	100%	100%	100%	100%	100%	100%
	Gen. Timed	100%	100%	100%	100%	100%	100%
Overall	Post-SRSD	100%	100%	100%	88.83%	88.83%	55.50% ^b
	Post-fluency	94.33%	94.33%	83.33%	83.33%	100%	66.67% ^b
	Main. Untimed	100%	100%	100%	100%	100%	33.33% ^b
	Gen. Untimed	100%	100%	83.33%	83.33%	100%	33.33% ^b
	Main. Timed	100%	100%	83.33%	83.33%	100%	66.67% ^b
	Gen. Timed	100%	100%	83.33%	83.33%	100%	66.67% ^b

Number of sentences. The total number of sentences written at post-SRSD, ($M = 9.95$, $SD = 3.46$, range 7.33 to 16.67) was significantly improved ($ES = 2.30$) from baseline ($M = 2.44$, $SD = 3.07$, range of 0.00 to 8.33). This was a 308% increase from baseline performance to post-SRSD on the number of sentences written by participants. The results of the Wilcoxon Matched Pairs, Signed Ranks test comparing baseline and post-SRSD were statistically significant ($p = 0.03$) for the number of sentences written. Visual analysis indicated an 88.83% PND for the total number of sentences written from baseline to post-SRSD testing. However, for Sandy, the number of sentences written at post-SRSD was lower than during baseline.

Number of transition words. The number of transition words written by participants at post-SRSD ($M = 4.67$, $SD = 2.35$, range of one to 8.34), was a significant ($ES = 2.23$) improvement from their baseline performance ($M = 0.72$, $SD = 0.86$, range of 0.00 to 2.40). It was a 549% increase in the number of transition words used in written essays between baseline and post-SRSD. The results of the Wilcoxon Matched Pairs, Signed Ranks test comparing baseline and post-SRSD were statistically significant ($p = 0.03$) for the number of transition words written. Visual analysis indicated 88.83% PND, comparing the number of transition words written at baseline to post-SRSD. Since Jason did not use any transition words in two of his post-SRSD essays, it affected the overall PND levels.

Number of paragraphs. The number of paragraphs written post-SRSD ($M = 1.06$, $SD = 0.14$, range from 1.00 to 1.34) was a significant increase ($ES = 2.70$) from the baseline performance ($M = 0.28$, $SD = 0.39$, range 0.00 to 1.00). This was a 293%

increase in the number of paragraphs written from baseline to post-SRSD. The results of the Wilcoxon Matched Pairs, Signed Ranks test comparing baseline and post-SRSD for the number of paragraphs written were not statistically significant ($p = 0.05$). Visual analysis indicated 50% PND between baseline and post-SRSD for the number of paragraphs. Sandy and Neil wrote the same number of paragraphs between baseline and post-SRSD, which affected the overall PND.

Individual participants' performance during post-SRSD. Participants were given 45 minutes to plan and write three untimed persuasive essays during this phase. Essays were analyzed for the number of essay parts, essay quality, number of words, sentences, transition words, and paragraphs. Figures 1 - 6 were used in the visual analysis of between and within phase essay performance comparisons on all essay scoring measures. Table 5 displays individual mean performance results for post-SRSD. Table 6 displays individual PND results for post-SRSD for each essay scoring measure.

Jason. Post-SRSD instruction, Jason's essays had mean of 5.00 essay parts ($SD = 1.73$, range of four to seven) per essay. This was an increase from baseline performance where his essays did not contain any essay parts as noted by the level change upon visual inspection. Visual analysis of within phase performance indicate a mid-level of performance, with slight variability with the number of essay parts increasing from the second essay and then decreasing on the third essay to the level of the first post-SRSD essay, with no clear trend (see Figure 1). Jason's performance at post-SRSD remained above baseline as indicated by 100% PND (see Table 6). Jason's essay quality score ($M = 4.00$, $SD = 2.64$, range of two to seven), increased 92% from his baseline performance

of ($M = 0.33$, $SD = 0.58$, range of zero to one) indicating a low to mid-level change upon visual inspection with no clear trend and variability as the essay quality increased between the first and second essay and then decreased to the third essay (see Figure 2). Despite the variability noted Jason's essay quality performance at post-SRSD remained above baseline as indicated by 100% PND (see Table 6).

Post-SRSD, the number of words Jason used per essay ($M = 91.33$, $SD = 14.57$, range from 75 to 103), representing a 603% increase over baseline levels ($M = 13.00$, range of eight to 10), indicating a mid to high level change. Visual analysis within post-SRSD indicates a stable increasing trend for the number of words written, and 100% PND (see Table 6 and Figure 3). The number of sentences Jason wrote post-SRSD ($M = 8.67$, $SD = 2.52$, range of six to 11), which was an impressive improvement from his baseline performance where he did not write any sentences. Visual analysis reveal 100% PND (see Table 6) from baseline. The intervention had a rapid immediacy of effects with an increasing a stable, mid-level of performance and an increasing trend (see Figure 4).

Jason's use of transition words post-SRSD ($M = 1.00$, $SD = 1.73$, range of zero to three) represented a 67% increase from baseline ($M = 0.33$, $SD = 0.58$, range of zero to one). Visual analysis revealed a low level change post intervention, however there was a decreasing trend noted after the first essay to a low to mid-level of performance, resulting in some variability, which was verified by 33% PND between baseline and post-SRSD (see Table 6 and Figure 5). Finally, Jason wrote a paragraph ($M = 1.00$, $SD = 0.00$) for each post-SRSD essay, an increase from baseline where he did not write any paragraphs. There was a level change after SRSD instruction from baseline. Within the post-SRSD

phase there was a stable, mid-level of performance and no trend, with 100% PND noted (see Table 6 and Figure 6).

Drew. Post-SRSD instruction, Drew's use of essay parts ($M = 8.00$, $SD = 0.00$) exhibited a 167% increase from baseline ($M = 3.00$, $SD = 0.00$). The intervention had a rapid immediacy of effect with a mid to high level change, stable performance and no trend and 100% PND (see Table 6 and figure 1). His post-SRSD essay quality score ($M = 8.00$, $SD = 0.00$) was a 201% increase from baseline ($M = 2.66$, $SD = 0.58$, range of two to three). The intervention had a rapid immediacy of effect with a mid to high level change, stable performance and no trend, with 100% PND (see Table 6 and Figure 2).

Drew's use of words post-SRSD ($M = 91.33$, $SD = 24.09$, range of 75 to 119) marked a 280% increase from his baseline performance ($M = 24.00$, $SD = 1.73$, range of 22 to 25). There was an immediacy of effect after the intervention; with a high level change. Within post-SRSD for the number of words written there was a high level, with no trend and some variability as the number of words written increased on the second essay and decreased on the third essay, however performance remained higher than baseline as validated by 100% PND (see Table 6 and Figure 3). The number of sentences Drew wrote post-SRSD ($M = 7.67$, $SD = 0.58$, range of seven to eight) was an increase from baseline, where he did not write any sentences. There was an increase in performance between baseline and post-SRSD as verified by 100% PND for number of sentences written (see Figure 6). Within phase visual analysis indicate a stable, mid-level of performance with no trend for the number of sentences written by Drew during post-SRSD (see Figure 4).

Post-SRSD instruction, Drew's use of transition words ($M = 4.00$, $SD = 0.00$) increased 300% from baseline ($M = 1.00$, $SD = 0.00$). There was a mid-level change in the number of transition words written by Drew between baseline and post-SRSD with 100% PND (see Table 6). Within post-SRSD performance was stable, at a mid-level with no variability (see Figure 5). Finally, he wrote a paragraph at post-SRSD ($M = 1.00$, $SD = 0.00$) which was an increase from baseline where he did not write any paragraphs, 100% PND (see Table 6), indicating that the intervention had an immediacy of effect. Visual analysis within post-SRSD performance for the number of paragraphs written by Drew, display a stable, mid-level performance with no trend (see Figure 6).

Carter. Post-SRSD instruction, Carter's use of essay parts ($M = 8.67$, $SD = 0.58$, range of eight to nine) displayed a 272% increase from baseline ($M = 2.33$, $SD = 1.53$, range one to four). Visual analysis indicated that the intervention had an immediacy of effect with a mid-level change, with performance remaining above baseline as indicated by 100% PND (see Table 6). Within post-SRSD visual analysis reveal a stable, mid-level of performance with a slight decreasing trend (see Figure 1). His mean essay quality score at post-SRSD ($M = 9.00$, $SD = 0.00$) was a 350% increase from his baseline performance ($M = 2.00$, $SD = 1.00$, range of one to three) indicating an immediacy of effect from baseline performance. Carter's performance at post-SRSD remained above baseline performance for essay quality as exhibited by 100% PND (see Table 6). Within phase visual analysis indicate a mid-level with no trend and a slight amount of variability as his performance decreased slightly from the first essay to the second essay and then increased slightly again (see Figure 2).

Carter wrote more words ($M = 63.33$, $SD = 48.91$, range of 71 to 95) post-SRSD, a 197% increase from baseline performance ($M = 21.33$, $SD = 13.58$, range of 13 to 37), indicating an immediacy of effect from the intervention. There was a mid to high level change with a slight decreasing trend and some variability (see Figure 3). The number of words Carter wrote on the second post-SRSD essay was higher than the first essay, while the third essay contained fewer words than both the first and second essay. Carter's performance did remain above baseline as revealed by 100% PND (see Table 6). The number of sentences he wrote post-SRSD ($M = 9.00$, $SD = 0.00$), was a 442% increase from baseline ($M = 1.66$, $SD = 1.15$, range of one to three). There was a level change noted in the number of sentences written by Carter between baseline and post-SRSD, with post-SRSD performance remaining above baseline as exhibited by 100% PND (see Table 6). Within post-SRSD reveal a stable, mid-level performance with no trend (see Figure 4).

Carter's use of transition words ($M = 5.00$, $SD = 0.00$) post-SRSD increased 1,415% from baseline ($M = 0.33$, $SD = 0.58$, range of zero to one) indicating the intervention had an immediacy of effect (see Figure 5). Post-SRSD performance remained above baseline performance as indicated by 100% PND (see Table 6). Within post-SRSD a stable, mid-level, increasing trend was noted (see Figure 5). Finally, Carter wrote a paragraph ($M = 1.00$, $SD = 0.00$) post-SRSD, an increase from baseline where he did not write a paragraph, demonstrating the immediacy of effect of the intervention, and supported by 100% PND (see Table 6). Within post-SRSD a stable, mid-level of performance and no trend was noted (see Figure 6).

Sandy. Post-SRSD instruction, Sandy used more essay parts ($M = 8.67$, $SD = 2.08$, range of seven to 11) in her essays, which resulted in a 419% increase from her baseline performance ($M = 1.67$, $SD = 2.08$, range of zero to four). Performance at Post-SRSD remained higher than baseline for the number of words written with 100% PND noted between phases (see Table 6). In addition, visual analysis of post-SRSD performance reveal a mid to high level, increasing trend with slight variability as noted by the decreased in the number of essay parts contained in Sandy's second essay compared to her first, while her third essay contains more essay parts than her first and second (see Figure 1). Her post-SRSD essay quality scores ($M = 6.67$, $SD = 3.06$, range of four to ten) were a 402% increase from her baseline scores ($M = 1.33$, $SD = 1.53$, range of zero to three). Performance at post-SRSD was above baseline as supported by 100% PND (see Table 6). Visual analysis reveal a mid-level in post-SRSD, with an increasing trend and some variability, as noted by the decrease in the essay quality of the second post-SRSD essay compared to the first and than a significant increase in the essay quality of the third essay (see Figure 2).

Sandy also used more words in her post-SRSD essays ($M = 123.00$, $SD = 7.55$, range of 116 to 131); a 53% increase from her baseline performance ($M = 80.33$, $SD = 27.15$, range of 55 to 109). There was a 100% PND noted between baseline and post-SRSD for the number of words written by Sandy supporting the immediacy of effect of the intervention (see Table 6). Visual analysis of post-SRSD reveals a stable, high level of performance with a slightly increasing trend (see Figure 5). She also wrote more sentences post-SRSD ($M = 10.33$, $SD = 1.53$, range of nine to 12) which was a 24%

increase from her baseline performance ($M = 8.33$, $SD = 2.52$, range of six to 11). There was not a rapid immediacy of effect of the intervention for sentences written by Sandy as noted in by the 33% PND indicating overlap in performance between baseline and post-SRSD (see Table 6). Within post-SRSD there was a stable, mid-level performance, with a slightly increasing trend for number of sentences written (see Figure 6).

Post-SRSD, Sandy's use of transition words ($M = 5.00$, $SD = 1.73$, range of three to six) also increased from baseline when she did not use any transition words in her essays, which is supported by 100% PND (see Table 6). The intervention had an immediacy of effect with a change from a low level to mid-level, no trend and slight variability with Sandy's second essay containing fewer transition words then her first and third in post-SRSD (see Figure 5). Finally, Sandy wrote a paragraph ($M = 1.00$, $SD = 0.00$) post-SRSD which, was the same as her baseline performance and supported by 0% PND. There is no change in Sandy's ability to write paragraphs as a result of this intervention. Her performance at post-SRSD indicated a stable, mid-level of performance and no trend.

Rocky. Post-SRSD instruction, the number of essay parts in Rocky's essays ($M = 9.00$, $SD = 0.00$) increased 237% from his baseline performance ($M = 2.67$, $SD = 0.58$, range of two to three). The intervention had an immediacy of effect with a level change between a low baseline level to a mid post-SRSD level, which is supported by 100% PND (see Table 6). Additional visual analysis revealed a stable mid to high level performance and no trend (see Figure 1). His holistic essay quality scores at post-SRSD ($M = 8.67$, $SD = 0.58$, range of eight to nine) were a 272% increase from baseline ($M =$

2.33, $SD = 0.58$, range of two to three). An immediacy of effect was seen after intervention with a level change seen between a low baseline level to a high post-SRSD level, which is further supported by 100% PND (see Table 6). In addition, visual analysis of post-SRSD revealed a stable, high level of performance with a slight decreasing trend (see Figure 2).

Rocky's use of words in his post-SRSD essays ($M = 78.67$, $SD = 9.87$, range of 72 to 90) was a 123% increase from his baseline performance ($M = 35.33$, $SD = 11.72$, range of 22 to 44). The intervention had an immediacy of effect with a level change between a mid baseline level to a mid post-SRSD level, which is supported by 100% PND (see Table 6). Additional within phase visual analysis, reveal a stable, mid-level of performance and an increasing trend (see Figure 3). For sentences, ($M = 7.33$, $SD = 0.58$, range of seven to eight), he had a 215% increase from baseline ($M = 2.33$, $SD = 1.53$, range of one to four). Visual analysis reveal a level change from a low level at baseline to a mid-level at post-SRSD showing the intervention was effected, which is further supported by 100% PND for number of sentences (see Table 6). Within post-SRSD visual analysis reveal a stable, mid-level of performance with no trend (see Figure 4).

For the number of transition words ($M = 4.67$, $SD = 0.58$, range of four to five) used at SRSD post-testing, Rocky had a 1,315% increase from his baseline performance ($M = 0.33$, $SD = 0.53$, range of zero to one). An immediacy of effect was seen after intervention with a level change seen between a low baseline level to a mid post-SRSD level, which is further supported by 100% PND (see Table 6) for number of transition words. In addition, visual analysis of post-SRSD revealed a stable, mid-level of

performance with a slight increasing trend (see Figure 5). Finally, Rocky's development of paragraphs ($M = 1.00$, $SD = 0.00$) in his post-SRSD essays was a 203% increase from his baseline performance ($M = 0.33$, $SD = 0.53$, range of zero to one). There was not a large change seen between Rocky's low level of performance at baseline to his mid-level of performance at post-SRSD, which was stable and had no trend (see Figure 6). At baseline, Rocky was able to write one one-paragraph essay, while at post-SRSD he consistently wrote three one-paragraph essays, which is supported by the 0% PND (see Table 6).

Neil. Post-SRSD instruction, Neil's expanded use of essay parts in his essays ($M = 12.33$, $SD = 10.02$, range of 13 to 20) resulted in a 208% increase from baseline ($M = 4.00$, $SD = 1.00$, range of three to five). Visual analysis reveal a level change from a low level at baseline to a mid to high level at post-SRSD showing the intervention was effected, which is further supported by 100% PND for number of essay parts (see Table 6). Within post-SRSD visual analysis reveal a stable, mid to high level of performance with an increasing trend (see Figure 1). The essay quality of his post-SRSD essays ($M = 10.00$, $SD = 0.00$) was a 172% increase from Neil's baseline performance ($M = 3.67$, $SD = 0.58$, range of three to four). The intervention had an immediacy of effect with a level change from a mid to low level at baseline to a high level at post-SRSD, which is further supported by 100% PND (see Table 6). Visual analysis within post-SRSD revealed a stable, high level of performance and no trend (see Figure 2).

Neil also wrote more words in his post-SRSD essays ($M = 216.67$, $SD = 45.72$, range of 167 to 257) resulting in a 513% increase from his baseline performance ($M =$

35.33 $SD = 29.96$, range of 32 to 60). The intervention had a rapid immediacy of effect with a level change from a mid-level at baseline to a high level at post-SRSD, which is further supported by 100% PND (see Table 6). Within phase visual analysis for Post-SRSD reveal a stable, high level of performance with an increasing trend (see Figure 3). The number of sentences written ($M = 16.67$, $SD = 4.04$, range of 13 to 21) at post-SRSD was a 615% increase from baseline untimed ($M = 2.33$, $SD = 0.58$, range of two to three). The intervention had a rapid immediacy of effect with a level change from a mid-level at baseline to a high level at post-SRSD, which is further supported by 100% PND (see Table 6). Within phase visual analysis for Post-SRSD reveal a stable, high level of performance with an increasing trend (see Figure 4).

For the number of transition words used in post-SRSD essays, Neil performance ($M = 8.34$, $SD = 1.53$, range of seven to ten) was a 256% increase from baseline ($M = 2.34$, $SD = 0.58$, range of two to three). There was a 100% PND noted between baseline and post-SRSD for the number of words written by Neil supporting the immediacy of effect of the intervention (see Table 6). Visual analysis of post-SRSD reveals a stable, high level of performance with an increasing trend (see Figure 5). Finally, the number of paragraphs Neil wrote ($M = 1.34$, $SD = 0.58$, range of one to two) post-SRSD was a 306% increase from baseline ($M = 0.33$, $SD = 0.58$, range of zero to one). There was a change seen between Neil's low level of performance at baseline to his mid to high level of performance at post-SRSD. Neil was able to write one two paragraph essay at post-SRSD, while the other two essays were only one-paragraph, which is further supported

by 33% PND (see Table 6). Visual analysis within the post-SRSD phase revealed a stable, mid to high level of performance with a decreasing trend (see Figure 6).

Post-fluency performance. Following fluency instruction, during which participants ($N = 6$) were taught to plan and write a persuasive essay containing at least eight essay parts in 10 minutes, participants were administered three post-fluency essay tests. Prior to post-fluency testing, participants were required to reach mastery performance criteria that included independently planning and writing two essays in ten minutes that contained a minimum of eight essay parts. Testing procedures and materials were the same as those used during baseline untimed and timed as well as post-SRSD testing; however, participants were required to plan and write their essays in 10 minutes. Post-fluency testing occurred over three consecutive days. The results of the three post-fluency essays were compared to the one baseline timed essay. Visual analysis indicate 66.67 - 100% PND between baseline fluency timed and post-fluency on all writing measures and all post intervention data were higher than all baseline data for each participant. Participants' post-fluency essay scores indicated significant growth across all essay measures. The mean scores across all essay measures for participants at post-fluency testing were large and statistically significant from timed baseline essay scores, according to Wilcoxon Matched-Pairs, Signed Ranks tests (all p 's $< .05$, see Table 4).

Essay parts. Participants made significant growth in the number of essay parts written at post-fluency ($M = 8.67$, $SD = 2.28$, range of 5.67 to 10.00). This was a 478% increase from baseline fluency timed ($M = 1.50$, $SD = 1.76$, range of zero to four). Results comparing performance between baseline fluency timed and post-fluency essays

for the number of essay parts written were significant according to the Wilcoxon Matched Pairs, Signed Ranks test ($p = 0.03$). In addition, there was a 0.70% increase in the number of essay parts written by participants between post-SRSD ($M = 8.61$, $SD = 2.34$, range of 5.00 to 12.33) and post-fluency. These data can be seen in Figure 1 and in Table 4.

Essay quality. Participants also made significant growth in the essay quality of their essays from baseline fluency timed ($M = 1.50$, $SD = 1.76$, range of zero to four) to post-fluency ($M = 7.56$, $SD = 2.01$, range 4.67 to 10.00). This was a 404% increase from baseline fluency timed. Results comparing performance between baseline fluency timed and post-fluency essays were significant according to the Wilcoxon Matched Pairs, Signed Ranks test ($p = 0.03$). There was a 2% decline in participants' essay quality between post-SRSD ($M = 7.72$, $SD = 2.13$, range of four to 10) and post-fluency. These data can be seen in Figure 2 and in Table 4.

Number of words. The number of words written at post-fluency ($M = 70.78$, $SD = 16.54$, range from 50.33 to 90.33) was a 109% increase compared to a baseline fluency timed ($M = 33.83$, $SD = 34.42$, range from 10 to 101). Results comparing performance between baseline fluency timed and post-fluency essays were not significant according to the Wilcoxon Matched Pairs, Signed Ranks test ($p = 0.05$) for the number of words written. While there was an increase in the number of words written from baseline fluency timed to post-fluency, there was a 36% decrease in the number of words written by participants between post-SRSD ($M = 110.72$, $SD = 55.50$, range of 63.33 to 216.67) and post-fluency. These data can be seen in Figure 3 and in Table 4.

Number of sentences. At post-fluency the number of sentences participants wrote ($M = 8.83$, $SD = 1.24$, range of seven to 10.33), was a 213% increase from a baseline fluency timed ($M = 2.67$, $SD = 4.18$, range of zero to 11). Results comparing performance between baseline timed and post-fluency essays were not statistically significant according to the Wilcoxon Matched Pairs, Signed Ranks test ($p = 0.05$) for the number of sentences written. While there was an increase in performance between baseline fluency timed and post-fluency, there was an 11% decrease in the number of sentences written by participants between post-SRSD ($M = 9.95$, $SD = 3.46$, range of 7.33 to 16.67) and post-fluency. These data can be seen in Figure 1 and in Table 4.

Number of transition words. The number of transition words written at post-fluency was significantly higher than at baseline fluency timed. The number of transition words written by participants ($M = 5.11$, $SD = 0.59$, range of 4.33 to six) post-fluency was a 922% increase from baseline fluency timed ($M = 0.50$, $SD = 0.87$, range of zero to two). Results comparing performance between baseline fluency timed and post-fluency essays were statistically significant according to the Wilcoxon Matched Pairs, Signed Ranks test ($p = 0.03$) for the number of transition words written. In addition, there was a 9% increase in the number of transition words written by participants between post-SRSD ($M = 4.67$, $SD = 0.35$, range of one to 8.34) and post-fluency. These data can be seen in Figure 5 and in Table 4.

Number of paragraphs. Finally the number of paragraphs written by participants at post-fluency ($M = 0.83$, $SD = 0.41$, range of zero to one) was a 388% increase from baseline fluency timed ($M = 0.17$, $SD = 0.41$, range of zero to one). Results comparing

performance between baseline timed and post-fluency essays for the number of paragraphs written were not significant according to the Wilcoxon Matched Pairs, Signed Ranks test ($p = 0.05$). There was a 22% decrease in the number of paragraphs written by participants between post-SRSD ($M = 1.06$, $SD = 0.14$, range of one to 1.34) and post-fluency. These data can be seen in Figure 6 and in Table 4.

The mean scores across all participants for number of essay parts written, essay quality, and the number of transition words written for post-fluency testing were statistically significant from baseline fluency timed scores, as indicated in Table 4 (all p 's $< .05$, according to Wilcoxon Matched-Pairs, Signed Ranks tests). These positive results are supported by the 100% PND for transition words and 83.33% PNDs for number of essay parts and quality. Results according to the Wilcoxon Matched-Pairs, Signed Ranks test were not statistically significant for number of words, sentences, or paragraphs between baseline fluency timed and post-fluency. Visual analysis revealed 83.33% PND for number of words and sentences and 66.67% PND for number of paragraphs between baseline fluency timed and post-fluency essays (see Table 6).

Individual participants' performance during post-fluency. Participants were given 10 minutes to plan and write three timed persuasive essays during this phase. Essays were analyzed for the number of essay parts, essay quality, number of words, sentences, transition words, and paragraphs. Figures 1 - 6 were used in the visual analysis of between and within phase essay performance comparisons on all essay scoring measures. Table 5 displays individual mean performance results for post-SRSD. Table 6 displays individual PND results for post-fluency for each essay scoring measure.

Jason. At post-fluency, Jason wrote a mean of 8.67 essay parts ($SD = 0.58$, range of eight to nine), an increase from baseline timed performance where his timed essays did not contain any essay parts (see Table 5). At post-SRSD, Jason wrote a mean of 5.00 ($SD = 1.73$, range of four to seven) for essay parts. His performance between post-SRSD and post-fluency increased by 73%. Jason wrote more essay parts at post-fluency than the one he wrote at baseline fluency timed, as supported by 100% PND (see Table 6). Visual analysis within post-fluency phase indicated a stable, mid-level of performance with a slight decreasing trend (see Figure 1). There was increased level change in performance between a low level of performance at baseline fluency timed to a high level of performance at post-fluency. In addition, there was an increased level change in performance between the mid-level post-SRSD performance and the high level post-fluency performance for number of essay parts written by Jason.

Jason had a mean score of 8.00 ($SD = 0.00$) for essay quality post-fluency, which was an increase from baseline fluency timed where his essay received an essay quality score of zero (see Table 5). There was also an increase of 100% between post-SRSD ($M = 4.00$, $SD = 2.64$ range of two to seven) essay quality and post-fluency essay quality. Jason's essay quality at post-fluency improved from his baseline fluency timed essay, and is further supported by 100% PND (see Table 6). Visual analysis within post-fluency phase indicated a stable, mid-level of performance and no trend (see Figure 2). There was an increased level change in performance between a low level of performance at baseline fluency to a mid-level of performance at post-fluency. In addition, there was an

increased level change in performance between low to mid-level at post-SRSD and mid-level performance at post-fluency.

Jason wrote a mean of 50.33 words ($SD = 5.69$, range of 44 to 55), which was a 403% increase from his baseline fluency timed essay on which he wrote 10 words (see Table 5). Between post-SRSD ($M = 91.33$, $SD = 14.57$, range of 75 to 103) and post-fluency there was a 45% decrease in the number of words written by Jason. The number of words written by Jason at post-fluency improved from his baseline fluency timed essay, and is further supported by 100% PND (see Table 6). Visual analysis within post-fluency phase indicated a stable, mid-level of performance and an increasing trend (see Figure 3). There was an increased level change in performance between a low level of performance at baseline fluency timed to a mid-level at post-fluency. In addition, there was a decreased level change in performance between a mid to high level at post-SRSD to a mid-level at post-fluency for number of words written by Jason.

Jason wrote a mean of 9.00 sentences ($SD = 1.00$, range eight to 10), which was an increase from baseline fluency timed performance where he did not write any sentences (see Table 5). The number of sentences written by Jason increased 4% between post-SRSD ($M = 8.67$, $SD = 2.52$, range of six to 11) and post-fluency. The number of sentences written by Jason at post-fluency improved from his baseline fluency timed essay, and is further supported by 100% PND (see Table 6). Visual analysis within the post-fluency phase indicated a mid-level of performance, with a slight decreasing trend and a slight amount of variability as noted by the number of sentences per essay during post-fluency testing. Jason wrote more sentences on his second post-fluency

essay than on his first essay but his third essay contained fewer sentences than either his first or second post-fluency essay (see Figure 4). There was an increased level change in performance between a low level of performance at baseline fluency timed to a mid-level of performance at post-SRSD. In addition Jason's performance level at post-SRSD and post-fluency for the number of sentences written remained at a mid-level.

Jason had a mean of 4.33 ($SD = 0.58$, range of four to five) for transition words at post-fluency, an increase from baseline fluency timed when he did not use any transition words (see Table 5). His use of transition words increased by 333% from post-SRSD ($M = 1.00$, $SD = 1.73$, range of zero to three) to post-fluency. The number of transition words written by Jason at post-fluency improved from his baseline fluency timed essay, and was further supported by 100% PND (see Table 6). Visual analysis within post-fluency phase indicated a stable, mid-level of performance, with a slight decreasing trend (see Figure 5). There was a slight level change for the number of transition words written by Jason from a low level at baseline fluency timed to a low to mid-level at post-SRSD. In addition, there was an increased level change for the number of transition words written by Jason from a low to mid-level at post-SRSD to a mid to high level at post-fluency.

He did not write any paragraphs at post-fluency testing; therefore, his performance ($M = 0.00$, $SD = 0.00$) was unchanged from baseline fluency timed (see Table 5). However there was a 100% decrease in the number of paragraphs written between post-SRSD ($M = 1.00$, $SD = 0.00$) and post-fluency by Jason. The number of paragraphs written by Jason at post-fluency remained stable from his baseline fluency

timed essay, and is further supported by 0% PND (see Table 6). Visual analysis within post-fluency phase indicated a stable, low level of performance, and no trend (see Figure 6). There was no level change in the low level performance of baseline fluency timed to post-fluency. Jason's level of performance between post-SRSD and post-fluency for the number of paragraphs written decreased from a mid-level to a low level.

Drew. At post-fluency instruction testing, Drew wrote a mean of 6.67 essay parts ($SD = 2.52$, range of four to nine), a 67% increase from baseline fluency timed, where his essay contained four parts (see Table 5). His performance between post-SRSD ($M = 8.00$, $SD = 0.00$) and post-fluency for the number of essay parts written decreased by 17%. Visual analysis within post-fluency phase indicated a mid to high level of performance with no trend and some variability (see Figure 1). Visual analysis comparing baseline timed fluency to post-fluency results for essay parts revealed a 66% PND (see Table 6). Drew's first essay at post-fluency contained the most essay parts and the number of essay parts written on his second essay decreased. He then wrote more essay parts on his third essay than on his second essay; however, the number of essay parts was still less than his first post-fluency essay. Drew's performance on the number of essay parts written increased from a low level at baseline fluency timed to a mid-level at post-fluency. There was a slight decreased level change in performance between the mid to high level post-SRSD performance and the mid-level post-fluency performance for number of essay parts written by Drew.

Drew received a mean essay quality score of 6.00 ($SD = 3.00$, range of three to nine) for his post-fluency essays, a 50% increase from baseline timed where his essay

quality score was four (see Table 5). His performance between post-SRSD ($M = 8.00$, $SD = 0.00$) and post-fluency decreased by 25%. Visual analysis comparing baseline timed fluency to post-fluency results for essay quality revealed a 66% PND (see Table 6). Visual analysis within post-fluency phase indicated a mid-level of performance with variability and no trend (see Figure 2). Drew's first essay at post-fluency received the highest essay quality and his essay quality on his second essay decreased. His essay quality on the third essay was higher than on his second essay; however, the essay quality on the third essay was still less than his first post-fluency essay. Drew's performance on the essay quality increased from a low to mid-level at baseline fluency timed to a mid-level at post-fluency. There was a slight decreased level change in performance from the mid to high level post-SRSD scores and the mid-level post-fluency essay quality scores.

Drew wrote a mean of 75.33 words ($SD = 15.95$, range of 57 to 86) in his post-fluency essays, a 259% increase from baseline fluency timed where he wrote 21 words (see Table 5). His performance between post-SRSD ($M = 91.33$, $SD = 24.09$, range of 75 to 119) and post-fluency decreased by 18%. Visual analysis comparing baseline timed fluency to post-fluency results for number of words written revealed a 100% PND (see Table 6). Visual analysis within post-fluency phase indicated a mid-level of performance with variability and no trend (see Figure 3). The number of words written by Drew increased from his first post-fluency essay to his second essay and then decreased to his third essay. Drew's performance on the number of words written increased from a low level at baseline fluency timed to a mid-level at post-fluency. In addition, there was a slight decreased level change in performance between the mid to high level post-SRSD

performance to a mid-level post-fluency performance for number of words written by Drew.

He wrote a mean of 8.00 sentences ($SD = 1.00$, range of seven to nine), an increase from baseline fluency timed, where did not write any sentences. His performance between post-SRSD ($M = 7.67$, $SD = 0.58$, range of seven to eight) and post-fluency increased by 4% (see Table 5). Visual analysis comparing baseline timed fluency to post-fluency results for number of sentences revealed a 100% PND (see Table 6). Visual analysis within post-fluency phase indicated a mid-level of performance with slight variability and no trend (see Figure 4). The number of sentences written by Drew on his second post-fluency essay decreased slightly from his first post-fluency. The number of sentences written by Drew on his third post-fluency increased slightly from his second essay but remained below the number of sentences written on his first essay. There was an increased level change for the number of sentences written by Drew from a low level at baseline fluency timed to a mid-level at post-fluency. Performance level between post-SRSD and post-fluency remained stable at a mid-level for number of sentences written.

Drew wrote a mean of 4.67 transition words ($SD = 0.58$, range of four to five), a 367% increase from baseline timed where he wrote one transition word in his essay. His performance between post-SRSD ($M = 4.00$, $SD = 0.00$) and post-fluency increased by 16% (see Table 5). Visual analysis comparing baseline timed fluency to post-fluency results for use of transition words revealed a 100% PND (see Table 6). Visual analysis within post-fluency phase indicated a stable, mid-level of performance and no trend (see

Figure 5). Drew's performance on the number of transition words written increased from a low level at baseline fluency timed to a mid-level at post-fluency. Performance level between post-SRSD and post-fluency remained stable at a mid-level for number of transition words written by Drew.

Finally, he wrote a mean of 1.00 ($SD = 0.00$) paragraph at post-fluency, which was an increase from baseline fluency timed, where he did not write a paragraph. His performance between post-SRSD ($M = 1.00$, $SD = 0.00$) and post-fluency remained stable (see Table 5). Visual analysis within post-fluency phase indicated a stable, mid-level of performance with no trend (see Figure 6). Visual analysis comparing baseline timed fluency to post-fluency results for paragraphs written revealed a 100% PND (see Table 6). Drew's performance on the number of paragraphs written increased from a low level at baseline fluency timed to a mid-level at post-fluency. In addition, performance remained stable from a mid-level post-SRSD performance to a mid-level post-fluency performance for number of paragraphs written by Drew.

Carter. At post-fluency, Carter wrote a mean of 9.00 essay parts ($SD = 1.73$, range of seven to 10), a 350% increase from baseline fluency timed where his essay contained two parts (see Table 5). His performance between post-SRSD ($M = 8.67$, $SD = 0.58$, range of eight to nine) and post-fluency for the number of essay parts written increased by 4%. Visual analysis within post-fluency phase indicated a mid to high level of performance with no trend and some variability (see Figure 1). Carter's second post-fluency essay contained fewer essay parts than his first essay. While his third essay contained more parts than his second essay, his performance was unchanged from his

first essay. Visual analysis comparing baseline timed fluency to post-fluency results for essay parts revealed a 100% PND (see Table 6). There was an increased level change for the number of essay parts written by Carter from a low level at baseline fluency timed to a mid-level at post-fluency. Performance level remained stable at a mid-level from post-SRSD to post-fluency for the number of essay parts written by Carter.

His mean essay quality score at post-fluency was 7.33 ($SD = 3.06$, range four to 10), a 267% increase from his baseline fluency timed essay, which earned a quality score of two (see Table 5). His performance between post-SRSD ($M = 9.00$, $SD = 0.00$) and post-fluency decreased by 19%. Visual analysis comparing baseline timed fluency to post-fluency results for essay quality revealed a 100% PND (see Table 6). Visual analysis within post-fluency phase indicated a stable, high level of performance with an increasing trend (see Figure 2). Carter's performance on the essay quality increased from a low level at baseline fluency timed to a mid-level at post-fluency. There was a slight decreased level change in performance between post-SRSD and post-fluency; however, performance remained at a mid-level for the essay quality.

Carter's post-fluency essays contained a mean of 64.33 words ($SD = 11.93$, range of 51 to 74), a 239% increase from his baseline fluency timed essay, which had 19 words (see Table 5). His performance between post-SRSD ($M = 63.33$, $SD = 48.91$, range of 7 to 95) and post-fluency increased by 2%. Visual analysis comparing baseline timed fluency to post-fluency results for number of words written revealed a 100% PND (see Table 6). Visual analysis within post-fluency phase indicated a mid-level of performance with some variability and a slight increasing trend (see Figure 3). The number of words

written by Carter decreased from his first post-fluency essay to his second essay and then increased to his third essay above the number of words written in his first post-fluency essay. There was an increased level change from a low level at baseline fluency timed to a mid-level at post-fluency. In addition, there was a slight decreased level change in performance between the mid to high level post-SRSD performance to a mid-level post-fluency performance for number of words written by Carter.

His mean of 8.67 sentences ($SD = 1.53$, range seven to 10), was a 334% increase from the two sentences in his baseline fluency timed essay (see Table 5). His performance between post-SRSD ($M = 9.00$, $SD = 0.00$) and post-fluency decreased by 4%. Visual analysis comparing baseline timed fluency to post-fluency results for the number of sentences revealed a 100% PND (see Table 6). Visual analysis within post-fluency phase indicated a mid-level of performance with some variability and no trend (see Figure 4). The number of sentences written by Carter on his second post-fluency essay decreased from his first post-fluency essay. The number of sentences written by Carter on his third post-fluency essay increased slightly from his second essay; however, the number remained below the number of sentences written on his first essay. There was an increased level change from a low level at baseline fluency timed to a mid-level at post-fluency. Performance level between post-SRSD and post-fluency remained stable at a mid-level for number of sentences written.

For transition words at post-fluency, Carter wrote a mean of 5.00 ($SD = 0.00$) per essay, an increase from baseline timed when he did not use any transition words. His performance between post-SRSD ($M = 5.00$, $SD = 0.00$) and post-fluency remained stable

(see Table 5). Visual analysis comparing baseline timed fluency to post-fluency results for transition words revealed 100% PND (see Table 6). Visual analysis within post-fluency phase indicated a stable, mid-level of performance and no trend (see Figure 5). There was an increased level of performance between a low level at baseline fluency timed to a mid-level at post-fluency. Performance level between post-SRSD was slightly lower than at post-fluency; however, both were within a mid-level for number of transition words written by Carter.

Finally, Carter wrote a mean of 1.00 ($SD = 0.00$) paragraph, an increase from his baseline timed essay, which did not contain a paragraph. His performance between post-SRSD ($M = 1.00$, $SD = 0.00$) and post-fluency remained stable (see Table 5). Visual analysis within post-fluency phase indicated a stable, low to mid-level of performance with no trend (see Figure 6). Visual analysis comparing baseline timed fluency to post-fluency results for paragraphs written revealed a 100% PND (see Table 6). There was an increased level change in performance from a low level baseline fluency timed performance to a mid-level at post-fluency. Carter's performance level between post-SRSD and post-fluency remained stable at a mid-level for number of paragraphs written.

Sandy. After post-fluency instruction, Sandy wrote a mean of 10.00 essay parts ($SD = 1.73$, range of eight to 11), an increase from baseline fluency timed where she did not have any essay parts (see Table 5). Her performance between post-SRSD ($M = 8.67$, $SD = 2.08$, range of seven to 11) and post-fluency for the number of essay parts written increased by 15%. Visual analysis within post-fluency phase indicates a stable, mid to high level of performance with no trend (see Figure 1). Visual analysis comparing

baseline timed fluency to post-fluency results for essay quality revealed a 100% PND (see Table 6). Performance level between baseline fluency timed and post-fluency increased from a low level to a mid to high level, while post-SRSD and post-fluency performance remained stable at a mid to high level for the number essay parts written by Sandy.

She had a mean of 9.33 ($SD = 1.15$, range of eight to ten) on the essay quality measure, an increase from baseline fluency timed where her writing did not receive any points for essay quality (see Table 5). Her performance between post-SRSD ($M = 6.67$, $SD = 3.06$, range of four to 10) and post-fluency increased by 40%. Visual analysis comparing baseline timed fluency to post-fluency results for essay quality revealed a 100% PND (see Table 6). Visual analysis within post-fluency phase indicated a stable, high level of performance with increasing trend (see Figure 2). There was an increased level change in performance between a low level of performance at baseline fluency timed to a high level of performance at post-fluency. In addition, there was a slight increase in performance for the quality of essays written by Sandy from the mid-level at post-SRSD performance to a high level post-fluency performance.

Sandy's post-fluency essays contained a mean 88.00 words ($SD = 11.14$, range of 78 to 100), a 13% decrease from her baseline fluency timed essay which had 101 words (see Table 5). Her performance between post-SRSD ($M = 123.00$, $SD = 7.55$, range of 116 to 131) and post-fluency decreased by 28%. Visual analysis comparing baseline timed fluency to post-fluency results for number of words written revealed a 0% PND (see Table 6). Visual analysis within post-fluency phase indicated a mid-level of

performance with variability and an increasing trend (see Figure 3). The number of words written by Sandy increased from her first post-fluency essay to her second essay and then decreased to her third essay. The number of words written in her third essay was more than the number written in her first post-fluency essay. Sandy's performance at baseline fluency timed and post-fluency remained at a mid to high level for number of words written. Her performance from post-SRSD to post-fluency decreased slightly but remained at a mid to high level for number of words written.

Her post-fluency essays had a mean of 10.33 ($SD = 1.15$, range of nine to 11) sentences, a 6% decrease from baseline fluency timed where she wrote 11 sentences (see Table 5). Her performance between post-SRSD ($M = 10.33$, $SD = 1.53$, range of nine to 12) and post-fluency remained stable. Visual analysis comparing baseline timed fluency to post-fluency results for number of sentences revealed a 0% PND (see Table 6). Visual analysis within post-fluency phase indicated a stable, mid-level of performance with a slightly increasing trend (see Figure 4). Performance level between baseline timed and post-fluency as well as between post-SRSD and post-fluency remained relatively stable at a mid-level for the number of sentences written by Sandy.

She wrote a mean of 5.33 ($SD = 1.15$, range of four to six) transition words, an increase from baseline fluency timed where she did not use any transition words in her essay. Her performance between post-SRSD ($M = 5.00$, $SD = 1.73$, range of three to six) and post-fluency increased by 7% (see Table 5). Visual analysis comparing baseline timed fluency to post-fluency results for number of transition words revealed a 100% PND (see Table 6). Visual analysis within post-fluency phase indicated a stable, mid-

level of performance and an increasing trend (see Figure 5). There was an increased level change in performance between Sandy's low level baseline fluency timed essay to a mid-level at post-fluency. Performance between post-SRSD and post-fluency for number of transition words written by Sandy remained stable at a mid-level.

Finally, for paragraphs, Sandy wrote a mean of 1.00 ($SD = 0.00$), which was no change from the one paragraph in her baseline fluency timed essay. Her performance between post-SRSD ($M = 1.00$, $SD = 0.00$) and post-fluency remained stable (see Table 5). Visual analysis within post-fluency phase indicated a stable, mid-level of performance with no trend (see Figure 6). Visual analysis comparing baseline fluency timed to post-fluency results for number of paragraphs written revealed a 0% PND (see Table 6). Sandy's performance on the number of paragraphs written remained stable at a mid-level from baseline fluency timed to post-fluency as well as between post-SRSD and post-fluency.

Rocky. Rocky's post-fluency essays had a mean of 5.67 ($SD = 1.53$, range of four to seven) essay parts, an increase from his baseline fluency timed essay which contained no parts (see Table 5). His performance between post-SRSD ($M = 9.00$, $SD = 0.00$) and post-fluency for the number of essay parts written decreased by 37%. Visual analysis comparing baseline fluency timed to post-fluency results for essay parts revealed a 100% PND (see Table 6). Visual analysis within post-fluency phase indicated a stable, low to mid-level of performance with no trend (see Figure 1). Rocky's performance on the number of essay parts written increased from a low level at baseline fluency timed to a

mid-level at post-fluency. Rocky's performance level decreased between post-SRSD and post-fluency from a mid to high level to a mid-level for the number essay parts written.

His mean essay quality score post-fluency was 4.67 ($SD = 1.53$, range of three to six), an increase from baseline fluency timed where his essay had no quality points (see Table 5). His performance between post-SRSD ($M = 8.64$, $SD = 0.58$, range of eight to nine) and post-fluency decreased by 46%. Visual analysis comparing baseline timed fluency to post-fluency results for essay quality revealed a 100% PND (see Table 6). Visual analysis within post-fluency phase indicated a low to mid-level of performance with no trend and some variability (see Figure 2). Rocky's second post-fluency essay received a lower essay quality score than his first essay, while the essay quality of his third essay was higher than the other two essays. There was an increased level change in performance between a low level of performance at baseline fluency timed to a mid-level of performance at post-fluency. In addition, there was a decrease in performance for the quality of essays written by Rocky from the high level post-SRSD performance to a mid-level at post-fluency.

Rocky's post-fluency essays had a mean of 56.33 words ($SD = 12.50$, range of 44 to 69), a 333% increase from baseline fluency timed where his essay contained 13 words (see Table 5). His performance between post-SRSD ($M = 78.67$, $SD = 9.87$, range of 72 to 90) and post-fluency decreased by 28%. Visual analysis comparing baseline timed fluency to post-fluency results for number of words written revealed a 100% PND (see Table 6). Visual analysis within post-fluency phase indicated a stable, mid-level of performance with an increasing trend (see Figure 3). There was an increased level

change in performance between a low level of performance at baseline fluency timed to a mid-level of performance at post-fluency. In addition, there was a slight decrease in performance between post-SRSD and post-fluency for the number of words written but performance at both post-SRSD and post-fluency remained at mid-level.

He had a mean of 7.00 sentences ($SD = 1.00$, range of six to eight) post-fluency, a 600% increase from baseline fluency where his essay contained one sentence (see Table 5). His performance between post-SRSD ($M = 7.33$, $SD = 0.58$, range of seven to eight) and post-fluency decreased by 5%. Visual analysis comparing baseline timed fluency to post-fluency results for number of sentences revealed a 100% PND (see Table 6). Visual analysis within post-fluency phase indicated a low to mid-level of performance with slight variability and no trend (see Figure 4). The number of sentences written by Rocky on his second post-fluency essay decreased slightly from his first post-fluency. The number of sentences written by Rocky on his third post-fluency essay increased from his second essay and was also above the number of sentences written on his first essay. There was an increased level change in performance between a low level of performance at baseline fluency timed to a mid-level of performance at post-fluency. In addition, performance level between post-SRSD and post-fluency remained stable at a mid-level for number of sentences written.

For the number of transition words, he had a mean of 5.33 ($SD = 1.53$, range of four to seven) at post-fluency, an increase from baseline fluency timed where he did not write any transition words. His performance between post-SRSD ($M = 4.67$, $SD = 0.58$, range of four to five) and post-fluency increased by 14% (see Table 5). Visual analysis

comparing baseline timed fluency to post-fluency results for use of transition words revealed a 100% PND (see Table 6). Visual analysis within post-fluency phase indicated a stable, mid-level of performance with a slight decreasing trend (see Figure 5). There was an increased level change in performance between a low level of performance at baseline fluency timed to a mid-level of performance at post-fluency. In addition, performance level between post-SRSD and post-fluency remained stable at a mid-level for number of transition words written by Rocky.

Finally, post-fluency Rocky wrote a mean of 1.00 paragraph ($SD = 0.00$), an increase from baseline fluency timed where he did not write a paragraph. His performance between post-SRSD ($M = 1.00$, $SD = 0.00$) and post-fluency remained stable (see Table 5). Visual analysis within post-fluency phase indicated a stable, mid-level of performance with no trend (see Figure 6). Visual analysis comparing baseline timed fluency to post-fluency results for number of paragraphs revealed a 100% PND (see Table 6). Rocky's performance on the number of paragraphs written increased from a low level at baseline fluency timed to a mid-level at post-fluency. In addition, Rocky's performance level between post-SRSD and post-fluency for the number of paragraphs written remained stable at a mid-level.

Neil. Post-fluency, Neil's essays had a mean of 10.00 ($SD = 0.00$) essay parts, a 233% increase from baseline fluency timed where his essay contained three parts (see Table 5). His performance between post-SRSD ($M = 12.33$, $SD = 10.02$, range of one to 20) and post-fluency for the number of essay parts written decreased by 19%. Visual analysis within post-fluency phase indicated a stable, mid-level of performance with no

trend (see Figure 1). Visual analysis comparing baseline timed fluency to post-fluency results for essay parts revealed a 100% PND (see Table 6). There was an increased level change in performance between a low level of performance at baseline fluency timed to a mid-level of performance at post-fluency. In addition, there was a decrease in performance for the number of essay parts written by Neil from the mid to high level post-SRSD performance to a mid-level at post-fluency.

The mean essay quality of Neil's essays during post-fluency testing was 10.00 ($SD = 0.00$), a 233% increase from his baseline fluency timed essay quality score of 3.00 (see Table 5). His performance between post-SRSD ($M = 10.00$, $SD = 0.00$) and post-fluency remained stable. Visual analysis comparing baseline timed fluency to post-fluency results for essay quality revealed a 100% PND (see Table 6). Visual analysis within post-fluency phase indicated a stable, high level of performance with no trend (see Figure 2). There was an increased level change in performance between a low to mid-level of performance at baseline fluency timed to a high level of performance at post-fluency. In addition, performance for the quality of essays written by Neil remained stable at a high level from post-SRSD performance to post-fluency.

Neil wrote a mean of 90.33 words ($SD = 12.74$, range of 82 to 105) post-fluency, a 132% increase from his baseline fluency timed essay which contained 39 words (see Table 5). His performance between post-SRSD ($M = 216.67$, $SD = 45.72$, range of 167 to 257) and post-fluency decreased by 58%. Visual analysis comparing baseline timed fluency to post-fluency results for number of words written revealed a 100% PND (see Table 6). Visual analysis within post-fluency phase indicated a mid-level of performance

with no trend and some variability (see Figure 3). Neil wrote more words on his second post-fluency essay than either his first or third essay, while the number of words written on his first and third essay was relatively similar. There was an increased level change in performance between a low level of performance at baseline fluency timed to a mid-level of performance at post-fluency. In addition, there was a decrease in performance from a high level at post-SRSD to a mid-level at post-fluency for the number of words written by Neil.

For number of sentences written, Neil had a mean of 10.00 ($SD = 0.00$) at post-fluency, a 400% increase from baseline timed where he wrote two sentences (see Table 5). His performance between post-SRSD ($M = 16.67$, $SD = 4.04$, range of 13 to 21) and post-fluency decreased by 40%. Visual analysis comparing baseline timed fluency to post-fluency results for number of sentences revealed a 100% PND (see Table 6). Visual analysis within post-fluency phase indicated a stable, mid-level of performance with no trend (see Figure 4). There was an increased level change in performance between a low level of performance at baseline fluency timed to a mid-level of performance at post-fluency. In addition, there was a decrease in performance level between post-SRSD and post-fluency from a high level at post-SRSD to a mid-level at post-fluency for number of sentences written.

For transition words at post-fluency, Neil wrote a mean of 5.00 ($SD = 0.00$), a 156% increase from baseline timed where his essay contained two transition words. His performance between post-SRSD ($M = 8.34$, $SD = 1.53$, range seven to 10) and post-fluency decreased by 28% (see Table 5). Visual analysis comparing baseline timed

fluency to post-fluency results for use of transition words revealed a 100% PND (see Table 6). Visual analysis within post-fluency phase indicated a stable, mid-level of performance and no trend (see Figure 5). There was an increased level change in performance between a low level of performance at baseline fluency timed to a mid-level of performance at post-fluency. In addition, Neil's performance level between post-SRSD and post-fluency decreased from a high level to mid-level for number of transition words written.

Finally, Neil wrote a mean of 1.00 paragraph ($SD = 0.00$) post-fluency, an increase from baseline timed where he did not write a paragraph. His performance between post-SRSD ($M = 1.34$, $SD = 0.58$, range of one to two) and post-fluency decreased by 25% (see Table 5). Visual analysis within post-fluency phase indicated a stable, low to mid-level of performance with no trend (see Figure 6). Visual analysis comparing baseline timed fluency to post-fluency results for number of paragraphs revealed a 100% PND (see Table 6). Neil's performance on the number of paragraphs written increased from a low level at baseline fluency timed to a low to mid-level at post-fluency. In addition, Neil's performance level decreased from a mid to high level at post-SRSD to a low to mid-level at post-fluency for number of paragraphs written.

Maintenance essay performance. Participants ($N = 6$) wrote one untimed and one timed maintenance fluency essay. The untimed maintenance essay was administered three weeks after the final post-fluency testing day and generalization instruction lesson. Participants' maintenance essay scores indicated large growth across all essay measures except the number of paragraphs written. There was significant growth in the number of

persuasive essay parts written from baseline to maintenance. Approximately three days after completing the untimed maintenance essay, participants wrote one timed maintenance fluency essay. Participants' maintenance fluency timed essay scores indicated significant growth across all essay measures except the number of words and sentences written at maintenance fluency timed. Visual analysis indicate 33.33 – 100% PND between baseline and maintenance on all writing measures and all post intervention data were higher than all baseline data for each participant. Visual analysis indicate 66.67 - 100% PND between baseline fluency timed and maintenance fluency timed on all writing measures and all post intervention data were higher than all baseline data for each participant.

Essay parts. The number of essay parts written by participants at maintenance ($M = 9.67$, $SD = 2.94$, range of six to 14) was a 324% increase from the baseline ($M = 2.28$, $SD = 1.36$, range of zero to four). Between post-SRSD ($M = 8.61$, $SD = 2.34$, range of 5.67 to 12) and maintenance there was a 12% increase in the number of essay parts written. Participants wrote 12% more essay parts from post-fluency ($M = 8.67$, $SD = 2.28$, range of 5.67 to 12.00) to maintenance. This was statistically significant according to the Wilcoxon Matched Pairs, Signed Ranks test ($p = 0.03$). There was also significant growth in the number of persuasive essay parts written from baseline fluency timed to maintenance fluency timed according to the Wilcoxon Matched Pairs, Signed Ranks test ($p = 0.03$). At maintenance fluency timed ($M = 8.17$, $SD = 1.17$, range of seven to 10) the number of essay parts written by participants increased 445% from the baseline fluency timed ($M = 1.50$, $SD = 1.76$, range of zero to four). Participants wrote 5% fewer

essay parts from post-SRSD to maintenance fluency timed and 6% fewer essay parts from post-fluency to maintenance fluency timed. These data can be seen in Figure 1 and in Tables 3 and 4.

Essay quality. The essay quality scores at maintenance ($M = 8.50$, $SD = 1.52$, range of six to 10) were a 315% increase from the baseline ($M = 2.05$, $SD = 1.14$, range of 0.33 to 3.67). Comparing the post-SRSD ($M = 7.72$, $SD = 2.13$, range of 4.67 to 10.00) performance to maintenance; there was a 10% increase in the essay quality of participants' essays. Participants wrote 13% more essay parts from post-fluency ($M = 7.56$, $SD = 2.01$, range of 4.67 to 10.00) to maintenance. This was statistically significant according to the Wilcoxon Matched Pairs, Signed Ranks test ($p = 0.03$). Likewise, essay quality mean scores for the maintenance fluency timed essay was significantly improved from baseline fluency timed according to the Wilcoxon Matched Pairs, Signed Ranks test ($p = 0.03$). The essay quality scores at maintenance fluency timed ($M = 7.67$, $SD = 1.37$, range of six to 10) from a baseline fluency timed ($M = 1.50$, $SD = 1.76$, range of zero to four) represented a 411% increase. Participants' essay quality at maintenance fluency timed was slightly lower (0.67% decrease) than post-SRSD performance. Participants' performance at maintenance fluency timed was slightly improved (1% increase) from the post-fluency performance. These data can be seen in Figure 2 and in Tables 3 and 4.

Number of words. The number of words written at maintenance showed significant growth from baseline levels. Maintenance untimed ($M = 101.17$, $SD = 35.34$, range of 64 to 148) was a 188% increase in the number of words used from baseline ($M = 35.17$, $SD = 23.72$, range from 13.00 to 80.33). However, there was an 8% decrease in

the total number of words written from post-SRSD ($M = 110.72$, $SD = 55.50$, range of 63.33 to 216.67) to maintenance. Results comparing performance between post-SRSD and maintenance essays for the number of words written were statistically significant according to the Wilcoxon Matched Pairs, Signed Ranks test ($p = 0.03$). The number of words written at maintenance fluency timed ($M = 64.83$, $SD = 11.36$, range of 49 to 75) yielded a 92% increase from baseline fluency testing levels ($M = 33.83$, $SD = 34.42$, range from 10 to 101). According to the Wilcoxon Matched Pairs, Signed Ranks test, differences between baseline fluency timed and maintenance fluency timed results were not statistically significant ($p = 0.12$) for the number of words written. In addition, between the post-fluency ($M = 70.78$, $SD = 16.54$, range 49 to 75) and the maintenance fluency timed there was a decrease of 8% in the total number of words written. These data can be seen in Figure 3 and in Tables 3 and 4.

Number of sentences. The number of sentences written at maintenance was significantly higher than baseline. The maintenance performance ($M = 9.67$, $SD = 3.44$, range of six to 14) was a 296% increase from baseline ($M = 2.44$, $SD = 3.07$, range of zero to eight). Between post-SRSD ($M = 9.95$, $SD = 3.46$, range from 7.33 to 16.67) and maintenance there was a 3% decrease in the number of sentences written. Despite this decrease in the number of sentences written between post-SRSD and maintenance, results between baseline and maintenance were statistically significant according to the Wilcoxon Matched Pairs, Signed Ranks test ($p = 0.03$). Participants also wrote more sentences on their maintenance fluency timed essay ($M = 7.50$, $SD = 2.07$, range of five to 11) than their baseline timed ($M = 2.67$, $SD = 4.18$, range of zero to 11) essay. This

was a 181% increase in the number of sentences written between the two essays.

However, the result of the Wilcoxon Matched Pairs, Signed Ranks test comparing the number of sentences written during baseline fluency timed and maintenance fluency timed was not statistically significant ($p = 0.06$). There was a 15% decrease in the total number of sentences written by participants from post-fluency testing ($M = 8.83$, $SD = 1.24$, range of 7.00 to 10.33) to maintenance fluency timed. These data can be seen in Figure 4 and in Tables 3 and 4.

Number of transition words. There was significant growth in the number of transition words written during both maintenance essays. Maintenance results ($M = 5.33$, $SD = 1.21$, range of four to seven) were a 640% increase from baseline ($M = 0.72$, $SD = 0.86$, range of zero to 2.34). Between post-SRSD ($M = 4.67$, $SD = 2.35$, range of 1.00 to 8.34) and maintenance there was a 14% increase in the number of transition words used by participants. Results comparing performance between post-SRSD and maintenance essays were statistically significant according to the Wilcoxon Matched Pairs, Signed Ranks test ($p = 0.03$) for the number of transition words written. There was an 800% increase in the number of transition words written at maintenance fluency timed ($M = 4.50$, $SD = 0.55$, range of four to five) compared to the baseline fluency timed ($M = 0.50$, $SD = 0.84$, range of zero to two). This was statistically significant according to the Wilcoxon Matched Pairs, Signed Ranks test ($p = 0.03$). There was a 12% decrease in the number of transitions words written between post-fluency ($M = 5.11$, $SD = 0.59$, range of 4.33 to 6.00) and maintenance fluency timed performance. These data can be seen in Figure 5 and in Tables 3 and 4.

Number of paragraphs. The number of paragraphs written at maintenance ($M = 0.83$, $SD = 0.41$, range of zero to one) was not a significant improvement according to the Wilcoxon Matched Pairs, Signed Ranks test ($p = 0.06$) from baseline ($M = 0.27$, $SD = 0.39$, range from zero to one). Participant performance between post-SRSD ($M = 1.06$, $SD = 0.14$, range of 1.00 to 1.34) and maintenance for the number of paragraphs written, decreased 22%. The number of paragraphs written at maintenance fluency timed ($M = 0.83$, $SD = 0.41$, range of zero to one) was not a significant improvement from the baseline fluency timed ($M = 0.17$, $SD = 0.41$, range of zero to one) according to the Wilcoxon Matched Pairs, Signed Ranks test ($p = 0.05$). Participants' performance on the number of paragraphs written was stable from post-fluency ($M = 0.83$, $SD = 0.41$, range from zero to one) to maintenance fluency timed. These data can be seen in Figure 6 and in Tables 3 and 4.

The mean scores across number of essay parts, essay quality, words, sentences, and transition words from baseline to maintenance were statistically significant as indicated in Table 3 (all p 's $< .05$, according to Wilcoxon Matched-Pairs, Signed Ranks tests). These positive results are supported by the 100% PNDs (see Table 6 for PND data by participant and testing phase). The mean of scores for number paragraphs written by participants at maintenance fluency timed was not statistically significant from baseline untimed scores, as indicated in Table 3, with a PND of 33.33% as indicated in Table 6. The mean scores across essay parts, essay quality and number of transition words written by participants at maintenance fluency timed was statistically significant from baseline fluency timed scores, as indicated in Table 4 (all p 's $< .05$, according to Wilcoxon

Matched-Pairs, Signed Ranks tests). These positive results are supported by the 100% PNDs for number of essay parts, essay quality and transition words as shown in Table 6. The mean scores for the number of words, sentences and paragraphs written by participants at maintenance fluency timed was not statistically significant from baseline fluency timed scores, as indicated in Table 4. PNDs for number of words and sentences were 83.33% and 66.67% for number of paragraphs as shown in Table 6. Discussion of individual participant performance on the maintenance essays follows. See Table 5 for individual participant's total scores for each essay measure across all phases. Table 6 displays PND data for individual participants for all essay measures across all phases.

Individual participants' performance during maintenance. Participants were administered two essays during maintenance one untimed and one timed. For the untimed maintenance essay participants were given the whole 45-minute period to plan and write their essay. For the maintenance fluency timed essay, participants were given 10 minutes to plan and write a persuasive essay. Essays were analyzed for the number of essay parts, essay quality, number of words, sentences, transition words, and paragraphs. Figures 1 - 6 were used in the visual analysis of between and within phase essay performance comparisons on all essay scoring measures. Table 5 displays individual mean performance results for maintenance untimed and timed. Table 6 displays individual PND results at maintenance for each essay scoring measure.

Jason. Jason's performance for maintenance untimed and timed fluency was notable as demonstrated by moderate level changes across all essay measures except paragraphs from baseline untimed and fluency. Maintenance untimed and fluency timed

scores also demonstrate 100% PNDs from baseline untimed and fluency timed for number of essay parts and essay quality as well as for the number of words, sentences, and transition words. However, while the number of sentences increased, Jason wrote his maintenance untimed essay in a single line format, which affected his score in this area. There was no change in Jason's performance between baseline untimed and maintenance untimed for number of paragraphs (0% PND). His performance on the maintenance untimed essay remained higher than his baseline untimed performance except for paragraphs. In addition, there was no change in Jason's performance between baseline fluency timed and maintenance fluency timed for number of paragraphs (0% PND). Figures 1 – 6 show the mean number of essay measures graphed for Jason. See Table 5 for Jason's total scores in each phase of the study. See Table 6 for PND scores for Jason. Results for individual essay measures are discussed in detail below.

At maintenance untimed, Jason's essay contained six essay parts, a considerable increase in the number of essay parts from baseline untimed when his essays did not have any essay parts. The number of essay parts included in Jason's maintenance untimed essay increased by 20% from the number included in his post-SRSD essay ($M = 5.00$, $SD = 1.73$), and decreased by 31% from post-fluency ($M = 8.67$ $SD = 0.58$). Despite the decrease in the number of essay parts written by Jason's between post-fluency and maintenance untimed, his performance remained higher than at baseline fluency untimed. Visual analysis on this essay measure yielded 100% PND for the number of essay parts at maintenance untimed. At maintenance fluency timed, Jason's essay contained seven essay parts, a significant increase from baseline fluency timed where his essay did not

have any essay parts. The number of essay parts in Jason's maintenance fluency timed essay increased by 40% from the number included in his post-SRSD essay. However, his performance at maintenance timed was a 19% decrease from post-fluency ($M = 8.67$, $SD = 0.58$). Despite the decrease in the number of essay parts written by Jason's between post-fluency and maintenance fluency timed, his performance remained higher than at baseline fluency timed. Visual analysis revealed 100% PND for number of essay parts written between baseline fluency timed and maintenance fluency timed.

Jason's maintenance untimed essay had an essay quality rating of six a 1718% increase from baseline untimed ($M = 0.33$, $SD = 0.58$) and a 50% increase from post-SRSD ($M = 4.00$, $SD = 2.64$). The essay quality of Jason's essay decreased by 12.5% from post-fluency ($M = 8.00$, $SD = 0.00$) to maintenance untimed. Despite the decrease in the essay quality of Jason's essay between post-fluency and maintenance untimed, his performance remained higher than at baseline untimed. Visual analysis for essay quality revealed 100% PND with an increase in performance between baseline untimed and maintenance untimed, a slight increase in performance between post-SRSD and maintenance untimed and a slight decrease in performance between post-fluency and maintenance untimed. His performance on the maintenance untimed essay remained higher than his baseline untimed performance. Jason's maintenance fluency timed essay had an essay quality rating of seven, an increase from baseline fluency timed quality rating of zero, a 75% increase from post-SRSD and a 13% decrease from post-fluency performance. Despite the decrease in the essay quality of Jason's essay between post-fluency and maintenance fluency timed, his performance remained higher than at baseline

fluency timed. Visual analysis revealed 100% PND and performance at maintenance fluency timed remained higher than his baseline fluency timed performance for essay quality.

At maintenance untimed, Jason's essay contained 66 words. This was a 408% increase from baseline untimed ($M = 13.00$, $SD = 7.00$), a 28% decrease from post-SRSD ($M = 91.33$, $SD = 14.57$), and a 31% increase from post-fluency ($M = 50.33$, $SD = 5.69$). Despite the decrease in the number of words written by Jason between post-SRSD and maintenance untimed, his performance remained higher than at baseline untimed. At maintenance fluency timed, Jason's essay contained 53 words, compared to baseline fluency timed where he wrote 13 words. His maintenance fluency timed performance was a 430% increase from baseline fluency timed, a 42% decrease from post-SRSD and a 5% increase from post-fluency. Despite the decrease in the number of words written by Jason between post-SRSD and maintenance fluency timed, his performance remained higher than at baseline fluency timed. Visual analysis revealed 100% PND performance at maintenance untimed for number of words written by Jason compared to baseline untimed and 100% PND from maintenance fluency timed for number of words written compared to baseline fluency timed.

Jason wrote six sentences at maintenance untimed compared to baseline untimed where his essay did not contain any sentences. While this was an increase in the number of sentences written at maintenance untimed from baseline untimed, it was a 31% decrease from post-SRSD ($M = 8.67$, $SD = 2.52$) and a 33% decrease from post-fluency ($M = 9.00$, $SD = 1.00$). Despite the decrease in the number of sentences written by Jason

between post-SRSD and maintenance untimed and between post-fluency and maintenance untimed, his performance remained higher than at baseline untimed. Jason wrote seven sentences at maintenance fluency timed, compared to baseline fluency timed where his essay did not contain any sentences. This was a significant increase in performance from baseline fluency timed to maintenance fluency timed; however, it was a 19% decrease from post-SRSD and a 22% decrease from post-fluency performance. Despite the decrease in the number of sentences written by Jason between post-SRSD and maintenance fluency timed and between post-fluency and maintenance fluency timed, his performance remained higher than at baseline fluency timed. Visual analysis revealed 100% PND performance for the number of sentences written for the maintenance untimed essay compared to baseline untimed and 100% PND for the maintenance fluency timed essay compared to baseline fluency timed for the number of sentences written.

Jason's maintenance untimed essay contained four transition words. This was an 1112% increase from baseline untimed ($M = 0.33$, $SD = 0.58$), a 300% increase from post-SRSD ($M = 1.00$, $SD = 1.73$) and an 8% decrease in performance from post-fluency ($M = 4.33$, $SD = 0.58$). Despite the decrease in the number of transition written by Jason between post-fluency and maintenance untimed, his performance remained higher than at baseline untimed. Jason's maintenance fluency timed essay contained four transition words, compared to baseline fluency timed where he did not use any transition words. This was an increase in the number of transition words written by Jason from baseline fluency, a 300% increase from post-SRSD, and an 8% decrease from post-fluency

performance. Despite the decrease in the number of transition words written by Jason between post-fluency and maintenance fluency timed, his performance remained higher than at baseline fluency timed. Visual analysis for number of transition words written revealed 100% PND performance at maintenance untimed essay compared to baseline untimed and 100% PND for maintenance fluency timed essay compared to baseline fluency timed.

At maintenance untimed and maintenance fluency timed, Jason did not write any paragraphs, which was no change from his performance on the baseline untimed and baseline fluency timed essays. His performance decreased from post-SRSD ($M = 1.00$, $SD = 0.00$). Even though Jason wrote a higher number of sentences on his maintenance essays than on his baseline efforts, he wrote each sentence on an individual line and did not connect them together into a paragraph, which affected his results in this area. Jason's performance for paragraphs written remained stable from post-fluency ($M = 0.00$, $SD = 0.00$) to maintenance untimed and maintenance fluency timed. Visual analysis revealed a 0% PND between baseline untimed and maintenance untimed and between baseline fluency timed and maintenance fluency timed for number of paragraphs written.

In summary, Jason's overall maintenance untimed performance showed significant increases from baseline untimed across all essay measures. There were increases in the number of essay parts, essay quality, and transition words written by Jason between post-SRSD and maintenance untimed. There were decreases in the number of words, sentences and paragraphs written by Jason between post-SRSD and maintenance untimed. Between post-fluency and maintenance untimed there was an increase in the number of words and a decrease in the number of essay parts, essay

quality, sentences, and transition words, with performance in paragraphs remaining stable. Jason's overall maintenance fluency timed performance revealed increases from baseline fluency timed for number of essay parts, essay quality, number of words, sentences, and transition words with paragraphs remaining stable. Jason's essay at maintenance fluency timed contained increases in the number of essay parts, essay quality, and transition words from post-SRSD. There were decreases in the number of words, sentences, and paragraphs written by Jason between post-SRSD and maintenance fluency timed. There were decreases in the number of essay parts, essay quality, number of words, sentences and transition words between post-fluency and maintenance fluency timed, while paragraphs remained stable between phases. Figures 1 – 6 show the mean number of essay measures graphed for Jason. See Table 5 for Jason's total scores in each phase of the study. See Table 6 for PND scores for Jason.

Drew. Drew's performance for maintenance untimed and timed fluency was notable as demonstrated by moderate level changes across all essay scoring measures from baseline untimed and baseline fluency and 100% PNDs. Figures 1 – 6 show the mean number of essay measures graphed for Drew. See Table 5 for Drew's total scores in each phase of the study. See Table 6 for PND scores for Drew. Results for individual essay measures are discussed in detail below.

At maintenance untimed, Drew's essay contained eight essay parts; a 167% increase from baseline untimed ($M = 3.00$, $SD = 0.00$) essay parts. There was no change in his performance from post-SRSD ($M = 8.00$, $SD = 0.00$) parts. There was a 20% increase in the number of essay parts contained in Drew's essay from post-fluency ($M =$

6.67, $SD = 2.52$). At maintenance fluency timed, Drew's essay contained ten parts, a 150% increase from baseline fluency timed where his essay contained four parts; it was a 25% increase from post-SRSD, and a 50% increase from post-fluency. Visual analysis revealed 100% PND performance at maintenance untimed for essay parts compared to baseline untimed and 100% PND from maintenance fluency timed for essays parts compared to baseline fluency timed.

Drew's maintenance untimed essay had an essay quality rating of eight; a 201% increase from baseline untimed ($M = 2.66$, $SD = 0.58$), and remained stable from his post-SRSD ($M = 8.00$, $SD = 0.00$). Performance between post-fluency ($M = 6.00$, $SD = 3.00$) and maintenance untimed increased 33%. On the maintenance fluency timed essay Drew had an essay quality rating of ten, a 150% increase from baseline fluency timed where he had a quality rating of four. This essay quality rating was a 25% increase from post-SRSD, and a 67% increase from post-fluency. Visual analysis revealed 100% PND performance at maintenance untimed for essay quality compared to baseline untimed and 100% PND from maintenance fluency timed for essay quality compared to baseline fluency timed.

Drew's maintenance untimed essay contained 64 words compared to the number of words at baseline untimed ($M = 25.67$, $SD = 1.15$). His maintenance untimed performance was a 149% increase from baseline untimed, a 28% decrease from post-SRSD ($M = 91.33$, $SD = 24.09$) and a 15% decrease from post-fluency ($M = 75.33$, $SD = 15.95$). Despite the decrease in the number of words written by Drew between post-SRSD and maintenance untimed, and between post-fluency and maintenance untimed, his

performance remained higher than at baseline untimed. Drew's maintenance fluency timed essay contained 73 words, an increase from baseline fluency timed where he wrote 21 words. His maintenance fluency timed performance was a 248% increase from baseline fluency timed, a 20% decrease from post-SRSD and a 3% decrease from post-fluency. Despite the decrease in the number of words written by Drew from post-SRSD and post-fluency to maintenance fluency timed, his performance remained higher than at baseline fluency timed. Visual analysis revealed 100% PND performance at maintenance untimed for number of words written compared to baseline untimed and 100% PND from maintenance fluency timed for number of words written compared to baseline fluency timed.

Drew wrote eight sentences at maintenance untimed compared to baseline untimed where his essay did not contain any sentences. In addition, there was a 4% increase from post-SRSD ($M = 7.67$, $SD = 0.58$) performance but no change in performance between post-fluency ($M = 8.00$, $SD = 0.00$) and maintenance untimed. Drew wrote 11 sentences at maintenance fluency timed compared to baseline fluency timed where his essay did not contain any sentences. There was a 43% increase in performance between post-SRSD and maintenance fluency timed and a 38% increase from post-fluency performance. Visual analysis revealed 100% PND performance at maintenance untimed for number of sentences written compared to baseline untimed and 100% PND from maintenance fluency timed for number of sentences written compared to baseline fluency timed.

Drew used four transition words in his maintenance untimed essay. His performance at maintenance untimed was a 300% increase from baseline untimed ($M = 1.00$, $SD = 0.00$) and remained stable from post-SRSD ($M = 4.00$, $SD = 0.00$). There was a 14% decrease in his performance between post-fluency ($M = 4.67$, $SD = 0.58$) and maintenance untimed. Drew's performance at maintenance untimed for number of transition words written remained above baseline untimed performance despite the slight decrease in his performance between post-fluency and maintenance untimed. Drew used five transition words in his maintenance fluency timed essay, compared to baseline fluency timed where his essay contained one transition word. Drew's performance at maintenance fluency timed was a 400% increase from baseline fluency timed, a 25% increase from post-SRSD and was a 7% increase from post-fluency. Visual analysis revealed 100% PND performance at maintenance untimed for number of transition words written compared to baseline untimed and 100% PND from maintenance fluency timed for number of transition words written compared to baseline fluency timed.

At maintenance untimed, Drew wrote one paragraph, which was an increase from baseline untimed performance when he did not write any paragraphs. His performance was unchanged from post-SRSD ($M = 1.00$, $SD = 0.00$) and post-fluency ($M = 1.00$, $SD = 0.00$) to maintenance untimed. At maintenance fluency timed, Drew wrote one paragraph, which was a change from baseline fluency timed performance, where he did not write a paragraph. His performance was unchanged from post-SRSD and post-fluency to maintenance fluency timed. Visual analysis revealed 100% PND performance on the maintenance untimed for number of paragraphs written compared to baseline

untimed and 100% PND from maintenance fluency timed for number of paragraphs written compared to baseline fluency timed.

In summary, Drew's overall maintenance untimed essay performance revealed increases from baseline untimed across all essay measures. There was an increase in the number of sentences written by Drew from post-SRSD to maintenance untimed, while the number of essay parts, transition words and paragraphs remained stable. There was a decrease in the essay quality and number of words written by Drew from post-SRSD to maintenance untimed. From post-fluency to maintenance untimed there were increases in the number of essay parts written by Drew as well as the essay quality. Decreases were noted in the number of words and transition words written by Drew between post-fluency and maintenance untimed, with the number of sentences and paragraphs remaining stable between the phases. Drew's overall maintenance fluency timed performance revealed increases from baseline fluency timed across all essay measures. Results from post-SRSD to maintenance fluency timed increased for the number of essay parts, essay quality, the number of sentences and transition words written by Drew, while the number of paragraphs remained stable. The number of words written by Drew decreased from post-SRSD to maintenance fluency timed. There was an increase in the number of essay parts, essay quality, number of words and transition words written by Drew between post-fluency and maintenance fluency timed. The number of sentences written by Drew from post-fluency to maintenance fluency timed decreased, while the number of paragraphs written remained stable from post-fluency to maintenance fluency timed.

Figures 1 – 6 show the mean number of essay measures graphed for Drew. See Table 5 for Drew's total scores in each phase of the study. See Table 6 for PND scores for Drew.

Carter. Carter's performance for maintenance untimed and fluency timed was notable as revealed by moderate level changes across all essay measures. Maintenance untimed and maintenance fluency timed scores revealed 100% PNDs compared to respective baseline scores across all essay measures. Figures 1 – 6 show the mean number of essay measures graphed for Carter. See Table 5 for Carter's total scores in each phase of the study. See Table 6 for PND scores for Drew. Results for individual essay measures are discussed in detail below.

At maintenance untimed, Carter's essays contained 12 essay parts, a 415% increase from his baseline untimed ($M = 2.33$, $SD = 1.53$), and a 38% increase from his post-SRSD ($M = 8.67$, $SD = 0.58$). There was a 33% increase in Carter's performance on the number of essay parts included in his essay from post-fluency ($M = 9.00$, $SD = 1.73$) to maintenance untimed. At maintenance fluency timed, Carter's essays contained nine essay parts a 350% increase from baseline fluency timed where his essay contained two parts. His performance increased 3% from post-SRSD and remained stable from the post-fluency to maintenance fluency timed. Visual analysis revealed 100% PND performance at maintenance untimed for number of essay parts written compared to baseline untimed and 100% PND from maintenance fluency timed for number of essay parts written compared to baseline fluency timed.

Carter's maintenance untimed essay had an essay quality rating of 10, a 400% increase from his baseline untimed ($M = 2.00$, $SD = 1.00$), and an 11% increase from his

post-SRSD ($M = 9.00$, $SD = 0.00$). There was a 36% increase in essay quality of Carter's essay between post-fluency ($M = 7.33$, $SD = 3.06$) and maintenance untimed. Carter's maintenance fluency timed essay had an essay quality rating of eight, a 300% increase from baseline fluency timed where his essay had a quality rating of two. Carter's performance decreased 11% between post-SRSD and maintenance fluency timed, while there was a 9% increase from post-fluency. Despite the decrease noted in the essay quality of Carter's essay from post-SRSD to maintenance fluency timed, the essay quality of Carter's essay at maintenance fluency timed remained above baseline fluency timed performance. Visual analysis revealed 100% PND performance at maintenance untimed for essay quality compared to baseline untimed and 100% PND from maintenance fluency timed for essay quality compared to baseline fluency timed.

Carter's essay at maintenance untimed contained 93 words. His maintenance untimed performance was a 336% increase from baseline untimed ($M = 21.33$, $SD = 13.58$) and a 47% increase from post-SRSD ($M = 63.33$, $SD = 48.91$). There was a 45% increase in the number of words written by Carter between post-fluency ($M = 64.33$, $SD = 48.91$) and maintenance untimed. At maintenance fluency timed, Carter's essay contained 49 words, compared to baseline fluency timed where he wrote 19 words. His maintenance fluency timed performance was a 158% increase from baseline fluency timed. There was a 23% decrease from post-SRSD to maintenance fluency and a 24% decrease from post-fluency and maintenance fluency in the number of words written by Carter. The number of words written by Carter in his maintenance fluency timed essay remained above his baseline fluency essay despite the decrease in number of words noted

from post-SRSD and post-fluency to maintenance fluency timed. Visual analysis revealed 100% PND performance at maintenance untimed for number of words written compared to baseline untimed and 100% PND from maintenance fluency timed for number of words written compared to baseline fluency timed.

Carter wrote 12 sentences at maintenance untimed. This was a 623% increase at maintenance untimed from baseline untimed ($M = 1.66$, $SD = 1.15$), a 33% increase from a post-SRSD ($M = 9.00$, $SD = 0.00$) and a 38% increase from post-fluency ($M = 8.67$, $SD = 1.53$). Carter wrote five sentences at maintenance fluency timed compared to baseline fluency timed where he wrote two sentences. This was a 150% increase at maintenance fluency timed from baseline fluency timed, a 44% decrease from post-SRSD, and a 42% decrease from post-fluency for the number of sentences written. Despite the decrease in the number of sentences written by Carter from post-SRSD and post-fluency to maintenance fluency timed, his performance for number of sentences written at maintenance fluency timed remained above his baseline fluency timed performance. Visual analysis revealed 100% PND performance at maintenance untimed for number of sentences written compared to baseline untimed and 100% PND from maintenance fluency timed for number of sentences written compared to baseline fluency timed.

Carter's maintenance untimed essay contained six transition words. This was a 1718% increase from baseline untimed performance ($M = 0.33$, $SD = 0.58$) and a 20% increase from both post-SRSD ($M = 5.00$, $SD = 0.00$) and post-fluency ($M = 5.00$, $SD = 0.00$) for the number of transition words written. Carter's maintenance fluency timed essay contained four transition words compared to baseline fluency where he did not use

any transition words in his essay. The number of transition words used increased from baseline fluency timed to maintenance fluency timed; however, there was a 20% decrease in the number of transition words written at maintenance fluency timed compared to post-SRSD and post-fluency. Carter's maintenance fluency timed essay performance for number of transition words written remained above baseline fluency timed performance for number of transition words written despite the decrease noted in performance from post-SRSD and post-fluency to maintenance fluency timed. Visual analysis revealed 100% PND performance on the maintenance untimed for number of transition words written compared to baseline untimed and 100% PND from maintenance fluency timed for number of transition written compared to baseline fluency timed.

At maintenance untimed, Carter wrote a one-paragraph essay, which was a change from baseline untimed when he did not write a paragraph. His performance remained stable from both post-SRSD ($M = 1.00$, $SD = 0.00$) and post-fluency ($M = 1.00$, $SD = 0.00$) for the three essays he wrote. At maintenance fluency timed, Carter wrote one paragraph, which was one paragraph more than he wrote at baseline fluency timed where he did not write a paragraph and his performance remained stable from post-SRSD and post-fluency. Visual analysis revealed 100% PND performance on the maintenance untimed for number of paragraphs written compared to baseline untimed and 100% PND from maintenance fluency timed for number of paragraphs written compared to baseline fluency timed.

In summary, Carter's overall maintenance untimed performance showed significant increases from baseline untimed across all essay measures. There were

increases in the number of essay parts, essay quality, number of words, sentences and transition words written by Carter between post-SRSD and maintenance untimed, with the number of sentences remaining stable between the phases. The number of essay parts, essay quality, number of words and transition words written by Carter increased from post-fluency to maintenance untimed. Carter wrote fewer sentences at maintenance untimed compared to post-fluency while the number of paragraphs written remained stable. Carter's overall maintenance fluency timed performance revealed increases from baseline fluency timed for all essay measures. Carter's essay at maintenance fluency timed contained more essay parts than his post-SRSD essays. There were decreases in the essay quality, number of words, sentences, and transition words written by Carter between post-SRSD and maintenance fluency timed, while the number of paragraphs written remained stable. The quality of Carter's essay increased from post-fluency to maintenance untimed, while decreases were noted in the number of words, sentences and transition words written between the phases. The number of essay parts and paragraphs written remained stable from post-fluency to maintenance fluency timed. Figures 1 – 6 show the mean number of essay measures graphed for Carter. See Table 5 for Carter's total scores in each phase of the study. See Table 6 for PND scores for Carter.

Sandy. Sandy's performance for maintenance untimed and maintenance fluency timed was notable as demonstrated by increases in the number of essay parts written, essay quality and the number of transition words written from baseline untimed and baseline fluency timed. The number of words and sentences written by Sandy between baseline untimed and maintenance untimed increased; however, there was a decrease in

the number of words and sentences written between baseline fluency timed and maintenance fluency timed. The number of paragraphs written by Sandy remained stable between baseline untimed and baseline fluency timed and maintenance untimed and maintenance fluency timed. Maintenance untimed scores demonstrate 100% PNDs from baseline untimed for number of essay parts and essay quality as well as for the number of words, sentences, and transition words. There was no change in Sandy's performance between baseline untimed and maintenance untimed for number of paragraphs (0% PND). Between baseline timed and maintenance fluency timed 100% PNDs were noted for number of essay parts, essay quality and transition words, with 0% PND noted for number of words, sentences and paragraphs. Figures 1 – 6 show the mean number of essay measures graphed for Sandy. See Table 5 for Sandy's total scores in each phase of the study. See Table 6 for PND scores for Sandy. Results for individual essay measures are discussed in detail below.

At maintenance untimed, Sandy's essay contained 10 essay parts, a 499% increase from baseline untimed ($M = 1.67$, $SD = 2.08$). Her performance increased from post-SRSD ($M = 8.67$, $SD = 3.06$) by 15% and remained stable from post-fluency ($M = 10.00$, $SD = 1.73$). At maintenance fluency timed, Sandy's essay contained eight essay parts, an increase from baseline fluency timed where her essay did not contain any essay parts. Her maintenance fluency timed essay contained 8% fewer essay parts than post-SRSD and 20% less essay parts than her post-fluency. Despite the decrease in the number of essay parts written at post-SRSD and post-fluency compared to maintenance fluency timed, Sandy's maintenance fluency timed essay contained more essay parts than

her baseline fluency timed essay. Visual analysis revealed 100% PND performance on the maintenance untimed for number of essay parts compared to baseline untimed and 100% PND from maintenance fluency timed for number of essay parts compared to baseline fluency timed.

Sandy's maintenance untimed essay had an essay quality rating of nine; a 579% increase from baseline untimed ($M = 1.33$, $SD = 1.53$) and a 35% increase from post-SRSD ($M = 6.67$, $SD = 3.06$). There was a 4% decrease in Sandy's essay quality from post-fluency ($M = 9.33$, $SD = 1.15$) to maintenance untimed; however, her performance at maintenance untimed remained above baseline untimed. Sandy's maintenance fluency timed essay had an essay quality rating of seven, an increase from baseline fluency timed where her essay quality was zero. The essay quality of her essay at maintenance fluency timed increased by 5% from post-SRSD and decreased 25% from her post-fluency essay quality. Despite the decrease in the number of words written between post-fluency and maintenance fluency timed, her performance remained above baseline fluency timed. Visual analysis revealed 100% PND performance on the maintenance untimed for essay quality compared to baseline untimed and 100% PND from maintenance fluency timed for essay quality compared to baseline fluency timed.

At maintenance untimed, Sandy's essay contained 138 words an increase from baseline untimed ($M = 80.33$, $SD = 27.15$). Her maintenance untimed performance was a 72% increase from baseline untimed, a 12% increase from her post-SRSD ($M = 123.00$, $SD = 7.55$), and a 36% increase from post-fluency ($M = 88.00$, $SD = 11.14$) for number of words written. Sandy's maintenance fluency timed essay contained 65 words, compared

to baseline fluency timed where she wrote 101 words. Her maintenance fluency timed performance was a 36% decrease from baseline fluency timed, a 47% decrease from post-SRSD, and a 26% decrease from post-fluency. Visual analysis revealed 100% PND for number of words written between baseline untimed and maintenance untimed; however, visual analysis revealed 0% PND between baseline fluency timed and maintenance fluency timed for number of words written.

Sandy wrote 12 sentences at maintenance untimed an improvement from baseline untimed ($M = 8.33$, $SD = 2.52$). This was a 44% increase at maintenance untimed from baseline untimed, and a 16% increase from both post-SRSD ($M = 10.33$, $SD = 1.53$) and post-fluency ($M = 10.33$, $SD = 1.15$). Sandy wrote eight sentences at maintenance fluency timed compared to baseline fluency timed where her essay contained 11 sentences. This was a 27% decrease at maintenance fluency timed from baseline fluency timed, a 23% decrease from both post-SRSD and post-fluency for number of sentences written. Despite the decrease in the number of sentences written by Sandy from post-SRSD and post-fluency to maintenance fluency timed, Sandy's maintenance fluency timed performance remained above baseline fluency for number of sentences written. Visual analysis revealed 100% PND between baseline untimed and maintenance untimed and 0% PND between baseline timed and maintenance fluency timed for the number of sentences written.

For transition words, Sandy used six words in her maintenance untimed essay. This was an increase in performance compared to baseline untimed when she did not use any transition words. Sandy's performance at maintenance untimed was a 20% increase

from post-SRSD ($M = 5.00$, $SD = 1.73$) and a 13% increase from post-fluency ($M = 5.33$, $SD = 1.15$). Sandy used five transition words in her maintenance fluency timed essay compared to a baseline fluency timed where she did not use any transition words. The number of transition words written by Sandy at maintenance fluency timed remained stable from her post-SRSD performance. There was a 6% decrease in her performance from her post-fluency to maintenance fluency timed; however, her performance remained above baseline fluency timed. Visual analysis revealed 100% PND performance on the maintenance untimed for number of transition words written compared to baseline untimed and 100% PND from maintenance fluency timed for number of transition words written compared to baseline fluency timed.

Sandy wrote one paragraph during maintenance untimed. Her performance writing paragraphs was stable between baseline untimed ($M = 1.00$, $SD = 0.00$), post-SRSD ($M = 1.00$, $SD = 0.00$) and post-fluency ($M = 1.00$, $SD = 0.00$). At maintenance fluency timed, Sandy wrote one paragraph, which was stable from her baseline fluency timed performance, post-SRSD and post-fluency performance. Visual analysis revealed 0% PND between baseline untimed and maintenance untimed as well as between baseline fluency timed and maintenance fluency timed.

In summary, Sandy's overall maintenance untimed performance revealed improvement in all writing areas except paragraphs from baseline untimed. Her performance on the number of paragraphs measure remained stable from baseline untimed to maintenance untimed. Continued increases were seen from post-SRSD to maintenance untimed in the number of essay parts, essay quality, the number of words,

sentences, and transition words written. Performance remained the same from post-SRSD to maintenance untimed for the number of paragraphs written. Sandy's performance between post-fluency and maintenance untimed remained stable for essay quality and the number of paragraphs written. Her performance increased for the number of words, sentences and transition words written between post-fluency and maintenance untimed. Sandy's overall maintenance fluency timed performance revealed varied results. Her performance demonstrated improvement from baseline fluency timed to maintenance fluency timed for the number of essay parts as well as the quality of her essay, and the number of transition words written. Her performance, however, decreased from baseline fluency timed to maintenance fluency timed in the number of words and sentences written, while her performance on the number of paragraphs written remained stable. The quality of Sandy's essay increased from post-SRSD to maintenance fluency timed with performance remaining stable on the number of paragraphs and transition words written. Performance decreased from post-SRSD to maintenance timed fluency on the number of words and the number of sentences. Between post-fluency and maintenance timed fluency decreases were also noted across all essay measures except paragraphs, which remained stable. Figures 1 – 6 show the mean number of essay measures graphed for Sandy. See Table 5 for Sandy's total scores in each phase of the study. See Table 6 for PND scores for Sandy.

Rocky. Rocky's performance for maintenance untimed and maintenance fluency timed was notable for increases in performance across all essay measures from baseline untimed and baseline fluency timed. Maintenance untimed scores also demonstrated

100% PND for all essay measures except paragraphs which demonstrated 0% PND. Maintenance fluency scores demonstrated 100% PND across all essay measures from baseline. Figures 1 – 6 show the mean number of essay measures graphed for Rocky. See Table 5 for Rocky's total scores in each phase of the study. See Table 6 for PND scores for Rocky. Results for individual essay measures are discussed in detail below.

During maintenance untimed, Rocky's essay contained eight essay parts, a 200% increase from baseline untimed ($M = 2.67$, $SD = 0.58$) but a 13% decrease from his post-SRSD ($M = 9.00$, $SD = 0.00$). There was a 41% increase between post-fluency ($M = 5.67$, $SD = 1.53$) and maintenance untimed. Despite the decrease in the number of essay parts written by Rocky from post-SRSD to maintenance untimed, the number of essay parts written by Rocky remained above baseline untimed performance. At maintenance fluency timed, Rocky's essay had seven parts, which was an increase from baseline fluency timed where his essay did not contain any essay parts. The number of essay parts at maintenance fluency timed was a 29% decrease from post-SRSD and a 23% increase from post-fluency. Rocky's maintenance fluency timed performance remained above his baseline fluency timed performance despite the decrease noted in his performance between post-SRSD and maintenance fluency timed. Visual analysis revealed 100% PND performance at maintenance untimed for number of essay parts compared to baseline untimed and 100% PND from maintenance fluency timed for number of essay parts compared to baseline fluency timed.

Rocky's maintenance untimed essay had an essay quality rating of eight, a 243% increase from baseline untimed ($M = 2.33$, $SD = 0.58$) and an 8% decrease from his post-

SRSD ($M = 8.67$, $SD = 0.58$). His performance between post-fluency ($M = 4.67$, $SD = 1.53$) and maintenance untimed increased by 71%. Rocky's performance at maintenance untimed remained above his baseline untimed performance despite the slight decrease in the number of words written between post-SRSD and maintenance untimed. Rocky's maintenance fluency timed essay had an essay quality rating of six an increase from baseline fluency timed, where he had an essay quality rating of zero. This quality rating was a 31% decrease from post-SRSD, and a 28% increase from post-fluency. Despite the decrease in the essay quality of Rocky's essay from post-SRSD to maintenance fluency timed, his performance remained above baseline fluency timed. Visual analysis revealed 100% PND performance at maintenance untimed for essay quality compared to baseline untimed and 100% PND from maintenance fluency timed for essay quality compared to baseline fluency timed.

At maintenance untimed, Rocky's essay contained 98 words. His maintenance untimed performance was a 177% increase from baseline untimed ($M = 35.33$, $SD = 11.72$) and a 25% increase from post-SRSD ($M = 78.67$, $SD = 9.87$). Rocky's performance between post-fluency ($M = 56.33$, $SD = 12.50$) and maintenance untimed increased by 74%. Rocky's maintenance fluency timed essay contained 75 words compared to baseline fluency timed, where he wrote 13 words. His maintenance fluency timed performance was a 477% increase from baseline fluency timed but a 5% decrease from post-SRSD. His performance increased 33% from post-fluency to maintenance fluency timed. Despite the decrease noted between his post-SRSD and maintenance fluency timed performance for number of words, the number of words written by Rocky

at maintenance fluency remained above baseline fluency performance. Visual analysis revealed 100% PND performance at maintenance untimed for number of words written compared to baseline untimed and 100% PND from maintenance fluency timed for number of words written compared to baseline fluency timed.

Rocky wrote six sentences at maintenance untimed. This was a 158% increase at maintenance untimed from baseline untimed ($M = 2.33$, $SD = 1.53$); however, it was an 18% decrease from his post-SRSD ($M = 7.33$, $SD = 0.58$) and a 15% decrease from post-fluency ($M = 7.00$, $SD = 1.00$). Rocky wrote more sentences at maintenance untimed than baseline untimed despite the decreases noted in the number of sentences written from post-SRSD and post-fluency to maintenance untimed. Rocky wrote six sentences at maintenance fluency timed compared to baseline fluency timed where he wrote one sentence. This was a 400% increase at maintenance fluency timed from baseline fluency timed and an 18% decrease from post-SRSD. Rocky's performance decreased 14% decrease from the post-fluency to maintenance fluency timed. Despite the decrease in performance for the number of sentence written from post-SRSD and post-fluency to maintenance fluency timed, the number of sentences written by Rocky at maintenance fluency timed remained above baseline fluency performance. Visual analysis revealed 100% PND performance at maintenance untimed for number of sentences written compared to baseline untimed and 100% PND from maintenance fluency timed for number of sentences written compared to baseline fluency timed.

Rocky's maintenance untimed essay contained five transition words. This was a 1415% increase from baseline untimed ($M = 0.33$, $SD = 0.58$) and a 7% increase from

post-SRSD ($M = 4.67$, $SD = 0.58$). Rocky's performance from post-fluency ($M = 5.33$, $SD = 1.53$) decreased by 6%. Despite the decrease in the number of transition words written by Rocky between post-fluency and maintenance untimed, the number of transition words in Rocky's maintenance untimed essay remained above baseline untimed performance. Rocky's maintenance fluency timed essay contained five transition words compared to baseline fluency timed where his essay did not contain any transition words. This was an increase from baseline fluency, a 7% increase from post-SRSD and a 6% decrease from post-fluency for transition words. Despite the decrease in number of transition words between post-fluency and maintenance fluency timed, the number of transition words in Rocky's maintenance fluency timed essay remained above baseline timed performance. Visual analysis revealed 100% PND performance at maintenance untimed for number of transition words written compared to baseline untimed and 100% PND from maintenance fluency timed for number of transition words written compared to baseline fluency timed.

At maintenance untimed, Rocky wrote one paragraph, which was a 203% increase from baseline untimed ($M = 0.33$, $SD = 0.53$). His performance remained stable from post-SRSD ($M = 1.00$, $SD = 0.00$) and post-fluency ($M = 1.00$, $SD = 0.00$) to maintenance untimed. At maintenance fluency timed, Rocky wrote one paragraph, an increase from baseline fluency timed where he did not write a paragraph. Rocky's performance remained stable from post-SRSD and post-fluency to maintenance fluency timed. Visual analysis revealed 0% PND between baseline untimed and maintenance untimed, while

visual analysis revealed 100% PND between baseline fluency timed and maintenance fluency timed.

In summary, Rocky's overall maintenance untimed performance showed significant increases from baseline untimed across all essay measures. There were increases in the number of words and transition words written by Rocky from post-SRSD and maintenance untimed. Decreases were noted between post-SRSD and maintenance untimed for number of essay parts, essay quality and the number of sentences written by Rocky. Between post-SRSD and maintenance untimed, the number of sentences and number of paragraphs remained stable. The number of essay parts, essay quality, and number of words increased from post-fluency to maintenance untimed. Rocky wrote fewer sentences and transition words at maintenance untimed compared to post-fluency while the number of paragraphs written remained stable. Rocky's overall maintenance fluency timed performance revealed increases from baseline fluency timed for all essay measures. Rocky's essay at maintenance fluency timed contained more essay parts and transition words than his post-SRSD essays. There were decreases in the essay quality, number of words, and sentences written by Rocky between post-SRSD and maintenance fluency timed, while the number of paragraphs written remained stable. The number of essay parts, essay quality and number of words written by Rocky increased from post-fluency to maintenance untimed, while decreases were noted in the number of sentences and transition words written. The number paragraphs written remained stable from post-fluency to maintenance fluency timed. Figures 1 – 6 show the mean number of essay

measures graphed for Rocky. See Table 5 for Rocky's total scores in each phase of the study. See Table 6 for PND scores for Rocky.

Neil. Neil's performance for maintenance untimed and maintenance fluency timed was notable for increases in performance across all essay measures from baseline untimed and baseline fluency timed. Maintenance untimed scores also demonstrated 100% PND for all essay measures except paragraphs which demonstrated 0% PND. Maintenance fluency timed scores demonstrated 100% PND across all essay measures from baseline. Figures 1 – 6 show the mean number of essay measures graphed for Neil. See Table 5 for Neil's total scores in each phase of the study. See Table 6 for PND scores for Neil. Results for individual essay measures are discussed in detail below.

At maintenance untimed, Neil's essay contained 14 essay parts, a 250% increase from baseline untimed ($M = 4.00$, $SD = 1.00$) and a 14% increase from post-SRSD ($M = 12.33$, $SD = 10.02$). There was a 17% increase in the number of essay parts written by Neil between post-fluency ($M = 12.00$, $SD = 2.83$) and maintenance untimed. At maintenance fluency timed, Neil's essay contained eight essay parts, a 167% increase from baseline fluency timed where his essay had three essay parts. However, this was a 35% decrease from post-SRSD, and a 33% decrease from post-fluency. Neil's performance for the number of essay parts written at maintenance fluency timed remained above baseline fluency timed despite the decrease in performance between post-fluency and maintenance fluency timed. Visual analysis revealed 100% PND performance on the maintenance untimed for the number essay parts written compared to

baseline untimed and 100% PND from maintenance fluency timed for number of essay parts written compared to baseline fluency timed.

Neil's maintenance untimed essay had an essay quality rating of 10.00, a 172% increase from baseline untimed ($M = 3.67$, $SD = 0.58$). Neil's performance remained stable from post-SRSD ($M = 10.00$, $SD = 0.00$) and post-fluency ($M = 10.00$, $SD = 0.00$) to maintenance untimed. Neil's maintenance fluency timed essay had an essay quality rating of eight, an increase from baseline fluency where his essay quality was zero.

There was a 20% decrease in performance from post-SRSD and post-fluency to maintenance fluency timed for essay quality. Despite the decrease in performance noted in the essay quality of Neil's essays from post-SRSD and post-fluency to maintenance fluency timed, his performance at maintenance fluency timed remained above baseline fluency essay quality. Visual analysis revealed 100% PND performance at maintenance untimed for essay quality compared to baseline untimed and 100% PND from maintenance fluency timed for essay quality written compared to baseline fluency timed.

At maintenance untimed, Neil's essay contained 148 words an increase in performance compared to baseline untimed ($M = 35.33$, $SD = 29.96$). His maintenance untimed performance was a 319% increase from baseline untimed but a 32% decrease from post-SRSD ($M = 216.67$, $SD = 45.72$). Neil's performance increased 64% from post-fluency ($M = 90.33$, $SD = 12.74$) to maintenance untimed. Despite the decrease noted in the number of words written by Neil from post-SRSD to maintenance untimed, the number of words written at maintenance untimed remained above his baseline untimed performance. At maintenance fluency timed, Neil's essay contained 74 words

compared to baseline fluency timed where he wrote 39 words. His maintenance fluency timed performance was a 90% increase from baseline fluency timed but a 66% decrease from post-SRSD and an 18% decrease from post-fluency. Neil's performance at maintenance fluency timed remained above his baseline fluency performance despite the decreases that were noted in the number of words written from post-SRSD and post-fluency to maintenance fluency timed. Visual analysis revealed 100% PND performance on the maintenance untimed for number of words written compared to baseline untimed and 100% PND from maintenance fluency timed for number of words written compared to baseline fluency timed.

Neil wrote 14 sentences at maintenance untimed. This was a 442% increase at maintenance untimed from baseline untimed ($M = 2.33$, $SD = 0.58$) and a 16% decrease from post-SRSD ($M = 16.67$, $SD = 4.04$). Neil's performance from post-fluency ($M = 10.00$, $SD = 0.00$) to maintenance untimed increased 40%. Despite the decrease in the number of sentences written by Neil from post-SRSD to maintenance untimed, his maintenance untimed performance remained above baseline untimed for number of sentences written. Neil wrote eight sentences at maintenance fluency timed compared to baseline fluency timed where he wrote two sentences. This was a 300% increase at maintenance fluency timed from baseline fluency timed, a 52% decrease from post-SRSD, and a 20% decrease from post-fluency. Neil's performance at maintenance fluency timed remained above baseline fluency timed performance for the number of sentences written despite the decreases noted in the number of sentences written by Neil from post-SRSD and post-fluency to maintenance fluency timed. Visual analysis

revealed 100% PND performance at maintenance untimed for number of sentences written compared to baseline untimed and 100% PND from maintenance fluency timed for number of sentences written compared to baseline fluency timed.

Neil's maintenance untimed essay contained seven transition words. This was a 199% increase from baseline untimed ($M = 2.34$, $SD = 0.58$) but a 16% decrease from post-SRSD ($M = 8.34$, $SD = 1.53$) for the number of transition words. Neil's performance increased 17% from post-fluency ($M = 6.00$, $SD = 1.41$) to maintenance untimed for the number of transition words written. Despite the decrease in number of transition words between post-SRSD and maintenance untimed, Neil's performance at maintenance untimed remained above baseline untimed performance. Neil's maintenance fluency timed essay contained four transition words compared to baseline fluency timed where his essay contained two transition words. This was a 100% increase from baseline fluency timed, a 52% decrease from post-SRSD, and a 33% decrease from post-fluency for transition words written by Neil. Neil's performance at maintenance fluency timed remained above baseline fluency timed for the number of transition words written despite the decreases in the number of transition words written by Neil from post-SRSD and post-fluency to maintenance fluency timed. Visual analysis revealed 100% PND performance at maintenance untimed for number of transition words written compared to baseline untimed and 100% PND from maintenance fluency timed for number of transition words written compared to baseline fluency timed.

At maintenance untimed, Neil wrote one paragraph, which was a 203% increase from his baseline untimed ($M = 0.33$, $SD = 0.58$). His performance at maintenance

untimed for paragraphs was a 25% decrease from post-SRSD ($M = 1.34$, $SD = 0.58$) while performance remained stable from post-fluency ($M = 1.00$, $SD = 0.00$). At maintenance fluency timed, Neil wrote one paragraph, an increase from baseline fluency timed where he did not write a paragraph. His maintenance fluency timed performance decreased 25% from post-SRSD and remained stable from post-fluency. Visual analysis revealed 0% PND for the number of paragraphs written by Neil between baseline untimed and maintenance untimed, while there was 100% PND for the number of paragraphs written between baseline and maintenance fluency timed.

In summary, Neil's overall maintenance untimed performance revealed improvements from baseline untimed to maintenance untimed on all essay measures. From post-SRSD to maintenance untimed there was an increase in the number of essay parts included in Neil's essay. Neil's performance between post-SRSD and maintenance untimed revealed decreases in the number of words, sentences, transition words and paragraphs, while his performance for essay quality remained stable. From post-fluency to maintenance untimed there was an increase in the number essay parts, words, sentences, and transition words written by Neil, while the essay quality and number of paragraphs remained stable. Neil's overall performance at maintenance fluency timed revealed increases from baseline fluency timed across all essay measures. Neil's performance from post-SRSD to maintenance fluency revealed decreases across all essay measures. Neil's results from post-fluency to maintenance fluency timed revealed decreases in performance for the number of essay parts, essay quality, number of words, sentences, and transition words. Performance between post-fluency and maintenance

fluency timed for paragraphs remained stable. Figures 1 – 6 show the mean number of essay measures graphed for Neil. See Table 5 for Neil’s total scores in each phase of the study. See Table 6 for PND scores for Neil.

Generalization essay performance. Generalization essay starters included new social studies content. Participants ($N = 6$) wrote one generalization untimed essay three weeks after the final post-fluency testing day and generalization instruction day. See Table 3 for overall generalization untimed mean performance for participants across essay measures. Participants’ generalization untimed essay scores indicated large growth across all essays measures except the number of paragraphs written. There was significant growth in the number of persuasive essay parts written from baseline untimed to generalization untimed. Participants wrote one generalization fluency timed essay approximately three and one half weeks after the last post-fluency testing day and generalization instruction day. See Table 4 for overall generalization fluency timed mean performance for participants across essay measures. Participants’ generalization fluency timed essay scores indicated growth across all essay measures except the number of paragraphs written at generalization fluency timed for Jason and Sandy.

Essay parts. At generalization, the number of essay parts written ($M = 8.17$, $SD = 1.83$, range of five to 10) was a 258% increase from the number of essay parts written at baseline ($M = 2.28$, $SD = 1.36$, range of zero to four). The results of the Wilcoxon Matched Pairs, Signed Ranks test comparing baseline and generalization results were statistically significant ($p = 0.03$) for the number of persuasive essay parts written. Between post-SRSD ($M = 8.61$, $SD = 2.34$) and generalization, there was a 5% decrease

in the number of essay parts written. There was significant growth in the number of persuasive essay parts written from baseline fluency timed ($M = 1.50$, $SD = 1.76$, range from zero to four) to generalization fluency timed ($M = 6.83$, $SD = 2.14$, range of three to nine). This was a 355% increase use of persuasive essay parts from baseline fluency timed. This result was statistically significant according to the Wilcoxon Matched Pairs, Signed Ranks test ($p = 0.03$). Again there was a 21% decrease in participant performance between post-fluency ($M = 8.67$, $SD = 2.28$, range from 5.67 to 12.00) and generalization fluency timed on the number of essay parts written by participants. These data can be seen in Figure 1 and in Tables 3 and 4.

Essay quality. The essay quality performance at generalization ($M = 7.33$, $SD = 1.97$, range of five to 10) was a 258% increase from baseline ($M = 2.05$, $SD = 1.14$, range from 0.33 to 3.67). The results of the Wilcoxon Matched Pairs, Signed Ranks test comparing the essay quality of essays written at baseline and generalization results were statistically significant ($p = 0.03$). Comparing post-SRSD ($M = 7.72$, $SD = 2.13$, range from four to ten) to generalization, there was a 5% decrease in the essay quality of participant's essays. The essay quality at generalization fluency timed ($M = 5.50$, $SD = 1.87$, range of three to eight) represented a 267% increase from baseline fluency timed ($M = 1.50$, $SD = 1.76$, range from zero to four). The essay quality score for the generalization fluency timed essay was significantly improved from baseline fluency timed according to the Wilcoxon Matched Pairs, Signed Ranks test ($p = 0.03$). There was a 27% decrease in participant's performance at generalization fluency timed from the

post-fluency ($M = 7.56$, $SD = 2.01$, range from 4.67 to ten) for essay quality. These data can be seen in Figure 2 and in Tables 3 and 4.

Number of words. The number of words written at generalization ($M = 85.83$, $SD = 25.66$, range of 51 to 126) was a 144% increase from baseline ($M = 35.17$, $SD = 23.72$, range from 13.00 to 80.33) and showed significant growth. Results of the Wilcoxon Matched Pairs, Signed Ranks test comparing baseline and generalization for the number of words written were statistically significant ($p = 0.03$). There was a 22% decrease in the total number of words written from post-SRSD, ($M = 110.72$, $SD = 55.50$, range from 63.33 to 216.67) to generalization. The number of words written at generalization fluency timed ($M = 65.17$, $SD = 11.32$, range of 52 to 82) was a 93% increase from baseline fluency timed ($M = 33.83$, $SD = 34.42$, range from 10 to 101). This was not statistically significant according to the Wilcoxon Matched Pairs, Signed Ranks test ($p = 0.05$) for the number of words written. There was a decrease of 8% in the total number of words written between post-fluency ($M = 70.78$, $SD = 16.54$, range from 50.33 to 90.33) and generalization fluency timed. These data can be seen in Figure 3 and in Tables 3 and 4.

Number of sentences. The number of sentences written at generalization ($M = 7.50$, $SD = 2.17$, range of five to 10) increased 207% from baseline ($M = 2.44$, $SD = 3.07$, range from zero to 8.33). The results of the Wilcoxon Matched Pairs, Signed Ranks test comparing baseline and generalization results were statistically significant ($p = 0.03$) for the number of sentences written. Between post-SRSD ($M = 9.95$, $SD = 3.46$, range from 7.33 to 16.67) and generalization there was a 25% decrease in the number of sentences

written. The number of sentences written at generalization fluency timed ($M = 7.33$, $SD = 1.86$, with a range of five to nine) was a 175% increase from baseline fluency timed ($M = 2.67$, $SD = 4.18$, range of zero to 11). This increase was not significant according to the Wilcoxon Matched Pairs, Signed Ranks test ($p = 0.09$). There was a 17% decrease in the total number of sentences written for participants from post-fluency ($M = 8.83$, $SD = 1.24$, range of seven to 10.33) to generalization fluency timed. These data can be seen in Figure 4 and in Tables 3 and 4.

Number of transition words. There was a 525% increase in the number of transition words written at generalization ($M = 4.50$, $SD = 0.84$, range from three to five) from baseline ($M = 0.72$, $SD = 0.85$, range from zero to 2.34). The results of the Wilcoxon Matched Pairs, Signed Ranks test comparing baseline and generalization results were statistically significant ($p = 0.03$) for the number of transition words written. Again, there was a slight decrease (4%) in the number of transition words used between post-SRSD ($M = 4.67$, $SD = 2.35$, range from one to 8.34) and generalization. There was significant growth in the number of transition words written at generalization fluency timed ($M = 4.00$, $SD = 1.10$, range of two to five) compared to baseline fluency timed ($M = 0.50$, $SD = 0.87$, range from zero to two). This 700% increase in use of transition words was statistically significant according to the Wilcoxon Matched Pairs, Signed Ranks test ($p = 0.03$). There was a 22% decrease in the number of transitions words written between post-fluency ($M = 5.11$, $SD = 0.59$, range from 4.33 to six) and generalization fluency timed. These data can be seen in Figure 5 and in Tables 3 and 4.

Number of paragraphs. The number of paragraphs written at generalization ($M = 0.83$, $SD = 0.41$, range of zero to one) was not a significant improvement from baseline ($M = 0.27$, $SD = 0.39$, range from zero to one). Participant performance between baseline and generalization was not statistically significant, according to the Wilcoxon Matched Pairs, Signed Ranks test ($p = 0.06$) for the number of paragraphs written. There was a 22% decrease in the number of paragraphs written by participants between post-SRSD ($M = 1.06$, $SD = 0.14$, range from zero to one) and generalization. The number of paragraphs written at generalization fluency timed ($M = 0.83$, $SD = 0.41$, range of zero to one) was not a significant improvement from baseline fluency timed ($M = 0.17$, $SD = 0.41$, with a range of zero to one) according to the Wilcoxon Matched Pairs, Signed Ranks test ($p = 0.05$). Participant's performance on the number of paragraphs written was stable from post-fluency ($M = 0.83$, $SD = 0.41$, range from zero to one) to generalization fluency timed. See Table 5 for individual participants' total scores for each essay measure across all phases. Table 6 displays PNDs for individual participants for all essay measures across all phases. Figures 1 – 6 show the mean performance across essay measures graphed for each participant.

Individual participants' performance during generalization. Participants were administered two essays during generalization one untimed and one timed. For the untimed generalization essay participants were given the whole 45-minute period to plan and write their essay. For the generalization fluency timed essay, participants were given 10 minutes to plan and write a persuasive essay. Essays were analyzed for the number of essay parts, essay quality, number of words, sentences, transition words, and paragraphs.

Figures 1 - 6 were used in the visual analysis of between and within phase essay performance comparisons on all essay scoring measures. Table 5 displays individual mean performance results for generalization untimed and timed. Table 6 displays individual PND results at generalization for each essay scoring measure.

Jason. At generalization untimed, Jason's essay contained five essay parts which was an increase from baseline untimed ($M = 0.00$, $SD = 0.00$). His performance remained stable from post-SRSD ($M = 5.00$, $SD = 1.73$) to generalization untimed for essay parts. Between post-fluency ($M = 8.67$, $SD = 0.58$) and generalization untimed there was a 42% decrease in the number of essay parts written by Jason. In spite of the decrease in the number of essay parts written by Jason between post-fluency and generalization untimed, his performance remained higher than baseline untimed. At generalization fluency timed, Jason's essay contained seven essay parts, a significant increase from baseline fluency timed where his essay did not have any essay parts. Between post-SRSD and generalization fluency timed, Jason's performance increased by 40%. His performance at generalization fluency timed was a 19% decrease from post-fluency. Jason's performance at generalization fluency timed remained higher than his baseline fluency timed performance even though there was a decrease in the number of essay parts from post-fluency to generalization fluency timed. Visual analysis revealed 100% PND from baseline untimed to generalization untimed and generalization fluency timed.

Jason's generalization untimed essay had a quality rating of five; a 1415% increase from baseline untimed ($M = 0.33$, $SD = 0.58$) and a 25% increase from post-

SRSD ($M = 4.00$, $SD = 2.64$). There was a 38% decrease in Jason's essay quality from post-fluency ($M = 8.00$, $SD = 0.00$) to generalization untimed; however, essay quality remained higher than baseline untimed performance. Jason's generalization fluency timed essay had an essay quality rating of seven, a significant increase from baseline fluency timed overall quality rating of zero. There was a 75% increase in Jason's essay quality between post-SRSD and generalization fluency timed and a 13% decrease from post-fluency. Despite the decrease in the essay quality of Jason's essay between post-fluency and generalization fluency timed, his performance remained higher than at baseline fluency timed. Visual analysis revealed 100% PND from baseline untimed to generalization untimed and generalization fluency timed.

At generalization untimed Jason's essay contained 51 words, compared to his baseline untimed ($M = 13.00$, $SD = 7.00$) essay; this was a 292% increase in his performance. Jason's performance from post-SRSD ($M = 91.33$, $SD = 14.57$) to generalization untimed decreased by 79%. His performance increased 1.33% from post-fluency ($M = 50.33$, $SD = 5.69$) to generalization untimed. Despite the decrease in number of words written by Jason between his post-SRSD and generalization untimed essays, his performance remained higher than baseline untimed. At generalization fluency timed, Jason's essay contained 72 words, compared to baseline fluency timed where he wrote 10 words. His generalization fluency timed performance was a 620% increase from baseline fluency timed, a 21% decrease from post-SRSD and a 43% increase from post-fluency. The number of words written by Jason at generalization fluency timed remained higher than baseline fluency timed despite the decrease noted in

the number of words written between post-fluency and generalization fluency timed.

Visual analysis revealed 100% PND from baseline untimed to generalization untimed and generalization fluency timed.

Jason wrote five sentences at generalization untimed, compared to baseline untimed where his essay did not contain any sentences. While this was an increase in the number of sentences written at generalization untimed, Jason's had a 42% decrease from post-SRSD ($M = 8.67$, $SD = 2.52$). In addition, Jason's performance between post-fluency ($M = 9.00$, $SD = 1.00$) and generalization untimed decreased 44% for the number of sentences written. Despite the decreases in the number of sentences written by Jason between post-SRSD and post-fluency and generalization untimed, his performance remained higher than baseline untimed performance. Jason wrote eight sentences at generalization fluency timed compared to baseline fluency timed where his essay did not contain any sentences. There was an 8% decrease in the number of sentences Jason wrote from post-SRSD and an 11% decrease from post-fluency to generalization fluency timed. Even with the decreases noted between post-SRSD and post-fluency and generalization fluency timed, Jason's performance remained above baseline fluency timed. Visual analysis revealed 100% PND from baseline untimed to generalization untimed and generalization fluency timed.

Jason's generalization untimed essay contained four transition words, which was more than he used in his baseline untimed essay ($M = 0.33$, $SD = 0.58$). This was an 1112% increase from baseline untimed and a 300% increase from post-SRSD ($M = 1.00$, $SD = 1.73$) in transition word use per essay. There was an 8% decrease in the number of

transition words written by Jason between post-fluency ($M = 4.33$, $SD = 0.58$) and generalization untimed; however, Jason's performance remained above baseline untimed performance. Jason's generalization fluency timed essay contained four transition words, compared to baseline fluency timed where he did not use any transition words. This was an increase from baseline, a 300% increase from post-SRSD, and an 8% decrease from post-fluency transition words. Despite the decrease noted between post-fluency and generalization fluency timed, Jason's performance remained above baseline fluency timed for the number of transition words. Visual analysis revealed 100% PND from baseline untimed to generalization untimed and generalization fluency timed.

At generalization untimed, Jason did not write any paragraphs, which was no change from his baseline untimed or his post-fluency performance. His performance decreased from post-SRSD ($M = 1.00$, $SD = 0.00$) to generalization untimed for number of paragraphs written. At generalization fluency timed, Jason did not write any paragraphs, which was no change from baseline fluency timed performance, or from post-fluency performance. Jason's performance at generalization fluency timed was a 100% decrease from his post-SRSD performance and remained stable from baseline fluency timed where he did not write any paragraphs. Even though Jason wrote a higher number of sentences from baseline untimed, he wrote each sentence on an individual line and did not connect them together into a paragraph during generalization untimed and fluency timed, which affected his results in this area. Visual analysis revealed 0% PND no change in performance between baseline untimed and baseline fluency timed and generalization untimed and generalization fluency timed.

In summary, Jason's overall generalization untimed performance showed significant increases from baseline untimed across number of essay parts, essay quality, as well as number of words, sentences, and transition words. No change was noted in his ability to write paragraphs between baseline untimed and generalization untimed. Between post-SRSD and generalization untimed the number of essay parts remained stable, while there was an increase in the number of transition words written by Jason. There was a decrease in the essay quality, the number of words, sentences and paragraphs written between post-SRSD and generalization untimed. Between post-fluency and generalization untimed there was a decrease in the number of essay parts, the essay quality, transition words and sentences written. Jason's performance on paragraphs written remained stable, while the number of words written increased from post-fluency to generalization untimed. Between baseline fluency timed and generalization fluency timed, there was an increase in the number of essay parts, essay quality, words, sentences and transition words written by Jason, while his performance on paragraphs remained stable. The number of essay parts, essay quality, sentences and transition words decreased between post-SRSD and generalization fluency timed. Between post-fluency and generalization fluency timed Jason's performance decreased in the number of essay parts, essay quality, number of sentences and transition words written, while the number of words written by Jason increased and the number of paragraphs written remained stable. Figures 1 – 6 show the mean number of essay measures graphed for Jason. See Table 5 for Jason's individual scores for all essay measures across phases. See Table 6 for overall PNDs for Jason.

Drew. At generalization untimed, Drew's essay contained eight essay parts; a 167% increase from baseline untimed ($M = 3.00$, $SD = 0.00$) for essay parts. There was no change in his performance from post-SRSD ($M = 8.00$, $SD = 0.00$) to generalization untimed. Drew's performance increased 20% from post-fluency ($M = 6.67$, $SD = 2.52$) to generalization untimed. At generalization fluency timed, Drew's essay contained eight essay parts, a 100% increase from baseline fluency timed ($M = 4.00$, $SD = 0.00$). The number of essay parts remained stable from post-SRSD, and increased 20% from post-fluency. Visual analysis revealed 100% PND from baseline untimed to generalization untimed and generalization fluency timed.

Drew's generalization untimed essay had an essay quality rating of eight; a 201% increase from baseline untimed ($M = 2.66$, $SD = 0.58$), and remained stable from post-SRSD ($M = 8.00$, $SD = 0.00$). Drew's performance from post-fluency ($M = 6.00$, $SD = 3.00$) to generalization untimed increased 33%. Drew's generalization fluency timed essay had an essay quality rating of eight; a 100% increase from baseline fluency timed essay contained four essay parts. Essay quality remained stable from post-SRSD and increased 33% from post-fluency. Visual analysis revealed 100% PND from baseline untimed to generalization untimed and generalization fluency timed.

Drew's generalization untimed essay contained 86 words, compared to baseline untimed ($M = 25.67$, $SD = 1.15$). His generalization untimed essay performance was a 235% increase from baseline untimed and a 6% decrease from post-SRSD ($M = 91.33$, $SD = 24.09$); however, his performance remained above baseline untimed performance. There was a 14% increase in Drew's performance between post-fluency ($M = 75.33$, SD

= 15.95). Drew's generalization fluency timed essay contained 63 words, a 200% increase from baseline fluency timed where his essay contained 21 words. His generalization fluency timed performance was a 31% decrease from post-SRSD and a 6% decrease from post-fluency for the number of words written; however, his performance at generalization fluency timed remained higher than baseline fluency timed performance. Visual analysis revealed 100% PND from baseline untimed to generalization untimed and generalization fluency timed.

Drew wrote seven sentences at generalization untimed, compared to baseline untimed where his essay did not contain any sentences. Drew's performance at generalization untimed for sentences was a 9% decrease from post-SRSD ($M = 7.67$, $SD = 0.58$) and a 13% decrease from post-fluency ($M = 8.00$, $SD = 1.00$). Despite the decreases seen in Drew's performance between post-SRSD and post-fluency and generalization untimed, his performance at generalization untimed remained above his baseline untimed performance. Drew wrote nine sentences at generalization fluency timed compared to his baseline fluency timed essay, which contained no sentences. This was a significant increase at generalization fluency timed for sentences from baseline fluency timed; it was also a 17% increase from post-SRSD and a 13% increase from post-fluency. Visual analysis revealed 100% PND from baseline untimed to generalization untimed and generalization fluency timed.

For transition words, Drew used three words in his generalization untimed essay, an improvement compared to baseline untimed ($M = 1.00$, $SD = 0.00$). Drew's performance at generalization untimed was a 200% increase from baseline untimed for

the number of transition words written. However, there was a 25% decrease in his performance at generalization untimed from post-SRSD ($M = 4.00$, $SD = 0.00$) and a 36% decrease from post-fluency ($M = 4.67$, $SD = 0.58$). Despite the decrease between post-SRSD and generalization untimed and post-fluency and generalization untimed, his performance remained above his baseline performance for the number of transition words written. In his generalization fluency timed essay, Drew used four transition words compared to the baseline timed essay where he used one transition word. At generalization fluency timed, he increased his use of transition words 300% from baseline fluency timed. His performance remained stable from post-SRSD and he decreased his use of transition words at generalization fluency timed from post-fluency by 14%; however, his performance at generalization fluency timed remained above baseline fluency timed performance. Visual analysis revealed 100% PND from baseline untimed to generalization untimed and generalization fluency timed.

At generalization untimed, Drew wrote one paragraph, which was an increase from baseline untimed performance where he did not write any paragraphs. His performance was stable from post-SRSD ($M = 1.00$, $SD = 0.00$) and post-fluency ($M = 1.00$, $SD = 0.00$) to generalization untimed. At generalization fluency timed, Drew wrote one paragraph, which was a change from baseline fluency timed performance, where he did not write a paragraph. His performance was unchanged from post-SRSD and post-fluency to generalization fluency timed. Visual analysis revealed 100% PND from baseline untimed to generalization untimed and generalization fluency timed.

In summary, Drew's overall generalization untimed performance showed increases from baseline untimed across all essay measures. Between post-SRSD and generalization untimed the number of essay parts, essay quality, and paragraphs written remained stable, while there was a decrease in the number of words, sentences and transition words. Between post-fluency and generalization untimed there was an increase in the number of essay parts, the essay quality, and sentences written. Drew's performance on paragraphs written remained stable, while the number of words and transition words written decreased from post-fluency to generalization untimed. Between baseline fluency timed and generalization fluency timed, there was an increase across all essay measures. The essay quality and the number of sentences written by Drew increased between post-SRSD and generalization fluency timed. Between post-SRSD and generalization timed Drew's performance remained stable for the number of essay parts, transition words and paragraphs, while there were decreases in the number of words. Between post-fluency and generalization fluency timed Drew's performance increased for the number of essay parts, the essay quality and sentences written. Decreases were noted in the number of words and transition words written, while the number of paragraphs written by Drew remained stable between post-fluency and generalization fluency timed. Figures 1 – 6 show the mean number of essay measures graphed for Drew. See Table 5 for Drew's individual scores for all essay measures across phases. See Table 6 for overall PNDs for Drew.

Carter. Carter's generalization untimed essay contained 10 essay parts, a 329% increase from baseline untimed ($M = 2.33$, $SD = 1.53$) and a 15% increase from post-

SRSD ($M = 8.67$, $SD = 0.58$). There was an 11% increase in the number of essay parts written by Carter between post-fluency ($M = 9.00$, $SD = 1.73$) and generalization untimed. At generalization fluency timed, Carter's essay contained eight parts a 300% increase from baseline fluency timed where his essay contained two parts. Between post-SRSD and generalization timed, there was an 8% decrease in the number of essay parts written by Carter. In addition, there was an 11% decrease in the number of essay parts Carter wrote between post-fluency and generalization timed. Despite the decrease in performance between post-SRSD and generalization fluency timed and post-fluency and generalization fluency timed Carter's performance at generalization fluency timed remained above baseline. Visual analysis revealed 100% PND from baseline untimed to generalization untimed and generalization fluency timed.

Carter's generalization untimed essay had a quality rating of nine a 350% increase from baseline untimed ($M = 2.00$, $SD = 1.00$) and remained stable from post-SRSD ($M = 9.00$, $SD = 0.00$). His performance increased 23% from post-fluency ($M = 7.33$, $SD = 3.06$) to generalization untimed. Carter's generalization fluency timed essay had an essay quality rating of six, which was a 200% increase from baseline fluency timed where he had a quality rating of two for his essay. This rating was a 33% decrease from post-SRSD and an 18% decrease from post-fluency for essay quality. Despite the decreases from post-SRSD and post-fluency to generalization fluency timed, Carter's performance remained above baseline fluency timed. Visual analysis revealed 100% PND from baseline untimed to generalization untimed and generalization fluency timed.

At generalization untimed, Carter's essay contained 70 words. His generalization untimed word usage performance was a 228% increase from baseline untimed ($M = 21.33$, $SD = 13.58$), an 11% increase from post-SRSD ($M = 63.33$, $SD = 48.91$) and a 9% increase from post-fluency ($M = 64.33$, $SD = 11.93$). Carter's generalization fluency timed essay contained 54 words, compared to his baseline fluency timed essay, which contained 19 words. His generalization fluency timed performance was a 184% increase from baseline fluency timed, a 15% decrease from post-SRSD and a 16% decrease from post-fluency performance for the number of words written. While there was a decrease in the number of words written by Carter between post-SRSD and generalization fluency timed and post-fluency and generalization fluency timed, the number of words Carter wrote remained higher than his baseline timed performance. Visual analysis revealed 100% PND from baseline untimed to generalization untimed and generalization fluency timed.

Carter wrote nine sentences at generalization untimed. This was a 422% increase from baseline untimed ($M = 1.66$, $SD = 1.15$). Performance remained stable from post-SRSD ($M = 9.00$, $SD = 0.00$) to generalization untimed and increased slightly by 3% from post-fluency ($M = 8.67$, $SD = 1.53$). Carter wrote eight sentences at generalization fluency timed compared to baseline fluency timed where he wrote two sentences. This was a 300% increase from baseline fluency timed, an 11% decrease from post-SRSD, and an 8% decrease from post-fluency. While there was a slight decrease in Carter's performance from post-SRSD and post-fluency to generalization timed, his performance at generalization fluency timed remained higher than his baseline fluency timed

performance. Visual analysis revealed 100% PND from baseline untimed to generalization untimed and generalization fluency timed.

Carter's generalization untimed essay contained five transition words. His use of transition words increased 1415% from baseline untimed ($M = 0.33$, $SD = 0.58$) to generalization fluency timed. His performance for transition words was stable from post-SRSD ($M = 5.00$, $SD = 0.00$) and post-fluency ($M = 5.00$, $SD = 0.00$) to generalization untimed. Carter's generalization fluency timed essay contained two transition words compared to baseline fluency where he did not use any transition words in his essay. The number of transition words used by Carter increased from baseline fluency timed to generalization fluency timed. There was 60% decrease in the number of transition words used by Carter in his essays from post-SRSD to generalization timed. In addition, there was a 60% decrease in the number of transition words written by Carter from post-fluency to generalization fluency timed. While there was a decrease in the number of transition words written by Carter from post-SRSD and post-fluency to generalization fluency timed, the number of transition words he wrote at generalization timed remained higher than his baseline untimed and fluency timed performances. Visual analysis revealed 100% PND from baseline untimed to generalization untimed and generalization fluency timed.

For the generalization untimed essay, Carter wrote one paragraph, which was a change from baseline untimed when he did not write a paragraph. In addition, his performance for number of paragraphs written was unchanged from post-SRSD ($M = 1.00$, $SD = 0.00$) and post-fluency ($M = 1.00$, $SD = 0.00$) to generalization untimed. At

generalization fluency timed, Carter wrote one paragraph, which was more than he wrote at baseline fluency timed where he did not write a paragraph. His performance remained stable from post-SRSD and post-fluency to generalization untimed. Visual analysis revealed 100% PND from baseline untimed to generalization untimed and generalization fluency timed.

In summary, Carter's overall performance from baseline untimed to generalization untimed showed increases across all essay measures. Between post-SRSD and generalization untimed the number of essay parts increased while there was a decrease in the number of words written. Performance remained stable between post-SRSD and generalization untimed for essay quality, number of sentences, transition words and the number of paragraphs. Between post-fluency and generalization untimed the number of essay parts, essay quality, number of sentences, transition words and paragraphs remained stable. There was a decrease in the number of words written between post-fluency and generalization untimed. Between baseline fluency timed and generalization fluency timed, there was an increase in all essay measures. The number of essay parts, essay quality, words, sentences and transition words decreased between post-SRSD and generalization fluency timed. Between post-SRSD and generalization fluency timed Carter's performance remained stable for the number of paragraphs written. The number of essay parts, essay quality, number of words, sentences and transition words decreased from post-fluency to generalization fluency timed. Between post-fluency and generalization fluency timed Carter's performance remained stable for the number of paragraphs written. Figures 1 – 6 show the mean number of essay measures graphed for

Carter. See Table 5 for Carter's individual scores for all essay measures across phases. See Table 6 for overall PNDs for Carter.

Sandy. Sandy's generalization untimed essay contained eight essay parts, a 379% increase from baseline untimed ($M = 1.67$, $SD = 2.08$) and an 8% decrease from her post-SRSD ($M = 8.67$, $SD = 2.08$). Sandy's performance from post-fluency ($M = 10.00$, $SD = 1.73$) to generalization untimed for the number of essay parts decreased by 20%. Her performance on the generalization untimed essay remained higher than her baseline untimed performance despite the decreases in performance noted between post-SRSD and post-fluency. At generalization fluency timed, Sandy's essay contained three essay parts, an increase from baseline fluency timed where her essay did not contain any essay parts. There was a 65% decrease in her performance between post-SRSD and a decrease of 70% in the number of essay parts written from post-fluency to generalization fluency timed. Her performance on the generalization fluency timed essay remained higher than her baseline fluency timed performance for number of essay parts despite the decreases noted between post-SRSD and post-fluency. Visual analysis revealed 100% PND from baseline untimed to generalization untimed and generalization fluency timed.

Sandy's generalization untimed essay had an essay quality rating of six, a 351% increase from baseline untimed ($M = 1.33$, $SD = 1.53$), indicating a significant increase in performance while there was a 10% decrease from post-SRSD ($M = 6.67$, $SD = 3.06$) essay quality. There was a 36% decrease in performance from post-fluency ($M = 9.33$, $SD = 1.15$) to generalization untimed for essay quality. Her performance on the generalization untimed essay remained higher than her baseline untimed performance,

despite the decreases seen in her performance between post-SRSD and generalization untimed and between post-fluency and generalization untimed. Sandy's generalization fluency timed essays had an essay quality rating of three, an increase from baseline fluency timed where she had an essay quality rating of zero. There was a 55% decrease in the essay quality between post-SRSD and generalization fluency timed and a 68% decrease between post-fluency essay quality and generalization fluency timed. Her performance on the generalization fluency timed essay remained higher than her baseline fluency timed performance for essay quality despite the decreases noted between post-SRSD and generalization fluency timed and post-fluency and generalization fluency timed. Visual analysis revealed 0% PND from baseline untimed to generalization untimed and 100% PND from baseline untimed to generalization fluency timed.

Sandy's generalization untimed essay contained 100 words. This represents a moderate increase from baseline untimed ($M = 80.33$, $SD = 27.15$). Sandy's generalization untimed performance was a 24% increase from baseline untimed and a 19% decrease from post-SRSD ($M = 123.00$, $SD = 7.55$) for number of words written. There was a 14% increase from post-fluency ($M = 88.00$, $SD = 11.14$) to generalization untimed in the number of words written by Sandy. Her performance on the generalization untimed essay remained higher than her baseline untimed performance despite the decreases noted between post-SRSD. Sandy's generalization fluency timed essay contained 68 words, compared to her baseline fluency timed essay, which contained 101 words. Her generalization fluency timed performance was a 33% decrease from baseline fluency timed, a 45% decrease from post-SRSD, and a 23% decrease from

post-fluency for number of words written. Her performance on the generalization fluency timed essay for the number of words written was below her baseline fluency timed performance. Visual analysis revealed 0% PND from baseline untimed to generalization untimed and generalization fluency timed.

Sandy wrote nine sentences at generalization untimed. This was an 8% increase from baseline untimed ($M = 8.33$, $SD = 2.52$) and a 13% decrease from post-SRSD ($M = 10.33$, $SD = 1.53$) and post-fluency ($M = 10.33$, $SD = 1.53$) for the number of sentences written. Her performance on the generalization untimed essay remained slightly higher than her baseline untimed performance, despite the decreases noted in the number of sentences written by Sandy from post-SRSD and post-fluency to generalization untimed. Sandy wrote five sentences at generalization fluency timed compared to baseline fluency timed where her essay contained 11 sentences. This was a 55% decrease from baseline fluency timed, and a 52% decrease from post-SRSD and post-fluency performance on the number of sentence written. Her performance on the generalization fluency timed essay for the number of sentences written was below her baseline fluency timed performance. Visual analysis revealed 0% PND from baseline untimed to generalization untimed and generalization fluency timed.

Sandy used five transition words in her generalization untimed essay. This represented an increase in performance compared to baseline untimed when she did not use any transition words. At generalization untimed, her use of transition words remained stable from post-SRSD ($M = 5.00$, $SD = 1.73$) and post-fluency ($M = 5.00$, $SD = 1.73$) performance. Her performance on the generalization untimed essay remained

higher than her baseline untimed performance. Sandy used four transition words in her generalization fluency timed essay, compared to baseline fluency timed where she did not use any transition words. The number of transition words written by Sandy at generalization fluency timed decreased 25% from post-SRSD and post-fluency; however, her performance on the generalization fluency timed essay remained higher than her baseline fluency timed performance for number of transition words used in the essay. Visual analysis revealed 100% PND from baseline untimed to generalization untimed and generalization fluency timed.

At generalization untimed, Sandy wrote one paragraph. Her performance writing paragraphs was stable between baseline untimed and generalization untimed where each of her essays contained one paragraph. In addition, her performance from her post-SRSD ($M = 1.00$, $SD = 0.00$) and post-fluency ($M = 1.00$, $SD = 0.00$), to generalization untimed remained stable. At generalization fluency timed, Sandy wrote one paragraph, which was stable from her baseline fluency timed, post-SRSD, and post-fluency performances. Visual analysis revealed 0% PND because Sandy could write a paragraph at baseline untimed and baseline fluency timed; therefore, her results display limited growth in this area.

In summary, Sandy's overall generalization untimed performance showed increases across the number of essay parts, essay quality, words, sentences and transition words from baseline untimed. Sandy's performance from baseline untimed to generalization untimed for number of paragraphs written remained stable. Between post-SRSD and generalization untimed there were decreases in the number of essay parts,

essay quality, number of words and sentences written by Sandy. Performance remained stable between post-SRSD and generalization untimed for number of transition words and paragraphs written by Sandy. Between post-fluency and generalization untimed the number of paragraphs written by Sandy remained stable. There was an increase in the number of essay parts and words written, while there were decreases in the essay quality, and the number of sentence and transition words written, between post-fluency and generalization untimed. Between baseline fluency timed and generalization fluency timed, there was an increase in the number of essay parts, the essay quality and the number of transition words written by Sandy. The number of words and sentences written by Sandy decreased between baseline fluency timed and generalization fluency timed, while the number of paragraphs written between the two phases remained stable. The number of essay parts, essay quality, words, sentences and transition words decreased between post-SRSD and generalization fluency timed. Between post-SRSD and generalization fluency timed Sandy's performance remained stable for the number of paragraphs written. The number of essay parts, essay quality, number of words, sentences and transition words decreased from post-fluency to generalization fluency timed. Between post-fluency and generalization fluency timed, Sandy's performance remained stable for the number of paragraphs written. Figures 1 – 6 show the mean number of essay measures graphed for Sandy. See Table 5 for Sandy's individual scores for all essay measures across phases. See Table 6 for overall PNDs for Sandy.

Rocky. Rocky's generalization untimed essay contained eight essay parts, a 200% increase from baseline untimed ($M = 2.67$, $SD = 0.58$), and a 13% decrease from post-

SRSD ($M = 9.00$, $SD = 0.00$). Rocky's performance between post-fluency ($M = 5.67$, $SD = 1.53$) and generalization untimed increased by 41%. His performance on the generalization untimed essay remained higher than his baseline untimed performance despite the decrease in performance from post-SRSD to generalization untimed. At generalization fluency timed, Rocky's essay contained six essay parts, an increase from baseline fluency timed where his essays did not contain any essay parts. There was a 33% decrease from post-SRSD and a 6% increase in the number of essay parts written by Rocky from post-fluency to generalization fluency timed. His performance on the generalization fluency timed essay remained higher than his baseline fluency timed performance for number of essay parts incorporated in the essay, despite the decrease in his performance from post-SRSD to generalization untimed. Visual analysis revealed 100% PND from baseline untimed to generalization untimed and generalization fluency timed.

Rocky's generalization untimed essay had an essay quality rating of six, a 160% increase from baseline untimed ($M = 2.33$, $SD = 0.58$) and a 42% decrease from post-SRSD ($M = 8.67$, $SD = 0.58$). His performance between post-fluency ($M = 4.57$, $SD = 1.53$) and generalization untimed increased by 31%. Rocky's generalization fluency timed essay had an essay quality rating of five, an increase from baseline fluency timed where his essay had an essay quality rating of zero. There was a 42% decrease in the essay quality from post-SRSD and a 7% increase from post-fluency to generalization fluency timed. His performance on the generalization fluency timed essay remained higher than his baseline fluency timed performance for essay quality, despite the decrease

in performance between post-SRSD and generalization fluency timed. Visual analysis revealed 100% PND from baseline untimed to generalization untimed and generalization fluency timed.

At generalization untimed Rocky wrote 82 words, a 132% increase from baseline untimed ($M = 35.33$, $SD = 11.72$) and a 4% increase from post-SRSD ($M = 78.67$, $SD = 9.87$). There was a 46% increase from post-fluency ($M = 56.33$, $SD = 12.50$) to generalization untimed for the number of words written by Rocky. Rocky's generalization fluency timed essay contained 52 words compared to baseline fluency timed where he wrote 13 words. His generalization fluency timed performance was a 300% increase from baseline fluency timed, a 33% decrease from post-SRSD and an 8% decrease from post-fluency. His performance on the generalization fluency timed essay remained higher than his baseline fluency timed performance for number of words written despite the decreases noted between post SRD and post-fluency performance. Visual analysis revealed 100% PND from baseline untimed to generalization untimed and generalization fluency timed.

Rocky's five sentences at generalization untimed was a significant (115%) increase in performance from baseline untimed ($M = 2.33$, $SD = 1.53$). However, his generalization untimed performance was a 32% decrease from post-SRSD ($M = 7.33$, $SD = 0.58$) and a 29% decrease from post-fluency ($M = 7.00$, $SD = 1.00$). Despite the decreases in performance from post-SRSD and post-fluency to generalization untimed, his performance on the generalization untimed essay remained higher than his baseline untimed performance. Rocky wrote five sentences at generalization fluency timed

compared to baseline fluency timed where he wrote one sentence. This was a 400% increase at generalization fluency timed from baseline fluency timed; however, it was a 32% decrease from post-SRSD and a 29% decrease from post-fluency. His performance on the generalization fluency timed essay remained higher than his baseline fluency timed performance for the number of sentences written despite the decreases seen between post-SRSD and generalization fluency timed and post-fluency and generalization fluency timed. Visual analysis revealed 100% PND from baseline untimed to generalization untimed and generalization fluency timed.

Rocky's generalization untimed essay contained five transition words; this was a 1415% increase from baseline untimed ($M = 0.33$, $SD = 0.58$) and a 7% increase from post-SRSD ($M = 4.67$, $SD = 0.58$) but a 6% decrease from post-fluency ($M = 5.33$, $SD = 1.53$). His performance on the generalization untimed essay remained higher than his baseline untimed performance, despite the decrease between post-fluency and generalization untimed. Rocky's generalization fluency timed essay contained five transition words compared to baseline fluency timed where his essay did not contain any transition words. This was an increase from baseline fluency timed, a 7% increase from post-SRSD, and a 6% decrease from post-fluency for transition words. Rocky's performance on the generalization fluency timed essay remained higher than his baseline fluency timed performance for the number of transition words written. Visual analysis revealed 100% PND from baseline untimed to generalization untimed and generalization fluency timed.

At generalization untimed, Rocky wrote one paragraph. This was a 203% increase from baseline untimed ($M = 0.33$, $SD = 0.53$). His performance remained stable from post-SRSD ($M = 1.00$, $SD = 0.00$) and post-fluency ($M = 1.00$, $SD = 0.00$) to generalization untimed. At generalization fluency timed, Rocky wrote one paragraph, an increase from baseline fluency timed where he did not write a paragraph. Rocky's performance remained stable from post-SRSD and post-fluency to generalization fluency timed. Visual analysis revealed 0% PND between baseline untimed and generalization untimed because Rocky could write a paragraph at baseline untimed. Visual analysis revealed 100% PND between baseline fluency timed and generalization fluency timed because at baseline fluency timed Rocky did not write a paragraph.

In summary, Rocky's overall generalization untimed performance showed increases across all essay measures from baseline untimed. Between post-SRSD and generalization untimed there were increases in the number of words and transition words written. Decreases in performance were noted on the number of essay parts, essay quality, and number of sentences written by Rocky from post-SRSD to generalization untimed. Performance remained stable between post-SRSD and generalization untimed for number of paragraphs written by Rocky. There was an increase in the number of essay parts and essay quality, while there were decreases in the number of words, sentence and transition words written between post-fluency and generalization untimed. The number of paragraphs written by Rocky between post-fluency and generalization untimed remained stable. Between baseline fluency timed and generalization fluency timed, there was an increase across all essay measures. The number of essay parts, essay

quality, as well as number of words and sentences decreased between post-SRSD and generalization fluency timed. Between post-SRSD and generalization fluency timed Rocky's performance remained stable for the number of paragraphs written and increased for the number of transition words written. The number of essay parts, and essay quality increased for Rocky between post-fluency and generalization fluency timed. The number of words, sentences and transition words decreased from post-fluency to generalization fluency timed. Between post-fluency and generalization fluency timed Rocky's performance remained stable for the number of paragraphs written. Figures 1 – 6 show the mean number of essay measures graphed for Rocky. See Table 5 for Rocky's individual scores for all essay measures across phases. See Table 6 for overall PNDs for Rocky.

Neil. Neil's generalization untimed essay contained 10 essay parts; a 150% increase from baseline untimed ($M = 4.00$, $SD = 1.00$) and a 19% decrease from post-SRSD ($M = 12.33$, $SD = 10.02$). There was a 17% decrease in the number of essay parts written by Neil from post-fluency ($M = 12.00$, $SD = 2.83$) to generalization untimed. His performance for the number of essay parts written at generalization untimed remained higher than his baseline untimed performance despite the decreases noted between post-SRSD and post-fluency performance and generalization untimed. At generalization fluency timed, Neil's essay contained nine essay parts, a 200% increase from baseline fluency timed where his essay contained three essay parts. There was a 27% decrease from post-SRSD and a 25% decrease from post-fluency to generalization fluency timed for the number of essay parts written by Neil. Despite the decreases noted from post-

SRSD and post-fluency to generalization fluency timed, his performance on the generalization fluency timed essay remained higher than his baseline fluency timed performance for number of essay parts written. Visual analysis revealed 100% PND from baseline untimed to generalization untimed and generalization fluency timed.

Neil's generalization untimed essay had an essay quality rating of 10, a 171% increase from baseline untimed ($M = 3.67$, $SD = 0.58$) and unchanged from his post-SRSD ($M = 10.00$, $SD = 0.00$) and post-fluency ($M = 10.00$, $SD = 0.00$). Neil's generalization fluency timed essay had an essay quality rating of four, a 33% increase from his baseline fluency timed essay which had an essay quality rating of three. However, there was a 150% decrease in essay quality from post-SRSD and post-fluency to generalized fluency timed. His performance on the generalization fluency timed essay remained higher than his baseline fluency timed performance for essay quality despite the decrease noted between both his post-SRSD and post-fluency performance compared to generalization fluency timed. Visual analysis revealed 100% PND from baseline untimed to generalization untimed and generalization fluency timed.

At generalization untimed, Neil's essay contained 126 words, a significant increase in performance compared to baseline untimed ($M = 35.33$, $SD = 29.96$). His generalization untimed performance was a 257% increase from baseline untimed and a 42% decrease from post-SRSD ($M = 216.67$, $SD = 45.72$). There was a 40% increase in the number of words written by Neil from post-fluency ($M = 90.33$, $SD = 12.74$) to generalization untimed. His performance on the generalization untimed essay remained higher than his baseline untimed performance, despite the decrease noted between post-

SRSD and generalization untimed. At generalization fluency timed Neil's essay contained 82 words compared to baseline fluency timed where he wrote 39 words. His generalization timed performance was a 110% increase from baseline fluency timed, a 62% decrease from post-SRSD, and a 9% decrease from post-fluency for the number of words written. Neil's performance on the generalization fluency timed essay remained higher than his baseline fluency timed performance for number of words used in the essay. Visual analysis revealed 100% PND from baseline untimed to generalization untimed and generalization fluency timed.

Neil wrote 10 sentences at generalization untimed a 329% increase from baseline untimed ($M = 2.33$, $SD = 0.58$) and a 40% decrease from post-SRSD ($M = 16.67$, $SD = 4.04$). Neil's performance from post-fluency ($M = 10.00$, $SD = 0.00$) to generalization untimed remained stable. The number of sentences written by Neil at generalization untimed remained higher than his baseline untimed performance. Neil wrote nine sentences at generalization fluency timed compared to baseline fluency timed where he wrote two sentences. This was a 350% increase from baseline fluency timed to generalization fluency timed and a 46% decrease from post-SRSD and post-fluency. His performance on the generalization fluency timed essay remained higher than his baseline fluency timed performance for the number of sentence written despite the decreases noted from post-SRSD and post-fluency to generalization fluency timed. Visual analysis revealed 100% PND from baseline untimed to generalization untimed and generalization fluency timed.

Neil's generalization untimed essay contained five transition words or an increase in performance from baseline untimed ($M = 2.34$, $SD = 0.58$). For generalization untimed, Neil's performance increased 114% from baseline untimed but there was a 40% decrease from post-SRSD ($M = 8.34$, $SD = 1.53$). Between post-fluency ($M = 6.00$, $SD = 1.41$) and generalization untimed, Neil wrote 17% fewer words. Despite the decreases noted from post-SRSD and post-fluency, Neil's performance on the generalization untimed essay remained higher than his baseline untimed performance for number of transition words written. Neil's generalization fluency timed essay contained five transition words compared to baseline fluency timed where his essay contained two transition words. This was 150% increase from baseline fluency timed; however, he wrote 40% fewer words from post-SRSD and 17% fewer words from post-fluency to generalization fluency timed. His performance on the generalization fluency timed essay remained higher than his baseline fluency timed performance for the number of transition words written despite the decreases noted from post-SRSD and post-fluency. Visual analysis revealed 100% PND from baseline untimed to generalization untimed and generalization fluency timed.

For generalization untimed, Neil wrote one paragraph, which was a 203% increase from baseline untimed ($M = 0.33$, $SD = 0.58$). The one paragraph at generalization untimed was a 25% decrease from post-SRSD ($M = 1.34$, $SD = 0.58$). Neil's performance remained stable from post-fluency ($M = 1.00$, $SD = 0.00$). While there was an overall increase in the number of paragraphs Neil wrote between baseline untimed and generalization untimed, his growth was limited because he was able to write

a one-paragraph essay at baseline untimed. His performance on this measure did improve as a result of instruction as he was able to consistently write one-paragraph essays after intervention and even wrote one two-paragraph essay during post-SRSD. At generalization fluency timed, Neil wrote one paragraph, an increase from baseline fluency timed where he did not write a paragraph. His performance at generalization fluency timed for paragraphs decreased by 25% from post-SRSD and remained stable from post-fluency. This assertion is supported by visual analysis results of 0% PND between baseline untimed and generalization untimed because Neil could write a paragraph at baseline untimed. Visual analysis revealed 100% PND between baseline fluency timed and generalization fluency timed because at baseline fluency timed, Neil did not write a paragraph.

In summary, Neil's overall generalization untimed performance showed increases across all essay measures from baseline untimed. Between post-SRSD and generalization untimed there were decreases in the number of essay parts, words, sentences, transition words and paragraphs written by Neil, while the essay quality remained stable. Between post-fluency and generalization untimed the essay quality, the number of sentences and paragraphs written by Neil remained stable. There was a decrease in the number of essay parts, words, and transition words written by Neil, between post-fluency and generalization untimed. Between baseline fluency timed and generalization fluency timed, there were increases across all essay measures. The number of essay parts, essay quality, words, sentences, transition words and paragraphs written by Neil decreased between post-SRSD and generalization fluency timed. The number of essay parts, essay

quality, number of words, sentences and transition words decreased for Neil between post-fluency and generalization fluency timed. Between post-fluency and generalization fluency timed Neil's performance remained stable for the number of paragraphs written. Figures 1 – 6 show the mean number of essay measures graphed by Neil. See Table 5 for Neil's individual scores for all essay measures across phases. See Table 6 for overall PNDs for Neil.

Writing Samples

Sample essays are presented for each phase of the study; in order to enhance the quantitative data presented previously. Jason, who had the lowest performance at baseline as well as Neil who had the highest performance at baseline were chosen to in order to demonstrate growth of these two participants growth in writing persuasive essays. Each essay presented displays growth in the number of essay parts, essay quality, number of words, sentences, transition words, and paragraphs for both Jason and Neil. These were the areas that were scored for each essay written by participants. Participants had to write two consecutive essays containing at least eight essay parts independently during instruction before they could proceed to the testing phase of the study. The essays presented here were typed exactly as the participant wrote them and spelling errors were not corrected. Table 7 displays Jason's baseline untimed essay compared to his post-SRSD essay. Table 8 displays Neil's baseline untimed essay compared to his post-SRSD essay. The writing samples in Tables 7 and 8 demonstrate the participant's successful use of the POW+TREE strategy to write a persuasive essay. The essays demonstrate the increase in the number of essay parts, essay quality, number of words, sentences,

transition words, and paragraphs written by each participant. These essays were similar to the essays written by all participants.

Table 7

Baseline and Post-SRSD Writing Samples for Jason

Baseline essay prompt. “Is it better to live in the city or country?”

in the city

it better to live in the city

Post-SRSD intervention essay prompt. “Which would you rather have to take a picture with: a digital camera or a disposable camera?”

A digital camera would be better instead of a disposable camera. A digital camera would be better so you can take a bunch of pichers. you can take a last of pichers of your digital camera. people would not like disposable camera. you cant look at the pichers. A digital camera you can look at pichers. When your disposable camera is out of batre you can fro it away. When you're A digital camera Is out of batre you can charch it up so you don't fro it away. A digital camera is better instead a disposable.

Table 8

Baseline and Post-SRSD Writing Samples for Neil

Baseline essay prompt. “Should students your age have a set bedtime?”

I think students my age should have a set bedtime because students need sleep to get a better education in school and learn better without falling asleep on their desks. That is why I think that students my age should have a set bedtime.

Post-SRSD intervention essay prompt. “Which would you rather have to take a picture with: a digital camera or a disposable camera?”

Which would you rather have to take pictures with; a digital camera, or a disposable camera?

I would rather have a digital camera. First you can load pictures and review them again if you like. You would be able to save pictures on the computer so you have more room to save pictures on the camera. Second, you don't have to go to Walmart to get the pictures printed like you do with disposable camera. You can just print the pictures at home, that is if you have a printer at your home. Third, a digital camera is better quality. That means that the camera takes better pictures. Fourth, there is more space to save pictures on the digital camera while a disposable camera. For a digital camera you can transfer the pictures on to the computer in case you use the printed copy. Lastly, you can video tape on a digital camera. You can't video on a disposable camera. On the other hand, you can lose a camera. If you had a disposable camera then you wouldn't have to worry about losing a disposable camera. Also you could drop a camera. If you had a disposable camera you wouldn't have to worry about wasting thousands of dollars. To sum up, I would rather take pictures with a digital camera rather than a disposable camera.

The writing sample shown in Table 9 demonstrates the Jason's successful use of POW+TREE strategy to write a persuasive essay in a 10-minute time period and Table 10 demonstrates Neil's successful use of POW+TREE strategy to write a persuasive essay in a 10-minute time period. These examples show a growth from baseline timed in the number of words, sentences, and transition words written, as well as an increase in the

number of essay parts and essay quality. Results were similar for other participants in the study.

Table 9

Baseline Timed and Post-fluency Writing Samples for Jason

Baseline timed essay prompt. “Is it better to buy books at a bookstore or borrow them from the library??”

I like to get books in the stor and i like to Read books Stefan and we like to Read books

Post-fluency essay prompt. “Should restaurants and indoor places ban (not allow) smoking?”

Yes restaurants should ban smoking.

First smoking is not a good thing.

Secont ist smell bad. ist danger ous thing to do.

Third it makes people sick. ist not good for you.

Yet smoking is a good thing for out side. So people wont get sick.

To end restaurants should ban smoking.

Table 10

Baseline Timed and Post-fluency Writing Samples for Neil

Baseline timed essay prompt. “Should children be required to do chores around the home?”

I think children should be required to do chores at home because when parents ask their children to do things or help out they would do it. That is my opinion on being required to do chores at home.

Post-fluency essay prompt. “Which type of vehicle is better to have: a car, a truck or a SUV?”

I think a SUV is a better vehicle to have. First, it can hold a lot of people. This would be good if you have a big family. Second, there is more room to put groceries and suit cases. That is important if you are going on a trip. My final reason is a SUV can drive up hill. This is needed when there is snow. On the other hand, a car is better to have if there are tiny parking spots. A car is small and that is a good thing. To sum up, I think a SUV is a better vehicle to have.

Table 11 contains Jason’s maintenance and generalization untimed essay performance, which occurred three weeks after post-fluency testing and the generalization lesson. Table 12 contains Neil’s maintenance and generalization untimed essay performance, which occurred three weeks after post-fluency testing and the generalization lesson. The examples demonstrate the continued growth from baseline untimed in the number of essay parts, essay quality, number of words, sentences, and transitions words for both Jason and Neil. These results were similar to those of the other participants in the study.

Table 11

Maintenance Untimed and Generalization Untimed Writing Samples for Jason

Maintenance untimed essay prompt. “Should parents send their kids to school when they have the flu?”

First no parents should not take their kids to school when they have the flu.

Reason Parents should leave there kids home.

Second The kids will get other kids sick.

Explanation When the kids are not sick they can go to school.

Reason When the kids are sick they will get germs.

Third Parents should not take their kids to school when they have the flu.

Generalization untimed essay prompt. “Should the age to get a drivers license be raised from 16 to 17 years in all states?”

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Yes people should get their drivers license when they are 17.

First kids should not get their drivers license when they are young.

Second kids should get their drivers license with their parent.

Third kids need to practice driving.

To end kids need to be 17 to get their drivers license.

Table 12

Maintenance Untimed and Generalization Untimed Writing Samples for Neil

Maintenance untimed essay prompt. “Should parents send their kids to school when they have the flu?”

To begin with, I think parents should not send their kids to school with the flu. First, the kid could get other peers sick. Soon the whole class would be sick. Second, the kid might throw up. It would not smell good and be a huge mess. My final reason is that the teacher might think the kid is not listening. The kid will probably get in trouble for no reason. On the other hand, the kid could miss a testing day. The kid would not enough preporation for the test. Next, the kid cold foreget because there was too much to learn. That would not be good for him or her. Lastly, in some cases, both parents might have a job. They could not leave work to watch their child. To sum up, I think parents should not send their kids to school with the flu.

Generalization untimed essay prompt. “Should the age to get a drivers license be raised from 16 to 17 years in all states?”

I think the age to get a drivers license should be raised. First if you are older you are probably more careful. People who are older are at a higher chance of being more careful. Second, people who are older are not at risk of getting in a wreck. People 16 usually are drunk on weekend and people 17 usally aren’t. Lastly, if it were changed it would give people more time to practice. That would be ideal for not getting in wrecks. On the other hand, if it changed that mean less time to take the driving test. That’s because you would be leaving for college the next year. To sum up, I think the age to get a drivers license should be changed.

Table 13 displays Jason’s maintenance and generalization timed essay performance which were administered several days after the maintenance and generalization untimed essays were completed. The writing samples shown in Table 13 display Jason’s successful use of the POW+TREE strategy at maintenance and generalization timed. Table 14 displays Neil’s maintenance and generalization timed

essay performance which were administered several days after the maintenance and generalization untimed essays were completed. The writing samples shown in Table 14 display Neil's successful use of the POW+TREE strategy at maintenance and generalization timed. These essays show the growth from baseline in the number of essay parts, essay quality, number of words, sentences, and transition words. Results were similar to those of all other participants in this study

Table 13

Maintenance Timed and Generalization Timed Writing Samples for Jason

Maintenance timed essay prompt. "Should elementary school students get two recess times a day?"

Yes schools should hav two recess times a day.

First kids need time to play.

Secont kids need to run around. So they can get exercise.

Third kids like to be outside with their frens.

Sow they can have fun.

to end kids should get two recess times a day in elementary school.

Generalization timed essay prompt. "Should people take public transportation (metro, trains, etc.) or car pool to work or school?"

Yes people should take bus an trins to work or school.

First trins are good to take people to work. So they can make money.

Secont trans are faster Than cars. People get to work so they can get to work.

Third people wont get in traffic if they are on the bus.

To end people should go to work on a bus or a trans. They nead to get on time.

Table 14

Maintenance Timed and Generalization Timed Writing Samples for Neil

Maintenance timed essay prompt. “Should students help develop school rules?”

I think students should help develop school rules. First, students are the ones who go to school. They should help because school is developed for students. Second, students should have a say in rules. It is good for students to decide what is good school rules. Lastly, students need to make good decisions when they are young. This will help them in the world. To sum up, I think students should help develop school rules.

Generalization timed essay prompt. “Should nutritional information be reported for all products on menus at restaurants?”

I think nutritional nutritional information should be on menus at restaurants. First, a person might be allergic. That person could look at ingredients to make sure. Second, you could look at the ingredients to see if it is healthy. You should choose the healthy things. Lastly, things have sugar. If you have diabetes you could die from having too much sugar. On the other hand, there might be too much words. It is hard to read a lot in a short time. To sum up, I think nutritional information should be on all menus.

On-task Behavior

Participants were videotaped during the instructional sessions of the intervention (SRSD, fluency and generalization) to observe on-task behavior. Two trained observers watched videos for instructional sessions and reliability was assessed on a third of the videos. An average of 11.5 videos were coded across all six participants, with reliability occurring on 25 (36%) of the video sessions. Overall, the participants were on-task ($M = 92.33\%$, $SD = 5.50\%$, range of 83.00 to 99.00%) during the instructional sessions. Inter-observer agreement on reliability of the observations was 99% ($SD = 0.89$).

Jason's overall on-task behavior was 93% for SRSD and fluency instructional sessions with an inter-observer reliability of 99%. It took Jason 12 sessions to master the SRSD persuasive essay strategy. He struggled to master fluency instruction. It took him nine sessions to reach mastery for fluency.

Drew's overall on-task behavior was 93% with 100% inter-observer reliability between the scorers. Drew was not overly focused during SRSD instruction. He did not like to write and his attitude about writing did not change throughout the study. It took Drew 13 sessions to master the SRSD strategy and four sessions to master writing a persuasive essay fluently in 10 minutes.

Carter was a hard worker. His overall on-task behavior was 90% across 12 sessions with an inter-observer reliability of 98%. It took him eight sessions to master the SRSD persuasive essay strategy and five sessions to master writing an essay in 10 minutes.

Sandy's overall on-task behavior was 96% over 11 instructional sessions. Interobserver reliability was 99% between the scorers. Sandy was also a very hard worker who was focused during the sessions. She was able to meet mastery for SRSD persuasive essay writing in seven sessions and it took her four sessions of fluency instruction to reach mastery.

Rocky's overall on-task behavior was 83% across seven sessions for SRSD instruction and four sessions of fluency instruction. Inter-observer reliability was 99%. Of all the participants, Rocky struggled the most, overall, with on-task behavior. He was

seen at an afterschool program, which was loud and distracting as kids came in and out of the area where intervention occurred.

Neil had the highest levels of on-task behavior. Overall his on-task behavior was 99% over ten sessions. There was 100% interobserver reliability between the scorers. Neil was a very focused participant during the sessions, which was evidenced by his high percentage of on-task behavior and the fact that it only took him six days of SRSD instruction and two days of fluency instruction to master the skill of writing persuasive essays.

In summary, during instructional lessons, students were on-task ($M = 92.33\%$, $SD = 5.50\%$, range of 83.00 to 99.00%) during the instructional sessions. Neil's on-task behavior was the highest of all six of the students in the study. On the other hand, Rocky's on-task behavior was the lowest of the students in the study. Overall the students had a high rate of on-task behavior during the instructional lessons throughout the study.

Knowledge of Persuasive Essay Parts

Participants were administered strategy probes orally at baseline, weekly during intervention and fluency instruction, once during post-SRSD testing, and at maintenance. Participants verbally stated their answers, which were recorded by the researcher. Participants were asked to name the parts of a good persuasive essay in order to determine their knowledge of the strategy being taught. There were eight possible points participants could obtain for the strategy probe; 1) pick my idea, 2) organize my notes, 3)

write and say more, 4) topic sentence, 5) reasons three or more, 6) explanations or explain reasons, 7) ending, and 8) examine.

During baseline, participants were unable to state any of the parts of a good persuasive essay. The baseline mean was 0.00 ($SD = 0.00$). Participants gradually learned the components of a persuasive essay. Some participants were able to acquire the knowledge by the first probe day and the majority of them were able to state all of the components of a persuasive essay by the second probe day. One participant, Drew, was unable to name all the components of the strategy until the third probe, about three weeks into the intervention. Jason was the only participant unable to identify all eight components of a persuasive essay by the time he began post-SRSD testing. During intervention, participants had a mean of 6.30 ($SD = 1.93$) for the knowledge probe and at post-SRSD they had a mean of 7.33 ($SD = 1.03$), a 16% increase in their ability to recall the components of a good persuasive essay. Participants were able to maintain their knowledge of the strategy from the post-SRSD mean of 7.33 ($SD = 1.03$) to the post-fluency mean of 7.33 ($SD = 0.82$). By maintenance, participants' performance increased slightly to a mean of 7.83 ($SD = 0.41$). These results indicate that students were able to learn most of the components of the SRSD strategy.

Self-efficacy

The self-efficacy measure was administered three times during the study. The first was administered to participants in conjunction with the second untimed baseline essay prompt. The second administration of the self-efficacy measure was in conjunction with the second post-SRSD essay prompt, and the final self-efficacy measure was

administered with the maintenance untimed essay prompt. The self-efficacy measure asked participants 13 Likert-scale questions about how confident (0% to 100%) they were in their ability to complete various persuasive writing skills while writing a persuasive essay.

Overall, the participants made descriptive gains on their self-efficacy over the course of the study, with a baseline untimed mean of 43.83 ($SD = 8.33$, of range 32 to 55), a post-SRSD mean of 51.67 ($SD = 9.03$, range from 43 to 65), and a maintenance untimed testing mean of 50.67 ($SD = 11.79$, range of 38 to 65). The difference between baseline untimed and post-SRSD was statistically significant according to the Wilcoxon Matched-Pairs, Signed Rank test, $p = 0.03$. However, the difference between baseline untimed and maintenance untimed testing was not statistically significant according to the Wilcoxon Matched-Pairs, Signed Rank test, $p = 0.05$. Additionally, the difference between post-SRSD and maintenance timed testing was not statistically significant according to the Wilcoxon Matched-Pairs, Signed Rank test, $p = 0.58$.

Attitudes Measure

The attitudes measure was administered to participants on the first day of baseline untimed testing and on the first day of post-SRSD testing. The attitudes measure used a Likert scale (“very different from me” to “a lot like me”) for participants to respond to twelve questions regarding their attitudes about writing. As with the self-efficacy measure, participant responses were converted into numeric scores and a composite score was calculated for each participant.

The descriptive results for participants on the attitude measure resulted in a baseline untimed mean of 24.50 ($SD = 5.43$, range of 18 to 30), and a post-SRSD mean of 27.50 ($SD = 5.01$, range of 22 to 36). The difference between baseline untimed and post-SRSD was not statistically significant according to the Wilcoxon Matched-Pairs, Signed Rank test, $p = 0.28$.

Social Validity

Both participant interviews and parent interviews were conducted to determine the social validity of the SRSD and fluency interventions. Participant interview results are presented first, followed by parent interview results.

Student interviews. Once fluency post testing was completed, each participant ($N = 6$) participated in a final interview with the researcher in order to gather information about their knowledge of the strategy as well as their thoughts about the instruction. All interviews were audio taped and transcribed by an assistant, and then reviewed by the researcher in order to make sure the transcriptions were 100% accurate.

All of the participants were able to talk about the writing strategy they had learned (POW + TREE) and tell the meaning of each part of the mnemonic. Two of the participants struggled when asked to draw the graphic organizer. One of the two was able to draw the outline and the boxes correctly but could not provide the labels to the boxes. The second participant was unable to draw the graphic organizer at all. The other four participants were able to draw the graphic organizer with 100% accuracy.

The participants were then asked questions in which they were able to share their opinions about the study and the strategy they were taught. Comments from participants

about what they liked about the strategy and had had the strategy helped them become a better writer are illustrated in Table 15.

Table 15

Participants Interview Comments After the Study Regarding the Writing Strategy

What did you like most about the POW + TREE strategy?

“Well, it’s easy to remember, ‘cause you have like this strategy. It’s like, like stuck in your head for the rest of your life.” (Rocky)

“Picking a point and to make people believe it.” (Neil)

“The organizing.” (Carter)

“I get to write, write about anything I want.” (Sandy)

“Learning how to write better.” (Jason)

“I forgot.” (Drew)

Has the POW + TREE strategy helped you become a better writer?

“Yes, well, I hadn’t really like writing much, and now I am faster and more effective.” (Rocky)

“Papers are better organized and I use transition words.” (Neil)

“Yes, it has. Umm. Not only do I know how to use POW+TREE for writing, I also now learned a bit more words, too.” (Referring to transition words) (Carter)

I learned how to write essays perfectly.” (Sandy)

“It helped me not to be lazy with writing?” (Drew)

“Yes, remembering to have a topic, ending and to organize my notes.” (Jason)

Participants were asked if they thought that the POW+TREE strategy could help other participants, all ($N = 6$) responded in the affirmative. Participants stated that they thought the strategy could help other participants organize their essays. One participant (Rocky) stated that it would be easy for others to learn and that they would see how it is

“effective for writing essays.” Finally one participant (Carter) stated, *“It would help them learn more about writing.”*

When asked if there was anything they would change or add to what was taught, all participants ($N = 6$) reported that they would not make any changes. In fact, one participant’s (Carter) response to the question was, *“Probably no, because there is already a lot to learn on that.”*

When asked what things in the lessons most helped them become a better writer, participants stated the structure was helpful, and the strategy was easy to learn and simple to remember. They were then asked if they preferred the untimed or timed writing periods. Three of the participants stated simply that they preferred the timed writing periods to the untimed sessions. One participant (Carter) explained, *“At first I liked the longer one. Though, as you progressed, you don’t want the longer one because then that takes more of your time span. The quicker one, your like, ‘Yeah I got that done! Man I’m glad.’”* Another participant (Rocky) stated, *“Forty-five minutes is pretty nice, but 10 minutes, I gradually got used to it.”* Finally, when asked about his preference, Neil stated, *“The longest one, because the short one, I had to write some and quit and it was sloppy.”* Participants were asked if they had used the POW + TREE strategy in any of their classes at school and all participants ($N = 6$) stated that they had not.

Participants were asked some additional open-ended questions by the researcher to see if the participants’ thoughts about themselves as a writer had changed by being involved in the study and learning the POW+TREE strategy. When asked if they liked to write now after participating in this study, five of the six participants stated yes, some

giving answers such as: “*Well, before this, I didn’t really like to write but I do enjoy it now.*” (Carter); and “*It’s one of my favorite things to do.*” (Rocky). One participant (Drew) stated that he still “. . . *do[es] not like to write...but it is easier for me to write because I learned something.*”

When asked to describe how they felt when asked to write a paper before the study versus at the end of the study, participants’ answers varied. Carter’s response ranged from, “Man, I wish I was doing something else...I wish I was home” to “Okay, I’ll do it.” One individual (Sandy) stated she still felt “worried” when asked to write a paper, although she later stated that she is a good writer and it is easy for her to get ideas for her paper. Two of the participants did not know how they felt about being asked to write a paper. Another participant (Rocky) stated, “I feel it’s easier now.”

Parent interviews. Parents were interviewed on the first day of baseline untimed to gather information about their child. Besides the demographic information, such as when was their child diagnosed, by whom, what types of services their child currently receives, parents were asked to discuss their child’s strengths and weaknesses, their attitudes about learning and what they hoped for the outcome of the study. At the completion of the study, the researcher met with the parents again to ask them if their stated outcome for the study from the initial interview was met. In addition, parents were asked if they thought the intervention was helpful for their child, and if they had noticed any changes in their child’s attitudes towards writing. Finally, parents were asked how they planned on reinforcing what their child had learned during the study.

The outcomes of participating in the study identified by parents for their child are listed in Table 16. One parent discussed the hope that this study would enable their child to overcome being intimidated by writing. Another parent stated they hoped that, by participating in the study, their child's confidence about himself as a writer would improve. Four parents discussed their desire that the study would improve their child's ability to organize or structure their writing.

Table 16
Parent Interview Comments Prior to the Study

What do you hope the outcome of the study will be?

"I hope that Sandy will not be intimidated by writing and take more initiative on writing projects." (Sandy's mom)
--

"We hope that Jason will be able to write an email in an organized manner independently." (Jason's parents)

"We hope Drew will not be held back in writing, since he has a difficulty time getting his ideas on paper." (Drew's parents)
--

"We would like for an improvement in Neil's ability to structure his thoughts and get his ideas out." (Neil's parents)
--

"I hope that Carter will be able to organize his papers and write better essays by participating in this study." (Carter's mom)

"Rocky lacks confidence in himself as a writer and I hope that will improve through his participation in the study." (Rocky's mom)
--

Table 17

Parent Interview Comments at the Completion of the Study

When I interviewed you before the study began you stated that you hope that _____ would be the outcome of the study. Did that happen?

“I think she’s (Sandy) definitely become more confident in her writing, that’s the benefit we’ve seen. I’ve gotten feedback from her teachers and they’ve said that she’s shown a little more initiative.” (Sandy’s mom)

“He has been able to send a few email messages on his own without constant help from us.” (Jason’s parents)

“Well, I think the main thing I got out of it is I know he (Drew) can do it, but I don’t think he will do it. His progress in the study hasn’t translated unfortunately into him carrying through and doing it on a school assignment.” (Drew’s parents)

“Absolutely, his (Neil’s) writing is done quicker, his writing is better structured and he is able to incorporate what is needed and explain each element. He also approaches writing more confidently.” (Neil’s parents)

“Yes, he (Carter) is able to organize his papers better, it (the intervention) was very helpful.” “He needs to generalize the skill to other areas. I mean, I think he’ll generalize the writing technique that he learned at home to school. I just don’t know that he’ll generalize the writing technique for persuasive writing to other genres.” (Carter’s mom)

“I would hope his confidence would be better. It’s hard for me to, you know, fully determine that. I think he’s learned things by participating in the study.” (Rocky’s mom)

All of the parents stated that, in general, the outcomes they had hoped for by their child participating in the study had been met (see Table 13). Specifically, two parents stated that they had seen their child become more confident in their writing. One parent could not fully determine how much confidence their child had gained although his writing skills had improved. Three parents stated that they felt their child’s essays were better organized. One parent stated that they now knew their child could write; however,

they were not confident that he would use the strategy for a school related writing assignment.

Parents were asked if they had seen any changes in their child's attitude toward writing. Sandy's mother stated, *"You know, just probably, not as intimidated,"* which was a change from prior to the study when Sandy was always intimidated by writing assignments and had a hard time getting started. On the other hand, parents of four participants, Drew, Rocky, Neil, and Jason, stated that they had not seen any changes in their child's attitudes about writing since participating in the study. Carter's mother, on the other hand, stated *"He (Carter) definitely has more confidence in writing, especially when you re-focus him. I think it organizes his mind into, 'Oh, I was successful at that so I can be successful at this.'"*

Finally, parents were asked how they planned on reinforcing what their children had learned during the study. Sandy's mom stated that she would use the graphic organizer and, *"When she starts to get, you know, anxious about an assignment, I might just bring that up. Say, 'think about what Dani taught you.'"* Drew's parents stated the need to, *"Get him writing about things that he likes ... he's made a graph on the computer himself about comparing this car to that car. So, I know he has an interest in it. It's just getting him to do what he needs to do, so I'll just keep pushing on that."* Four other parents (Carter, Jason, Neil and Rocky) stated that they were going to have their child work on writing throughout the summer using the strategy that was taught.

Standardized Writing Measure

Participants were administered the Woodcock-Johnson III writing fluency subtest at baseline and at post-SRSD instruction testing. Between baseline and post-SRSD instruction there were slight gains in participant performance. However, the difference between the pretest standard scores mean of 80.83 ($SD = 20.19$) and post-SRSD instruction test mean of 83.00 ($SD = 21.72$) was not statistically significant according to the Wilcoxon Matched Pairs, Signed Rank Test, ($p = 0.60$). Nonparametric tests were also run on the raw scores to see if there were any differences in performance following instruction. The pretest raw score mean of 12.00 ($SD = 5.90$) and post-SRSD instruction test mean of 13.00 ($SD = 6.36$) was not statistically significant according to the Wilcoxon Matched Pairs, Signed Rank Test, ($p = 0.46$). While descriptive gains on the Woodcock-Johnson III writing fluency subtest were observed, it is speculated that this measure may not have been sensitive enough to the treatment procedures or the intervention may have lacked sufficient length to depict significant changes in student performance. Major findings of this study and how they relate to previous research are presented in the following chapter.

5. DISCUSSION

The purpose of this study was to examine the effects of SRSD instruction using the POW+TREE strategy for persuasive writing on the writing performance of upper elementary school students with high functioning autism spectrum disorder (ASD). The final sample for the study consisted of six fourth and sixth grade students (5 males and 1 female) who participated in the multiprobe multiple baseline design study based on Kennedy (2005). Participants were taught individually for 45 minutes three days a week, a timer was set once instruction began in order to time the sessions and ensure they lasted the whole 45-minute period. Phase one lasted an average of 9.17 days (6.9 hours) for SRSD instruction, phase two, fluency instruction, lasted an average of 4.67 days (3.5 hours) and generalization instruction lasted one day for 45 minutes. During phase one, participants were taught to plan and write a single paragraph persuasive essay. During phase two, participants were taught to plan and write a single paragraph essay in 10-minutes. During generalization instruction, participants were taught to generalize the strategy they had been taught to write a persuasive letter to a person in authority. Writing was evaluated 14 times, between baseline, post SRSD instruction, post-fluency instruction, and at maintenance and generalization. Each essay written by participants was scored for the number of essay parts, essay quality, number of words, sentences and transition words written.

This study was intended to replicate and extend previous SRSD research studies conducted with students with EBD in middle school settings (Mastropieri et al., 2009; 2010; 2012) and individuals with ASD (Delano, 2007b). The current study extended the research in several ways. In this study SRSD POW+TREE instruction was explicitly taught to the students by the researcher, as opposed to Delano (2007b) which used video self-modeling to teach the strategy. This study focused on a younger population of students than either the Mastropieri et al. (2009; 2010; 2012) or Delano (2007b) studies. On-task behavior data was collected during instructional phases of this study unlike previous writing studies involving individuals with ASD. Since this study was conducted after school which differed from the school setting of previous studies (Asaro-Saddler, 2010; Cerar, 2012; Delano, 2007a, 2007b; Saddler & Saddler, 2009; Hauth, 2012; Mason et al., 2010; Mastropieri et al., 2012), parent interviews were conducted pre and post intervention. Overall findings indicated that persuasive writing instruction using the SRSD POW+TREE approach had a positive impact on the writing performance of six fourth and sixth, upper elementary age students with high functioning ASD. This chapter presents a discussion of the findings of the research based on the research questions, followed by a discussion of the limitations of the study, implications for practice and recommendations for future research.

Research Questions

Six research questions were posed about the effectiveness of SRSD and fluency instruction for students with ASD. The answers to these questions are discussed below.

Persuasive essay performance. The first research question asked: *Will SRSD instruction for POW + TREE persuasive writing strategy increase the number of essay parts, quality, number of words, sentences, and transition words of persuasive essays on immediate and maintenance measures for students with ASD?* A great deal of research on SRSD instruction for students with learning disabilities exists (De La Paz & Graham, 1997; De La Paz, 2005; Graham & Harris, 1989; Graham, Harris & Mason, 2005) and the number of research studies for students with EBD continues to grow (Cerar, 2012; Cuenca-Sanchez, Mastropieri, Scruggs & Kidd, 2012; Hauth, 2012; Mason, Kubina, Valasa, & Cramer, 2010; and Mastropieri, et al., 2009; 2010; 2012; Mills, 2012). SRSD training has been demonstrated to be an effective strategy that improves the writing skills of students with disabilities (Baker et al., 2009; Cerar, 2012; Cuenca-Sanchez et al., 2012; Graham & Harris, 2003; Hauth, 2012; Mason, et al., 2010; Mason, Kubina, Hoover, 2011; Mastropieri et al., 2009; 2010; 2012; Mills, 2012). However, only a few studies have focused on individuals with ASD and the effectiveness of SRSD instruction (Asaro & Saddler 2009; Asaro-Saddler & Saddler, 2010; Delano 2007a, 2007b). A few previous studies (Cerar, 2012; Hauth, 2012; Mason, et al., 2010; Mills, 2012) involving individuals with EBD also included students diagnosed with autism. These four studies presented data in such a way that information about individual students with ASD could be teased out and compared to the current study.

Combined, the eight previous studies (Asaro & Saddler 2009; Asaro-Saddler & Saddler, 2010; Cerar, 2012; Delano 2007a, 2007b; Hauth, 2012; Mason, et al., 2010; Mills, 2012) and the current study have investigated a total of 20 students with ASD (18

males and 2 females), ranging from second to tenth grade with a mean age of 11.62 (range 6.0 to 17.4) years (see Table 18). Students were all reported to have difficulty with writing or at risk for writing difficulty. The current study had five male participants, three of whom were diagnosed by a medical professional as PDD-NOS; the other two had a medical diagnosis of Asperger syndrome. The one female participant was diagnosed with PDD-NOS. All were considered high functioning ASD by parent report.

Table 18

Comparisons of Present and Reviewed SRSD Studies Involving Students with ASD

Study	Phase	Number of participants	Mean age	Grade	Type of ASD	Mean IQ	Design	Instruction provided	Mean hrs of instruction per phase	Weeks to maint/gen. ^b	Number of paragraphs taught
Allen Bronaugh (2013)	1	6 (5 m, 1 f)	11.9	4 th , 6 th	HF ASD	NR	Multiple baseline multiple probe	1 to 1 on SRSD POW+TREE	6.9	6/6.5	1
	2							+ Fluency			
Asaro & Saddler (2009)	1	1 m.	10	4 th	ASD	NR	Case study	1 to 1 on SRSD POW+WWW	7.5	8/NR	NR
Asaro-Saddler & Saddler (2010)	1	3 m.	7.37	2 nd , 4 th	ASD	84, 97, NR	Multiple probe	1 to 1 on SRSD POW+WWW	4	4/NR	NR
Cerar (2012) ^a	1	1 m.	13.5	7 th , 8 th	Autism	105	Multiple baseline multiple probe	Small group instruction in Fluency, SRSD, POW+TREE	17.8	8/8.5	1
	2							Multi-paragraph	4.5	5/5.5	5
Delano (2007a)	1	1 m.	12	6 th	AS	NR	Multiple baseline	1 to 1 on SRSD vocabulary - action words	5	NR	NR
	2							Describing words	2	NR	NR
	3							Revisions	0.75	2/NR	NR

Study	Phase	Number of participants	Mean age	Grade	Type of ASD	IQ	Design	Instruction provided	Mean hrs of instruction per phase	Weeks to maint/gen. ^b	Number of paragraphs taught
Delano (2007b)	1	3 m.	15.4	8 th , 10 th	AS	NR	Multiple baseline	1 to 1 on SRSD POW+TREE + Video self-modeling	NR	12/NR	NR
Hauth (2012) ^a	1	2 males	14.2	8 th	Autism	105.5	multiple baseline multiple probe	Small group instruction SRSD POW+TREE	5.4	7/4	NR
	2							+Content	2.75	6/3	NR
Mason, Kubina, Valasa, & Cramer (2010) ^a	1	1 m.	14.5	NR	AD	NR	Multiple probe	1 to 1 on SRSD POW+TREE Quick Write	3	1/NR	1
Mills (2012) ^a	1	2 (1 m., 1 f.)	13.4	8 th	AD	115, NR	Multiple baseline multiple probe	Small group instruction SRSD POW+TREE	6.9	NR	5
	2							+Revisions	7	7/1d	5

Note. NR = not reported for code.

^a = the participants in these studies were a part of larger studies involving students with EBD. The individual data of the students with ASD could be teased out to compare to performance of students in present study. ^b = Weeks to maintenance and generalization were calculated from the end of the phase to administration of maintenance and generalization measures.

Three of the participants in the current study (Drew, Carter and Rocky) were in the fourth grade and ranged in age from 10.6 to 12.3 years. The other three participants were in the sixth grade and ranged in age from 12.3 to 13.0 years. Delano (2007a) had a 12-year-old, sixth grade male with a diagnosis of Asperger's syndrome. Asaro and Saddler (2009) had a 10 year-old, fourth grade male with ASD while Asaro-Saddler and Saddler (2010) had one nine-year-old male in fourth grade and two second grade males age six and seven years; all diagnosed with ASD. Five of the previous studies involved participants that were older than the participants in the current study. Cerar (2012) had one 13.1 year-old male in seventh grade who was classified as having autism in addition to receiving EBD services. The mean age of the three males in Delano (2007b) was 15.4 years; all had a diagnosis of ASD and were in middle to high school. Hauth (2012) had two eighth grade male participants with a mean age of 14.2 years; both were diagnosed with autism and both received EBD services. The Mason et al. (2010) 14.5-year-old male participant was diagnosed with autism and received services for EBD. Mills (2012) had two eighth grade participants, one male and one female, with a mean age of 13.4 who were diagnosed with autism and received EBD services.

In the current study, participants needed to reach mastery during phase I, SRSD instruction, in order to move on to three days of post SRSD testing. SRSD instruction for the current study lasted an average of 9.17 days (range of six to 13 days) for an average of 6.9 hours (range of 4.5 to 9.75 hours). The current study reported significant gains for student performance from baseline to post SRSD on all writing measures. There were increases of 278% in the number of essay parts, 277% in essay quality, 215% in number

of words, 307% in number of sentences and 549% in number of transition words written between baseline and post SRSD (see Table 19). A large overall effect, 100% PND, was observed between baseline and post SRSD for all six participants for the number of essay parts, essay quality and the number of words (see Table 6). Five of the participants (Jason, Drew, Carter, Rocky and Neil) individually had 100% PND for the number of sentences written indicating a large effect; however, Sandy's performance on the number of sentences written was ineffective with a 33% PND from baseline to post SRSD. Two of the essays Sandy wrote during post SRSD contained fewer sentences than her baseline essay. During post SRSD, she combined her reasons and explanations into one sentence thus writing fewer sentences than at baseline. Overall performance across participants for number of sentences resulted in 83.33% PND indicating the intervention was moderately effective. Five of the participants (Drew, Carter, Sandy, Rocky and Neil) individually had 100% PND for the number of transition words written indicating a large effect; however, Jason's performance on the number of transition words written was ineffective with a 33% PND from baseline to post SRSD. Two of the essays written by Jason during post SRSD did not contain any transition words. Overall performance across participants for number of transition words resulted in 83.33% PND indicating the intervention was moderately effective.

In the current study, student performance from post SRSD to maintenance was compared to see if students could maintain their knowledge of the skills they had learned during the SRSD intervention six weeks after the completion of SRSD intervention and three weeks after post-fluency. All participants' demonstrated large effects from baseline

to maintenance across all measures as indicated by 100% PNDs. Between post SRSD and maintenance, there was an increase in participant performance for number of essay parts, essay quality and number of transition words written; there was a slight decrease in participant performance in number of words and sentences; however, student's performance on all measures was still higher than at baseline. These results indicate that participants were able to retain some of the skills learned from SRSD instruction.

In Asaro and Saddler (2009) there was a 100% increase in the student's performance from baseline to post-testing in number of essay parts and a 207% increase in the essay quality (see Table 19) indicating the SRSD story writing intervention was effective for the student. In Asaro and Saddler (2009) maintenance testing occurred eight weeks after the completion of SRSD intervention. There was no change in the number of essay parts written from post SRSD to maintenance indicating the student was able to maintain his abilities eight weeks after instruction. On the other hand, there was a decrease in the essay quality (-46%) from post SRSD to maintenance. Despite the decrease in essay quality, performance remained above baseline performance.

In Asaro-Saddler and Saddler (2010) there were increases across all essay measures from baseline to post SRSD, 184% in the number of essay parts, 134% in the essay quality and 45% in number of words (see Table 19). Visual analysis of Asaro-Saddler and Saddler (2010) results revealed 100% PND from baseline to post-treatment across all three participants for the number of essay parts written. Visual analysis of essay quality for Asaro-Saddler and Saddler (2010) revealed 66.67% PND for one participant (Justin) indicating a small effect and 100% PND for the other two participants

indicating a large effect for essay quality. Visual analysis of number of words written for Asaro-Saddler and Saddler (2010) revealed 66.67% PND for one participant (Mike) indicating a small effect and 100% PND for the other two participants indicating a large effect for number of words written. Maintenance data was collected four weeks after the final participant completed post-testing in Asaro-Saddler and Saddler (2010). There was a 12% decrease in the number of essay parts and a 1% decrease in the number of words written from post SRSD to maintenance. Participants' performance for essay quality remained unchanged from post SRSD performance to maintenance (see Table 19). Despite the decreases reported at maintenance in essay parts and number of words, performance remained above baseline.

Table 19

Comparisons of Percentage Changes between Present and Reviewed SRSD Studies Involving Students with ASD

Study	Phase	% Change in Number of Essay Parts			% Change in Essay Quality			% Change in Number of Words		
		Baseline to post phase	Post phase to maint	Post phase to gen.	Baseline to post phase	Post phase to maint	Post phase to gen.	Baseline to post phase	Post phase to maint	Post SRSD to gen.
Allen Bronaugh (2013)	1	278%	12%	-5%	277%	10%	-5%	215%	-9%	-22%
	2	478%	-6%	-21%	404%	1%	-27%	109%	-8%	-8%
Asaro & Saddler (2009)	1	100%	no change	NR	207%	-46%	NR	NR	NR	NR
Asaro-Saddler & Saddler (2010)	1	184%	-12%	100%	134%	no change	199%	45%	-1%	104%
Cerar (2012) ^a	1	158%	dropped	dropped	267%	dropped	dropped	30%	dropped	dropped
	2	1064%	dropped	dropped	1000%	dropped	dropped	800%	dropped	dropped
Delano (2007a)	1	NR	NR	NR	160%	NR	205%	714%	-12%	NR
	2	NR	NR	NR	260%	NR	NR	2203%	-8%	NR
	3	NR	NR	NR	400%	NR	NR	NA	-33%	NR
Delano (2007b)	1	458%	-25%	194%	NR	NR	NR	561%	-30%	399%
Hauth (2012) ^a	1	482%	11%	NR	530%	4%	NR	243%	-4%	NR
	2	565%	-3%	2%	615%	-3%	-3%	310%	10%	21%
Mason, Kubina, Valasa, & Cramer (2010) ^a	1	30%	-7%	NR	129%	-22%	NR	9%	1%	NR
Mills (2012) ^a	1	109%	NR	NR	156%	NR	NR	53%	NR	NR
	2	163%	no change	no change	225%	4%	4%	105%	48%	49%

Note. NR = not reported for code.

^a = the participants in these studies were a part of larger studies involving students with EBD. The individual data of the students with ASD could be teased out to compare to performance of students in present study.

In Cerar (2012) students received fluency instruction first and then were instructed on how to write a five-paragraph essay (see Table 18). The one male participant in Cerar (2012) diagnosed with autism showed increases in essay parts (1064%), essay quality (1000%) and number of words (800%) from baseline performance to post SRSD (5 paragraphs) (See Table 19). The student's results were further supported by 100% PNDs across all measures. Direct comparisons cannot be made between the current study and Cerar (2012) since the length of essays was longer, participants would have been expected to include more essay parts and more words as well as write an essay of higher quality than the current study. Cerar (2012) administered maintenance testing five weeks after the completion of multi-paragraph post testing; however, the individual with autism did not participate in maintenance testing.

Delano (2007a) used SRSD for vocabulary instruction to teach a 12-year-old male to increase the number of action and describing words he used in writing (see Table 18). Results indicated that from baseline to post SRSD, there were increases in both essay quality (160%) and number of words (714%) for the number of action words he wrote. Increases in essay quality (260%) and number of words (2203%) were also noted for the number of describing words written from baseline to post SRSD. Delano (2007a) had a revision component as the third phase of the study and results indicated that the student was able to improve his essay quality by 400% from baseline (see Table 19). Visual analysis revealed 100% PND across all three phases of study. Maintenance was assessed by Delano (2007a) two weeks following the completion of the revision intervention (see Table 18). Results from Delano (2007a) revealed that the number of action words written

by the student decreased 12%, the number of describing words decreased 8% and the number of revisions made by the student decreased 33% from post SRSD to maintenance (see Table 19). Despite these decreases, performance at maintenance remained above baseline performance.

Delano (2007b) used SRSD POW + TREE with video self-modeling to teach participants to write persuasive essays (see Table 18). Increases in performance were noted from baseline to post SRSD on the number of essay parts (458%) and the number of words written (561%) (see Table 19). Visual analysis of Delano (2007b) revealed 100% PNDs across all three participants for number of essay parts and number of words written from baseline through intervention. Maintenance performance was measured by Delano (2007b) 12 weeks after intervention. Decreases were noted in participant performance from post SRSD to maintenance in the number of essay parts (-25%) and number of words (-30%), indicating that students were not able to maintain the gains they had made in these two areas; however, performance at maintenance remained above baseline performance. Despite decreases noted at maintenance, performance of all three participants remained above baseline performance.

Hauth (2012), taught SRSD POW+TREE in the initial phase of instruction followed by a second phase where students were taught SRSD +Content. The two participants who were diagnosed with autism and received EBD services showed increases across both phases (see Table 18). For the initial phase, SRSD POW+TREE, there was a 482% increase in the number of essay parts, a 254% increase in the essay quality and a 243% increase in the number of words written. Visual analysis of Hauth

(2012) indicated 100% PND for number of essay parts, essay quality and number of words from baseline to post SRSD. In the second phase of Hauth (2012) there was a 565% increase in the number of essay parts, a 615% increase in the essay quality and a 310% increase in the number of words written (see Table 19). Visual analysis of Hauth (2012) indicated 100% PND for number of essay parts, essay quality and number of words from baseline to post SRSD + Content. Students were administered two maintenance essays, one SRSD essay four weeks after intervention and one SRSD + Content essay three weeks after intervention. Results indicated an 11% increase in the number of essay parts, an 85% increase in the essay quality and a 4% decrease in the number of words written by the two students with autism from post SRSD to maintenance (see Table 19). Despite the decrease noted in the number of words written at maintenance from post SRSD, performance remained above baseline. In the second phase of Hauth (2012), the two participants showed slight decreases in the number of essay parts (-3%) and essay quality (-3%) from post SRSD + Content, while there was a 10% increase in the number of words written (see Table 19). Despite the slight decreases noted for the number of essay parts and essay quality at maintenance + Content compared to post SRSD + Content, performance remained above baseline.

Mason et al. (2010) taught students with EBD to plan and write a persuasive essay in 10-minutes. Performance data for the one student diagnosed with autism was available so comparisons to the performance of students in the current study could be made (see Table 18). Increases were noted in the mean number of essay parts (30%), essay quality (129%), and number of words written (9%) from baseline to post SRSD instruction (see

Table 19). Visual analysis revealed 0% PND for number of essay parts and number of words written indicating that the intervention was ineffective in these two areas because the student wrote one essay at baseline and post SRSD with the same number of essay parts and words. However, it should be noted that there was less variability in the student's performance at post SRSD than at baseline. There was an 80% PND for the essay quality, indicating a moderate effect at increasing the quality of this particular individual's essays. Maintenance testing occurred one week after post SRSD. Decreases were noted in the number of essay parts (-7%), and essay quality (-22%), while there was a slight, 1% increase in the number of words written by this individual from post SRSD to maintenance. Despite the decrease in this participant's performance on number of essay parts and essay quality his performance on the singular essay was above his baseline performance.

Mills (2012) taught students with EBD to write persuasive essays using SRSD POW+TREE in phase I and then in phase II presented instruction in revisions (see Tables 20 and 21 for full study results). Two participants in this study also had a diagnosis of autism (see Table 18). The participants diagnosed with autism made gains from baseline to post SRSD in the number of essay parts (109%), essay quality (156%) and number of words (53%); these increases were supported by 100% PNDs for each participant. Gains were also noted from baseline to post revision in the number of essay parts (163%), essay quality (225%) and number of words (105%); these increases were also supported by 100% PND for both participants (see Table 19). Students were administered one persuasive essay prompt at maintenance seven weeks after revision post testing. There

was no change in participants' performance from post revision to maintenance on the number of essay parts. There was a 4% increase in essay quality and a 4% increase in number of words between post revision and maintenance. These results indicated that these two participants were able to maintain the skills learned during SRSD and revision instruction to write a good persuasive essay. It would be difficult to make direct comparisons between Mastropieri et al., 2009; 2010; 2012 and the current study because of the many variables between studies; however, their results are presented to provide possible insight into the broader effects of the SRSD intervention strategy.

In Mastropieri et al. (2009) there were 12 8th grade students with EBD who received SRSD POW+TREE intervention (see Table 20). Participants were initially instructed in the first phase to write a five paragraph essay, followed by a second phase in which students were taught to plan and write a one-paragraph essay in 10-minutes. No students in the study had a diagnosis of ASD. Overall mean performance for students indicated gains on all essay scoring measures from baseline to post SRSD. Increases were noted in the number of essay parts (198%), essay quality (153%), number of words (394%), and number of transition words (475%) from baseline to post SRSD (See Table 21), visual analysis supported these gains with 100% PND. Students received surprise maintenance testing 11.5 weeks after the post-fluency, phase II of the study. Decreases were noted across all scoring measures from post SRSD to maintenance in essay parts (-10%), essay quality (-1%), number of words (-27%), and transition words (-20%). Despite the decreases in performance between post SRSD and maintenance, performance

at maintenance remained above baseline indicating that students were able to retain and implement the strategy.

Table 20

Comparisons of Present and Reviewed SRSD Studies Involving Students with ASD and EBD

Study	Phase	Number of participants	Mean age	Grade	Disability category	Mean IQ	Design	Instruction provided	Mean hrs of instruction per phase	Weeks to maint/gen. ^b	Number of paragraphs taught
Allen Bronaugh (2013)	1	6 (5 m., 1 f.)	11.9	4 th , 6 th	HF ASD	NR	Multiple baseline multiple probe	1 to 1 on SRSD POW+TREE	6.9	6/6.5	1
	2							+Fluency	3.5	3/3.5	1
Cerar (2012)	1	7 (6 m., 1 f.)	13.1	7 th	EBD	100	Multiple baseline multiple probe	Fluency SRSD POW+TREE	17.8	8/8.5	NR
	2							Multi-paragraph	4.5	5/5.5	NR
Hauth (2012)	1	8 (7 m., 1 f.)	13.7	8 th	EBD	100	Multiple baseline multiple probe	SRSD POW+TREE	5.4	7/4	NR
	2							+Content	2.75	6/3	NR
Mason, Kubina, Hoover (2011)	1	3 m	16.3	9 th , 11 th	EBD	NR	Multiple probe	1 to 1 on SRSD POW+TREE Quick Write	3	2	1
Mason, Kubina, Valasa, & Cramer (2010)	1	5 m.	13.5	7 th , 8 th	EBD	NR	Multiple probe multiple baseline	1 to 1 on SRSD POW+TREE Quick Write	3	1	1

Study	Phase	Number of participants	Mean age	Grade	Disability category	Mean IQ	Design	Instruction provided	Mean hrs of instruction per phase	Weeks to maint/gen. ^b	Number of paragraphs taught
Mastropieri et al. (2009)	1	12 (11 m., 1 f.)	13.8	8 th	EBD	88.5	Multiple baseline design study	Small group on SRSD POW+TREE	NR	NR	5
	2							+ Fluency	29	11.5	1
Mastropieri et al. (2010)	1	10 (8 m., 2 f.)	13.9	7 th , 8 th	EBD	NR	Design experiment	Small group on SRSD POW+TREE	26.6	12	5
Mastropieri et al. (2012)	1	12 m.	13.2	7 th , 8 th	EBD	97	Multiple baseline multiple probe	Small group instruction SRSD POW+TREE	12	3/3.5	5
	2							+ Fluency	2.25	2/2.5	1
Mills (2012)	1	10 (7 m., 3 f.)	13.6	8 th	EBD	102	Multiple baseline multiple probe	Small group instruction SRSD POW+TREE	6.9	NR	NR
	2							+ Revisions	7	7/1day	NR

Note. NR = not reported for code.

^b = Weeks to maintenance and generalization were calculated from the end of the phase to administration of maintenance and generalization measures.

Table 21
Comparisons of Percentage Changes between Present and Reviewed SRSD Studies

		Number of essay parts			Essay quality			Number of words			% change in number of sentences			% change in number of transition words		
Study	Phase	Baseline to post phase	Post phase to main	Post phase to gen	Baseline to post phase	Post phase to main	Post phase to gen	Baseline to post phase	Post phase to main	Post SRSD to gen	Baseline to post phase	Post phase to main	Post phase to gen	Baseline to post phase	Post phase to main	Post phase to gen
Allen Bronaugh (2013)	1	278%	12%	-5%	277%	10%	-5%	215%	-9%	-22%	307%	-3%	-22%	549%	14%	-16%
	2	478%	-6%	-21%	404%	1%	-27%	109%	-8%	-8%	231%	-15%	-17%	922%	-12%	-11%
Cerar (2012)	1	231%	-24%	-28%	242%	-24%	-22%	96%	4%	0.35%	292%	-0.19%	-6%	630%	7%	-10%
	2	227%	-7%	-9%	218%	3%	0.37%	288%	-1.50%	-2%	829%	2%	8%	1042%	4%	6%
Hauth (2012)	1	481%	2%	NR	456%	3%	NR	233%	-8%	NR	288%	-3%	NR	310%	-11%	NR
	2	551%	-9%	-0.41%	5%	-4%	2%	265%	247%	-5%	337%	3%	-7%	292%	6%	-2%
Mason, Kubina, Hoover (2011)	1	61%	0.27%	NR	65%	88%	NR	53%	15%	NR	NR	NR	NR	NR	NR	NR
Mason, Kubina, Valasa, & Cramer (2010)	1	22%	-3%	NR	77%	3%	NR	13%	-11%	NR	NR	NR	NR	NR	NR	NR

		Number of essay parts			Essay quality			Number of words			% change in number of sentences			% change in number of transition words		
Study	Phase	Baseline to post phase	Post phase to main	Post phase to gen	Baseline to post phase	Post phase to main	Post phase to gen	Baseline to post phase	Post phase to main	Post SRSD to gen	Baseline to post phase	Post phase to main	Post phase to gen	Baseline to post phase	Post phase to main	Post phase to gen
Mastropieri et al. (2009)	1	198%	-10%	-30%	153%	-1%	-22%	394%	-27%	-31%	NR	NR	NR	475%	-20%	-42%
	2	209%	NR	NR	162%	NR	NR	326%	NR	NR	NR	NR	NR	525%	NR	NR
Mastropieri et al. (2010)	1	95%	-15%	NR	70%	-14%	NR	179%	-25%	NR	NR	NR	NR	589%	-66%	NR
Mastropieri et al. (2012)	1	219%	3%	no change	159%	7%	5%	237%	-10%	-10%	269%	-5%	-6%	866%	-11%	-9%
	2	208%	-4%	-5%	157%	-13%	-10%	133%	-32%	-4%	95%	4%	-8%	467%	4%	-3%
Mills (2012)	1	90%	NR	NR	113%	NR	NR	42%	NR	NR	NR	NR	NR	NR	NR	NR
	2	85%	3%	2%	114%	9%	7%	40%	9%	9%	NR	NR	NR	NR	NR	NR

Mastropieri et al. (2010) reported there was one individual with autism in the study involving a total of 10 7th and 8th grade males who received services for EBD. Individual data for the one student with autism could not be teased out from the larger study data to report their individual performance. Mastropieri et al. (2010) taught students to write multi-paragraph persuasive essays using SRSD POW+TREE (see Table 20). Increases were noted across all essay scoring measures from baseline to post SRSD. There was an increase of 95% in the number of essay parts, 70% in the essay quality, 179% in the number of words, and 589% in the number of transition words (see Table 21). Maintenance occurred twelve weeks after post SRSD and results indicated decreases across all scoring measures. Decreases were noted between post SRSD and maintenance in the number of essay parts (-15%), essay quality (-14%), number of words (-25%), and the number of transition words (-66%). Despite the decreases noted at maintenance, performance on all essay measures remained above baseline.

Mastropieri et al. (2012) reported there were four individuals with autism in the study involving a total of 12 7th and 8th grade males who received services for EBD (see Table 20). Individual data for the four students with autism could not be teased out from the larger study data to report their individual performance. Mastropieri et al. (2012) initially taught students to write multi-paragraph essays in phase I of the intervention followed by phase II where students were taught how to write fluently. Increases were noted across all essay scoring measures from baseline to post SRSD. There was an increase of 219% in the number of essay parts, 159% in the essay quality, 237% in the number of words, 269% in the number of sentences, and 866% in the number of

transition words (See Table 21), all increases were supported by 100% PNDs.

Maintenance occurred three weeks after post SRSD and results indicated a 3% increase in the number of essay parts and a 7% increase in the essay quality between the two phases. Decreases were noted between post SRSD and maintenance in the number of words (-10%), number of sentences (-5%), and the number of transition words (-11%). Despite the decreases noted at maintenance, performance on all essay measures remained above baseline.

Previous research has reported that students with ASD have difficulty coming up with ideas in order to write and that organizational issues may be a reason students with AS have difficulty with written expression (Church, Alisanski & Amanullah, 2000; Whitby & Mancil, 2009). SRSD provides students with a graphic organizer initially to explicitly teach them how to organize, come up with ideas and plan an essay prior to writing which helps them with organization. Pennington and Delano (2012) reported that previous studies using SRSD improved the writing performance of students with ASD demonstrating that the strategy was effective. Results from the current study indicated that six 4th and 6th grade students with high functioning ASD were able to increase the number of persuasive essay parts, essay quality, number of words, sentences, and transition words after receiving SRSD POW + TREE persuasive writing instruction. These results were supported by the positive results of other research studies involving students with ASD (Asaro & Saddler, 2009; Asaro-Saddler & Saddler, 2010; Delano, 2007a, 2007b). Additional studies that included students with autism (Cerar, 2012; Hauth, 2012; Mason et al., 2010; Mills, 2012) and the current study add to the body of

research that has demonstrated SRSD intervention is a beneficial strategy for improving the writing performance of students with ASD.

Fluency performance. The second research question asked: *Will students be able to learn to write fluently following mastery of the skills learned in writing an untimed one-paragraph essay to planning and writing essays in 10-minutes on immediate and maintenance measures?* Previous SRSD writing intervention studies focusing on individuals with ASD (Asaro & Saddler 2009; Asaro-Saddler & Saddler, 2010; Delano 2007a, 2007b) did not contain a fluency instruction component. Other studies that primarily focused on teaching students with EBD to plan and write a one-paragraph essay fluently (Cerar, 2012; Mason, et al., 2010; Mason, Kubina, and Hoover, 2011; Mastropieri et al., 2009; 2012) have reported varied results. It would be difficult to make direct comparisons between these studies and the current effort because of the many variables between studies; however, their results are presented to provide possible insight into the broader effects of the SRSD intervention strategy. For ease of presentation, results of baseline to post-fluency are discussed first followed by a discussion of post-fluency to maintenance results.

In Phase II of this study, Fluency, students were taught to use what they learned in Phase I, SRSD Intervention, to plan and write a one-paragraph essay in 10-minutes (See Tables 19 - 21 for study results). In order to be able to evaluate effectiveness of the fluency instruction, participants wrote one fluency essay at baseline and three essays at post-fluency. Increases were noted across all essay scoring measures from baseline fluency to post-fluency. There was a 478% increase in the number of essay parts, 404%

in essay quality, 109% in number of words, 231% in number of sentences and 922% in number of transition words between baseline fluency and post-fluency. Visual analysis revealed (see Figures 1 - 6, and Table 6) five participants (Jason, Carter, Sandy, Rocky and Neil) demonstrated 100% PND for the number of essay parts and essay quality, indicating that fluency intervention had a large effect on their ability to increase the number of essay parts and improve essay quality. For essay parts and essay quality, Drew wrote one essay at post-fluency that contained the same number of essay parts and one essay that had a lower quality than his baseline fluency essay. Visual analysis of Drew's performance revealed 66% PND indicating the intervention had a small effect on increasing his performance on these measures. For the number of words and sentences, five of the participants (Jason, Drew, Carter, Rocky and Neil) demonstrated 100% PND indicating a large effect. Sandy's essays at post-fluency contained fewer words and sentences than her single baseline fluency essay resulting in 0% PND, indicating an ineffective intervention. These results should be interpreted with caution because, although Sandy wrote fewer words and sentences at post fluency, her essay quality was much higher than at baseline. All participants demonstrated 100% PND from baseline fluency to post-fluency for number of transition words, indicating a large effect. Overall, participant performance between baseline fluency and post fluency resulted in a large effect, 94.33% PND, for essay parts and essay quality; a moderate effect, 83.33% PND, for number of words and sentences and a large effect, 100% PND, for number of transition words.

In the current study, student performance from post-fluency to maintenance was

compared to see if students could maintain their fluency skills to plan and write three weeks after fluency instruction. Except for a 1% increase in essay quality, performance in all other essay measures decreased (see Tables 19 & 21). There was a 6% decrease in number of essay parts, an 8% decrease in number of words, a 15% decrease in number of sentences and a 12% decrease in number of transition words. While participants' performance on all essay measures remained above baseline fluency performance, decreases were noted in participants' ability to maintain the skills demonstrated three weeks earlier at post-fluency performance levels. Visual analysis revealed (see Figures 1 - 6, and Table 6) 100% PND across all participants from post-fluency to maintenance fluency for the number of essay parts, essay quality and transition words indicating a large effect. Five participants (Jason, Drew, Carter, Rocky and Neil) demonstrated 100% PND for the number of words and sentences, indicating a large effect and that they were able to maintain what they had learned during fluency instruction at maintenance fluency. Sandy's essay at maintenance fluency contained fewer words and sentences resulting in 0% PND, indicating an ineffective intervention. Overall performance across all participants for number of words and sentences written resulted in an 83.33% PND indicating a moderate effect. However, this data needs to be interpreted with caution, as participants wrote three post fluency essays and only one maintenance fluency essay.

Cerar (2012) provided small group instruction to seven students with EBD in 7th and 8th grade; one 7th grade, 13 year-old male student was identified with autism in addition to receiving EBD services. See Table 19 for a comparison of the current study to Cerar (2012). From baseline to post-fluency, the student with autism showed a 158%

increase in number of essay parts, a 267% increase in essay quality and a 30% increase in number of words written. Visual analysis of the one student in Cerar (2012) with autism, revealed 100% PND for essay parts, quality and number of words written. The student identified with autism refused to participate in maintenance measures (see Table 19).

Mason, et al. (2010) conducted a multiprobe multiple baseline design to evaluate the effectiveness of a 10-minute persuasive quick write (same as the fluency phase in the current study) response using SRSD. Four 7th and one 8th grade student with EBD received one-on-one instruction. The 14.5 year old, 8th grade male in the study had a diagnosis of autism (see Table 19 for study results for the one student diagnosed with autism and Table 21 for complete study results). From baseline to post-fluency, the student with autism had a 30% increase in number of essay parts, a 129% increase in essay quality and a 9% increase in number of words written. Visual analysis of Mason et al. (2010) revealed 80% PND for essay quality indicating a moderately effective intervention for the individual with autism and his ability to increase the quality of his writing after instruction. Visual analysis of Mason et al. (2010) revealed 0% PND for both essay parts and number of words written, which would indicate that the intervention for the individual with autism was ineffective in increasing the number of parts and words written after instruction. The one student displayed similar varied results, a 7% decrease in number of essay parts, a 22% decrease in essay quality and a 1% increase in number of words written from post-fluency to maintenance. Visual analysis revealed 0% PND for number of essay parts, essay quality and number of words written indicating the

intervention was ineffective in maintaining post-fluency performance of the student with autism.

Mason, et al. (2011) replicated and extended the Mason et al. (2010) study. Three male high school students with EBD, one in 9th grade and two in 11th grade, received from five to seven, 30-minute, one-on-one sessions (see Table 20). None of the students had a diagnosis of ASD. From baseline to post-fluency, student performance increased 61% for essay parts, 65% for essay quality and 53% for number of words written (See Table 21). Visual analysis varied for the three participants based on data presented in Mason et al. (2011). Visual analysis of essay parts across the three participants showed a 68% PND (range of 17 – 100% PND), indicating the intervention had a small overall effect increasing the number of essay parts written from baseline to post-fluency. Visual analysis of the essay quality across the three participants revealed a 79% PND (range of 66 – 100% PND), indicating the intervention had a moderate overall effect improving the essay quality from baseline to post-fluency. Finally, visual analysis of the number of words across the three participants revealed a 68% PND (range of 17 – 100% PND), indicating the intervention had a small overall effect increasing the number of words written from baseline to post-fluency. Students' performance from post-fluency to maintenance was essentially static (0.27% increase) for number of essay parts but increased 88% for essay quality and 15% for number of words written (see Table 21). Visual analysis was varied for the three participants (Mason et al., 2011). Visual analysis of essay parts showed a 50% PND (range of 0 – 100% PND) for the three students, indicating the intervention had a small overall effect improving the number of essay parts

written from post-fluency to maintenance. Visual analysis of essay quality revealed an 83% PND (range of 50 – 100% PND), indicating the intervention had a moderate overall effect improving the three students essay quality from post-fluency to maintenance. Finally, visual analysis of number of words indicated a 66% PND (range of 0 – 100% PND) for the three students, signifying the intervention had a small overall effect improving the number of words written from post-fluency to maintenance.

The Mastropieri et al. (2009) study involved 12 middle school students with EBD, none of whom had a diagnosis of autism, therefore a direct comparison can not be made between the current study and this study; however, the data is of interest to see how students with other disabilities performed on fluency measures (see Tables 20 and 21). Students were instructed in small groups and received a total of 29 hours of instruction to learn how to write a five-paragraph essay as well as how to plan and write a one-paragraph essay in 10 minutes. Results indicated an increase of 209% in the number of essay parts, 162% in essay quality, 326% in number of words and a 475% in number of transition words. Visual analysis of essay parts and essay quality indicated a 100% PND from baseline to post-fluency.

While four of the 12 middle school students with EBD in the Mastropieri et al. (2012) study were also identified as having autism, a direct comparison of results with the current study cannot be made because the individual data for the Mastropieri et al. (2012) students with autism could not be teased out from the data presented (see Tables 20 and 21 for study results). The Mastropieri et al. (2012) study taught students to write 5-paragraph essays that contained a minimum of three sentences per paragraph prior to

teaching students to plan and write a one-paragraph fluency essay in 10 minutes.

Mastropieri et al. (2012) students received three 40-minute small group fluency sessions to reach mastery. Visual analysis of essay parts and essay quality included in Mastropieri et al. (2012) indicated 100% PND; figures were not included for the other measures to report PNDs. Results indicated an increase of 208% in the number of essay parts, 157% in essay quality, 133% in number of words, 95% in number of sentences and 467% in number of transition words between baseline and post-fluency. The students in the Mastropieri et al. (2012) study had varied results from post-fluency to maintenance. Student performance increased 4% for number of sentences and 4% for number of transition words; performance decreased for essay parts (-4 %), essay quality (-13%) and number of words (-32%). Visual analysis of Mastropieri et al. (2012) data indicated 0% PND across all groups for mean number of essay parts and essay quality; figures were not included for the other measures to report PNDs.

Overall, participants in the current study increased their performance on all measures from baseline fluency to post-fluency as shown in Tables 19 & 21. However, other than a slight increase in essay quality, participant performance decreased between post-fluency and maintenance. The current study extended previous SRSD writing studies focusing on individuals with high functioning ASD by teaching students to plan and write a one-paragraph essay in 10-minutes. Learning how to plan and write fluently is an important skill for students to master because many times in school they are asked to perform writing tasks in a short amount of time and it is important for students to be able to write a high quality essay in a defined, often short, amount of time.

Further research is needed in the area of fluency instruction involving individuals with ASD before more implications can be discussed. Results from the present study suggest fluency instruction can help students with high functioning ASD plan and write a good persuasive essay in 10-minutes. The results from the current study replicate and extend previous work teaching students with other disabilities to write essays fluently (Cerar, 2012; Mason et al. 2010; Mason et al. 2011; Mastropieri et al., 2012).

Generalization performance. The third research question asked: *Will students be able to generalize the use of the POW + TREE strategy to other academic content areas?* In the current study, generalization took place three weeks after the final day of post-fluency testing. The generalization fluency essay probe was administered following the generalization probe. See Tables 19 & 21 for results of this study.

The performance of all participants in this study improved from both baseline to generalization and from baseline fluency to generalization fluency as noted by 100% PND for number of essay parts, essay quality and number of transition words. Five participants (Jason, Drew, Carter, Rocky and Neil) also demonstrated large effects (100% PND) from baseline to generalization for number of words and sentences. Sandy, on the other hand, wrote fewer words and sentences on her one generalization essay compared to her mean baseline performance, indicating an ineffective intervention (0% PND). However, Sandy only wrote one essay at generalization compared to three essays at baseline, so results need to be interpreted with caution. Overall performance across participants for number of words and sentences written between baseline and generalization resulted in 83.33% PND.

From post SRSD to generalization, participants' performance decreased on every scoring measure in the current study. There was a decrease of 5% in the number of essay parts, a decrease of 5% in essay quality, a decrease of 22% in both number of words and number of sentences and a decrease of 16% in number of transition words written. While these decreases were noted between post SRSD and generalization, performance on all measures remained above baseline.

Student performance from post-fluency to generalization fluency was compared to see if students could generalize how to write persuasive essays fluently three weeks after learning to use the SRSD POW+TREE strategy to plan and write 10-minute essays. Decreases were noted across all essay scoring measures. There was a 21% decrease in the number of essay parts, a 27% decrease in essay quality, an 8% decrease in number of words a 17% decrease in the number of sentences, and a 11% decrease in the number of transition words. Although performance scores declined from post fluency to generalization fluency, performance on all essay measures remained above baseline fluency levels. These results indicate that while participants in the current study were able to generalize their skills to other academic writing tasks, they were unable to maintain the level of performance exhibited immediately following fluency instruction indicating that they had difficulty retaining the learned skill.

Only two of the studies that focused on students with ASD evaluated generalization performance (Asaro-Saddler & Saddler, 2010; Delano, 2007b). Asaro-Saddler and Saddler (2010) investigated participants' ability to generalize what they were taught during SRSD POW+WWW intervention by asking them to write an expository

essay four weeks later. Results, as shown in Table 19, revealed a 100% increase in number of essay parts, a 199% increase in essay quality and a 104% increase in the number of words written from post SRSD to generalization.

Generalization performance was measured by Delano (2007b) through expository writing probes throughout each phase of the study. The graphs presented by Delano (2007b) for the number of essay parts and number of words written by each of the three participants indicated 100% PND for all three participants. Between the baseline generalization probe and a generalization probe administered during post SRSD, there was a 458% increase in the number of essay parts and a 561% increase in the number of words. There was an increase of 194% in number of essay parts and 399% in number of words from post SRSD instruction to generalization (see Table 19).

As in other sections of this chapter, the findings of several studies that focused primarily on students with EBD (Cerar, 2012; Hauth, 2012; Mastropieri et al., 2009; 2012; Mills, 2012) are reviewed to see if possible comparisons can be made between the results of these studies and the current study, and whether, based on the accumulated information, general conclusions about the utility of the SRSD intervention strategy can be drawn. Two other studies that have been reviewed in other sections, which focused on teaching students with EBD to write essays fluently, did not contain generalization results (Mason et al., 2010; Mason et al., 2011).

Cerar (2012) results varied between post-fluency and generalization fluency; a very small increase, 0.35%, was noted in student performance on the number of words written while decreases were noted in the number essay parts (-28%), essay quality

(-22%), the number of sentences (-6%) and number of transition words (-10%) (see Table 21). While results varied, overall mean performance of students at generalization fluency remained above baseline performance. Comparing post multi-paragraph performance to generalization performance in Cerar (2012), increases were noted in essay quality (0.37%) as well as the number of sentences (8%) and transition (6%) words while decreases were noted in essay parts (-9%) and the number of words (-2%) (see Table 21). Overall mean performance of students at multi-paragraph generalization remained above mean baseline performance. Although results for the one student diagnosed with ASD in the Cerar, 2012 study were broken out separately, he refused to participate in the maintenance and generalization portions of that study so results discussed here are for the study's other seven students.

In Hauth (2012), two of the eight students with EBD also received services for autism. Students were administered a generalization probe 3 weeks after post SRSD + Content in students' math class, where students were asked to write a persuasive essay on the use of the mnemonic for order of operations (PEMDAS; Hauth, 2012). Students' performance from post SRSD + Content to generalization increased 2% for the essay quality. Decreases were noted on all other essay measures. There was a 0.41% decrease on essay parts, a 5% decrease on words, 7% decrease for sentences and a 2% decrease on transition words (Hauth, 2012) (see Table 21). The results for the two individual students in Hauth (2012) with a diagnosis of autism were slightly more varied than the overall performance of the eight students. Increases were noted in performance from post SRSD + Content to generalization for the number of essay parts (2%) and the number of words

(21%), while there was a slight decrease in the essay quality (-3%) of their essays.

Despite decreases noted at generalization, performance for all students remained above baseline (see Table 21).

Mastropieri et al. (2009; 2012) also conducted generalization probes (See Tables 20 and 21 for results of both studies). In Mastropieri et al. (2009) generalization probes occurred 11.5 weeks after the post-fluency phase of instruction. In the Mastropieri et al. (2009) study a slight decrease was noted in student performance from the post-fluency phase to the generalization phase; however, student performance remained above baseline. There was a 30% decrease in essay parts, a 22% decrease in essay quality, a 31% decrease in number of words, and a 42% decrease in the number of transition words used from post SRSD to maintenance.

Results from Mastropieri et al. (2012) post SRSD to generalization were mixed. Students were administered a generalization probe 3 weeks after the completion of post SRSD and a generalization fluency probe 2 weeks after the completion of post-fluency. On the generalization probe, students' performance on essay parts remained stable and essay quality improved by 5%; however, students wrote 10% fewer words, 6% fewer sentences and 9% fewer transition words. Student performance on generalization fluency probes compared to post-fluency performance decreased slightly; however, performance was higher than at baseline. Students wrote 5% fewer essay parts, had a 10% decrease in essay quality, 4% fewer words, 8% fewer sentences and 3% fewer transition words.

In Mills (2012), two of the 10 students with EBD also received services for autism (see Table 20). Students in Mills (2012) received one generalization testing

prompt immediately following revision post testing. All ten students made slight improvements from post revision to generalization in the number of essay parts (2%), essay quality (9%) and number of words written (9%) (Mills, 2012) (see Table 21). The two students with autism in the study had no change in their performance at generalization compared to post-revision in essay parts; they had a 4% increase in essay quality and a 49% increase in the number of words written (see Table 21).

Comparisons between the current study and the other studies discussed must be made with caution. There were differences, sometimes significant, in the time span between completion of interventions and administration of generalization essay probes in the various studies, the method and length of intervention, setting for intervention, as well as number, age, capability of participants. While the participants in the current study were younger than those in the majority of the other studies, their performance was similar to many of the other studies. These results demonstrated the positive effects of SRSD writing intervention for students with autism and suggest students with autism are able to generalize the skills they learned during instruction to other academic tasks. However, it is unknown how long students can maintain these gains post intervention. While students could maintain their gains at generalization fluency, not all results were statistically significant even though performance remained above baseline fluency performance. It might be beneficial to provide students with ASD a booster session to refresh their knowledge of the SRSD strategy prior to writing fluency essays.

Previous SRSD writing studies involving only individuals with ASD (Asaro & Saddler 2009; Asaro-Saddler & Saddler, 2010; Delano 2007a, 2007b) did not contain a

fluency instruction component. Therefore, the current study extended previous SRSD writing studies focusing on individuals with high functioning ASD by including a fluency phase to teach participants how to plan and write a one-paragraph essay in 10-minutes. Learning how to plan and write fluently is an important skill for students to master because many times in school they are asked to perform writing tasks in a short amount of time and it is important for students to be able to write a high quality essay in that short amount of time. Church et al. (2000) stated that students with ASD typically have difficulty coming up with ideas and organizing their thoughts for essays. Having to write an essay with a minimum of eight essay parts in 10 minutes may have been more difficult for students with ASD due to the difficulties discovered by Church et al. (2000). Further research is needed in the area of generalization skills involving individuals with ASD before more implications can be discussed.

On-task behavior. The fourth research question asked: *What levels of on-task behavior do students demonstrate during SRSD instruction, fluency instruction and generalization instruction?* On-task behavior during academic tasks has been reported to have an effect on academic achievement (Mastropieri & Scruggs, 2006); therefore, on-task behavior was collected during instructional lessons for this study. In the current study, six high functioning participants in grades four and six, with no reported behavioral issues were seen one-on-one. As a result, each student had the researcher's focused attention, and they did not have to compete with other participants for the instructor's attention. On-task behavior was observed and coded using 69 videos that were recorded during every instructional lesson provided to the participants in each phase

of the intervention. On-task behavior data yielded a mean of 92.33% ($SD = 5.50\%$, range of 83 to 99%). Rocky who was seen at an after school program had the lowest on-task behavior (83%) of all the participants. The after school setting at times was loud and there were distractions as students came and went through the area in which instruction occurred, all of which may have affected Rocky's on-task behavior. Even though Rocky had the lowest on-task behavior he completed the intervention in the same number of days as Sandy who had the second highest score. If he had been on-task more during the study, Rocky might have mastered the strategy even faster. Carter, Drew and Jason all had similar on-task behavior scores (90%, 93% and 93% respectively) and were the three students who struggled the most with writing. Sandy and Neil who had the highest on-task behavior (96% and 99% respectively) were hard workers and very focused during instruction, which played an important role in their achievement during the study.

The previous SRSD intervention studies that focused on students with ASD (Asaro & Saddler, 2009; Asaro-Saddler & Saddler, 2010; Delano, 2007a, 2007b) did not report on-task behavior data. Other SRSD intervention studies, primarily involving students with EBD, (Cerar, 2012; Mastropieri et al., 2009; 2010; 2012; Mills, 2012) did collect on-task behavior data but study differences make direct comparison difficult. For instance, even though each of the studies included at least one student also diagnosed with ASD, only Mills (2012) reported scores for individual students. In Cerar (2012) the overall on-task behavior across participants was 68%. In Mastropieri et al. (2009) the overall on-task behavior was 72%, while the overall on-task behavior in Mastropieri et al. (2010) was 72%. Mastropieri et al. (2012) reported among the highest on-task behavior

of any of the studies involving students with EBD who also had autism at 94%. The overall on-task behavior in Mills (2012) was 75.86%. While the two students with autism in Mills (2012) functioned at a high average to superior intellectual range, they had behavior issues and were seen in small groups that may have led to additional distractions and their lower on-task behavior scores (65.35%). The students in the current study, on the other hand were younger, had high functioning autism, had no behavioral issues and were not competing with other participants for the instructor's attention. Further research is required to determine what factors effect on-task behavior and to what extent on-task behavior is related to academic achievement of study participants.

Social validity. The fifth research question asked: *Will student perceptions and attitudes of themselves as a writer change as a result of the intervention?* Two measures were used to assess if participants' attitudes changed as a result of the intervention (a self-efficacy measure and an attitudes measure), in addition an individual interview was conducted. The self-efficacy measure was administered at baseline, during post SRSD and during maintenance. The attitude measure was administered at baseline and post SRSD. The student interview occurred at the completion of the study. Each measure will be discussed separately.

Self-efficacy. Self-efficacy is a skill all students develop in order to have confidence in their ability to attain a goal (Bandura, 2006). In this study, students were taught to set goals for writing as well as to use positive self-statements before, during and after writing a persuasive essay. There was an 18% increase in self-efficacy of

participants from baseline to post SRSD. There was a slight decrease (2%) from post SRSD to maintenance; however, performance at maintenance was 16% higher than at baseline. Overall participants made statistically significant gains on the self-efficacy measures from baseline to post SRSD and from baseline to maintenance. However, there is little data on too few participants at this time to validate this measure. Previous writing intervention studies focusing on students with ASD (Asaro & Saddler, 2009; Asaro-Saddler & Saddler, 2010; Delano, 2007a, 2007b) did not report self-efficacy results. There is value in finding a measure that is able to detect changes in a student's self-efficacy. A change in self-efficacy for students with ASD as well as any other disability is important and may impact other aspects of their life. The results of this study provide a preliminary assessment that must await further replication using this measure.

Attitudes measure. Participants did not make statistically significant gains on the attitudes measure from baseline performance to post SRSD. Previous research conducted by Mastropieri et al. (2009; 2010; 2012) had not reported statistically significant results with this measure either. The short time period between administrations (baseline and post SRSD) of this measure may not have been sufficient to allow students' attitudes about writing to change. After writing an essay, participants recorded the number of persuasive essay parts they wrote and set goals to include more essay parts in the next essay. Writing more than two essays containing eight persuasive essay parts may have provided more time for participants overall attitude about writing to change. Assessing their attitude after learning how to write a persuasive essay in 10 minutes may have resulted in a bigger change in their overall attitude. Administering this measure at post-

fluency and again during maintenance and generalization would have provided more data points to compare student attitudes. Post study interviews revealed that students who had not liked to write prior to the study now felt that they were faster and more effective. Carter stated that he did not like to write prior to the intervention, but that after the intervention he enjoyed writing. Rocky stated that writing was one of his favorite things to do now. Collecting data using the attitude measure more often during the study may have provided more opportunity for students to communicate changes in their attitudes.

Individual interview. Participants were interviewed at the completion of the study. All students were able to accurately recall the POW+TREE mnemonic. The majority of the participants were able to draw the graphic organizer they had been taught to use during the instructional portion of the study. All the students reported that they had become better writers after learning the strategy and they thought the strategy would be useful for other students. Participants stated that the strategy was “easy to remember” and “effective for writing essays.” All participants agreed that the POW+TREE strategy had helped them to become better writers. They believed that their papers were more organized, that they liked to write and that they weren’t “lazy” when it came to writing. None of the participants reported using the POW+TREE strategy in classes at school. The results of the social validity interview in the current study, replicated results reported by Asaro-Saddler and Saddler (2010) for individuals with ASD. The findings of this study are similar to those reported in other studies involving SRSD writing instruction focused on individuals with different disabilities that conducted social validity interviews (Cerar, 2012; Cuenca-Sanchez et al., 2012; Hauth, 2012; Mason, et al., 2010; Mastropieri

et al., 2009; 2010; 2012; Mills, 2012). The students in Mastropieri et al. (2009) commented that they liked writing the essay in 10 minutes because they could focus for 10 minutes and be done with writing. In the current study, Drew, who took four days to reach mastery during fluency, stated that he preferred the 10-minute fluency essays to the untimed essays because he did not like to write and he liked knowing he could be done in 10 minutes; however, he was still frustrated at having to make sure his essay included at least eight essay parts in the shortened amount of time. These findings would appear to indicate that students were receptive to interventions utilizing SRSD instruction and believed that the instruction had improved their writing ability.

Parent perspectives. The sixth research question asked: *Will parents report a change in their children's attitudes about writing as a result of the intervention?* This study extends previous SRSD intervention studies (Asaro & Saddler, 2009; Asaro-Saddler & Saddler, 2010; Cerar, 2012; Cuenca-Sanchez et al., 2012; Delano, 2007a, 2007b; Hauth 2012; Mastropieri et al., 2009; 2010; 2012; Mills, 2012) by adding a parental interview component. Because the intervention in the current study was not executed in schools, the researcher had more direct contact with parents than researchers conducting studies in school during the school day but had no direct contact with any of the participants' teachers. Obtaining a parent perspective about the research provided additional information on the benefits of the intervention that other studies have not investigated. Since parents witness firsthand the frustrations their child experiences with writing, they were able to detect and then report any changes to the researcher. In general parents reported that the outcomes they had hoped for by their child participating in the

study had been met. Sandy's mom felt Sandy was less intimidated by writing tasks. Sandy's mother also reported that Sandy's teacher had commented to her that Sandy was doing much better with writing tasks at school since participating in the intervention. Specifically Sandy's mom said the teacher shared that Sandy was not as reluctant to start writing tasks and had more confidence in her ability to complete writing assignments. All parents discussed improvements in their child's confidence about writing, the fact that their child was better able to organize their paper and that they noticed their child completed writing assignments quicker. Incorporating parent interviews into future research to determine if parents can detect any changes in their child's attitude or aptitude towards writing would be beneficial. If parents reported a perceptible change in their child's confidence and abilities, post SRSD intervention, especially as it related to homework and other at home writing tasks (letters, e-mails, etc.), it would indicate that skills learned during interventions were being transferred to other settings. This information would be further affirmation of the benefits of SRSD intervention and would be beneficial to collect in future research.

Knowledge of Persuasive Essay Parts

Participants were administered persuasive essay knowledge probes at baseline, during SRSD instruction, post SRSD, fluency instruction, post-fluency, and during the maintenance phase of the study. These probes were administered to determine each participant's knowledge of the parts of a persuasive essay. Participants needed to state the following essay parts successfully: topic sentence, three reasons, three explanations, ending and examine in order to get credit. Comparing participant's performance from

baseline throughout the different phases of the intervention showed students learned the parts of a persuasive essay and were able to maintain their knowledge. The results from this measure comparing baseline to maintenance performance indicated that participants learned the parts of a persuasive essay and were able to maintain the learned knowledge. Previous studies investigating writing with students with ASD did not include a measure to investigate participant's knowledge of persuasive essay parts. The results of this investigation were similar to those in Cerar (2012); Cuenca-Sanchez, et al., (2012); Hauth (2012); Mastropieri et al. (2009; 2010; 2012); and Mills (2012) in which students demonstrated an ability to identify persuasive essay parts after learning the POW+TREE strategy. The results of this study, although preliminary, suggest that the use of the POW+TREE mnemonic was, in fact, a very effective tool for students with ASD to recall the parts of a persuasive essay. Further replication using this measure is needed when investigating the writing instruction of students with high functioning ASD.

Standardized Writing Measure

The Woodcock Johnson III (WJIII) writing fluency subtest (Woodcock, McGrew, & Mather, 2001b) was administered to participants to assess their writing fluency prior to intervention and then post intervention in order to compare performance. At baseline, based on the WJIII writing fluency subtest, students were functioning at a mean grade of 3.77 and a mean age of 9.22, while the actual mean age of the students was 11.93. Jason, the oldest student in the study had the lowest performance on the WJIII writing fluency subtest (grade 1.0, age 5.9) and he was the one student in the study who took the longest to master the SRSD writing intervention. At post-SRSD administration the mean grade

of students based on their performance on the WJIII writing fluency subtest was 4.18, with a mean age of 9.47. Individually student's performance was varied, while four of the participants made gains in their performance (Jason, Carter, Rocky and Neil), two participants (Sandy and Drew) showed decreases in their performance from baseline. Overall the participant performance changes on the WJIII writing fluency subtest were not statistically significant. There was only a 2.69% increase in the standard scores for the participants between baseline ($M = 80.83$) and post SRSD ($M = 83.00$) administration of the WJIII writing fluency subtest. Despite the lack of statistically significant results, the performance of four students improved slightly when looking at the range of scores between baseline and post SRSD. Overall performance of the participants on this measure was slightly below average at baseline and post SRSD administration. Scores on the WJIII writing fluency subtest supported research stating that students with ASD have difficulty with writing and often perform below grade expectations (Ozonoff & Jenson, 1999).

Previous SRSD intervention studies involving students with ASD did not administer the WJIII writing fluency subtest (Asaro & Saddler, 2009; Asaro-Saddler & Saddler, 2010; Delano, 2007a, 2007b). Previous studies involving students with EBD (Cerar, 2012; Cuenca-Sanchez et al., 2012; Mason, et al., 2011; Mastropieri et al., 2009; 2010; 2012; Mills, 2012) used the WJIII writing fluency subtest to compare pre-test and post-test performance with mixed results. Although reported here, direct comparison of results would be difficult because these studies involved older, middle and high school, students with other learning or behavioral issues. Cerar (2012), whose six middle school

students were all functioning within the average intellectual range, reported a 17% increase in standard scores from pre- to post-test. In the Cuenca-Sanchez et al. (2012) experimental design SRSD writing intervention involving 21 seventh grade students with EBD, there was no statistical difference between the performance of the experimental ($M = 79.45$, $M = 84.00$) and control groups ($M = 76.60$, $M = 81.40$). Mills (2012) reported pre-test performance of the study's 10 middle school participants was in the low average range ($M = 89.22$) compared to same age peers, whereas the group mean standard score after fluency instruction was 90.78. Results of the WJIII subtests administered during the Cerar (2012), Cuenca-Sanchez, et al. (2012) and Mills (2012) studies were not statistically significant.

Four studies involving students with EBD reported statistically significant results. Mason, et al. (2011) reported a 22% increase in the raw mean score from pre- to post-test on the WJIII writing fluency subtest for three high school students. Mastropieri et al. (2010) reported a 21% increase in the raw mean score for the pre- and post-tests of eight eighth grade students. The other two Mastropieri et al. (2009; 2012) studies reported statistically significant differences of 12% and 19% respectively in the standardized mean score for the WJIII writing subtest performance of middle school students.

Participants in the current study did not demonstrate the same gains as those noted in the studies conducted by Mason, 2010 and Mastropieri et al. (2009; 2010; 2012). Ozonoff and Jenson (1999) reported that students with ASD have difficulty planning what to write, which could have impacted their performance on this measure. Students will not be able to complete a large number of sentences on a timed measure if they have

difficulty planning and organizing their thoughts or drawing on previous knowledge (Church et al., 2000). Whitby and Mancil (2009) reported that writing performance is commensurate with IQ so this might possibly explain participant scores but IQ was not available in this study, so their statement can not be validated in this study. More research using the WJIII fluency subtest is required to be able to draw meaningful conclusions from these wide-ranging results.

Educational Implications

Educational implications indicate that students with high functioning ASD in the fourth and sixth grades may benefit from persuasive writing instruction utilizing SRSD. As this is the first study to look at SRSD instruction to teach persuasive writing to upper elementary students with ASD, continued research is needed in order to draw broader educational implications. The results of this study were similar to other studies in which SRSD instruction was found to be effective in teaching persuasive writing to students with disabilities, which is promising (Asaro, 2008; Asaro-Saddler & Saddler, 2010; Cerar, 2012; Cuenca-Sanchez, et al., 2012; Delano 2007a, 2007b; Hauth, 2012; Mason et al., 2010; Mason et al., 2011; Mastropieri, et al., 2009; 2010; 2012; Mills, 2012). However, additional research is needed in order to better understand the full benefits of SRSD POW+TREE for students with ASD. Students with ASD tend to write shorter less complex sentences and have difficulty planning and generating ideas for papers (Church et al., 2000; Myles et al., 2005; Ozonoff & Jensen, 1999); therefore, they can benefit from specific writing instruction that teaches them how to plan and organize their papers prior to writing. This is what SRSD instruction provides.

Study Limitations

There were a number of limitations to the current study. Limitations of this study included the following: (a) sample size; (b) lack of demographic data; (c) setting and time of day; (d) type of intervener; (e) study quality. Each of the limitations will be discussed in further detail.

Sample size. The sample size of the current study was small and students were only in fourth or sixth grade. The listserv search for participants was for individuals in grades four through six; however, no participants in fifth grade were identified to participate in the study. As a single subject design, the sample size is adequate; however, due to the limited number of participants there is limited ability to generalize the results. The study does await further replication in order to strengthen the research base and generalizability of the findings for this population.

Lack of demographic data. The current study included no standardized test data such as academic functioning, social emotional functioning, autism screening tests, or precise IEP goals. Instead parent self-report data was collected. With the study taking place in the participants' homes or at mutually agreed upon locations, the researcher did not have access to student records to obtain more detailed demographic information about the students. School permission was not requested and gaining access to school records was not possible. Parents shared some information verbally about the services their child received but did not show the researcher any of the participants' standardized test scores. Having this data and seeing the student's records would have provided more detailed information about each of the participants and their ability levels.

Setting and time of day. In order to conduct this study, students needed to be seen after school in their homes or day care facilities. Conducting the study at home, led to many variables that might have affected student performance. Since students were seen after school, they may not have been at their peak performance level. After spending a full day at school, there is the possibility they were mentally tired. Since the participants were often seen right after coming home, they did not have any down time between school and the intervention. Conducting the research after school extended their instructional day by 45 minutes. Sometimes the setting was noisy (i.e. other family members coming and going, large groups of kids moving through the area); which at times caused distractions during the sessions. Typically there is more structure and less variability within a school during the school day. Conducting the intervention at a participant's home required flexibility on both the part of the examiner and the participant. Sometimes schedule changes would occur due to sibling activities or the participant was hungry, which could delay the start of the intervention. Conducting the study outside the school environment may have decreased the social validity of the study as outlined by Horner et al. (2005) who recommended that an intervention be conducted in typical physical and social contexts in order to strengthen the social validity. Another limitation based on the setting was attendance and scheduling. Extracurricular activities for the participant or siblings would at time require parents to cancel sessions. In these instances, sessions were rescheduled if possible. As a result, some students were seen daily over a three-day period where other students were seen every other day. If the intervention had occurred during school hours there may not have been as much

variability in the scheduling. Conducting intervention research in settings that are different from the traditional classroom can contribute to the research to practice gap (Greenwood & Abbot, 2001).

Intervener. In the present study as in many studies (Asaro, 2008; Asaro-Saddler & Saddler, 2010; Cerar, 2012; Delano, 2007a; Mastropieri, et al., 2009; 2010; 2012; Mills 2012), graduate students or the author served as the intervener, which goes against one of the recommendations of Horner et al. (2005). Horner et al. (2005) stated that in order to enhance the social validity of a study; the study should be implemented by typical intervention agents, in this case the classroom teacher. Having classroom teachers deliver the instruction mimics actual instruction occurring daily within schools. Classroom teachers are more familiar with their students and the school environment than an outside researcher and the students are likely to be more receptive to the intervention if it is conducted by a familiar figure in a familiar setting. Research is ultimately conducted to aid teachers in their instruction of students and determining that the intervention is effective and feasible for teachers to complete within the school day is important. Failure to include teachers as the interveners contributes to the research to practice gap (Greenwood & Abbot, 2001).

Study quality. Identification of evidence-based research is critical for the field of special education. Horner et al. (2005) identified criteria for high-quality single subject research. The current study met most of the quality indicator criteria used to establish evidence-based practices in single subject research outlined by Horner et al. (2005). To begin, the process for selecting participants and the setting were described in detail

allowing future researchers to select similar participants. Although the process for selecting participants was described, no standardized test data were provided on the participants. The only demographic information provided on the participants was obtained through parent self-report. Not having standardized test information on participants and complete knowledge of the functioning level of students will make exact replication of the study impossible. However, many studies (e.g., Asaro-Saddler, 2009; Delano, 2007a, 2007b; Mason et al., 2010) have also not reported standardized test demographic data on samples.

Dependent variables were described with precision. Dependent measures were described in detail and included in the study along with information on the scoring procedures for each measure enabling future researchers to accurately replicate. In addition, dependent variables were measured over time in this study. Interobserver reliability was gathered for dependent variables and all reliability results met the minimum standard of 80%.

The independent variables in this study were described in detail and lesson plans as well as the lesson materials were included in the study. The independent variables were systematically manipulated under the strict control of the researcher. The study was implemented with a high degree of fidelity. Fidelity of treatment data indicated that the intervention was implemented as intended with 99% fidelity of treatment for SRSD instruction

The baseline condition of this study was included and explained in detail, enabling replication by future researchers. The baseline phase provided repeated

measurement of the dependent variables to establish a stable baseline before introduction of the intervention for number of parts and essay quality; however there were only three essay probes during baseline and one for baseline fluency which is below the five probes recommend by Horner et al. (2005) for each testing phase.

External validity was addressed by replicating experimental effects across participants and settings. Improving the writing skills of students with ASD is an important goal. Improving the writing skills of individuals with ASD is important for school success as well as for lifelong success. The implementation of the study is practical and cost effective. The quality of this study would be further enhanced if it had taken place within a typical classroom with teachers carrying out the intervention instead of being carried out in participants' homes or day care settings by the researcher.

This study did not meet one of the important criteria for high-quality single-subject research, demonstrating experimental control, which is met by measuring participant's performance on a dependent measure repeatedly over time. Horner et al. (2005) recommended five demonstrations of experimental effect at five different points in time. In this study participants wrote three baseline essays that were used in order to determine stability before entering into the intervention phase. In addition, participants wrote one baseline fluency essay to be used to compare post-fluency results. Ideally to be considered high quality, participants should have written a minimum of five stable baseline essays and five stable baseline fluency essays prior to beginning intervention. In addition there were only three essay probes administered at post-SRSD and post-fluency which is below the five recommended by Horner et al. (2005). At both maintenance and

generalization, participants wrote one untimed and one timed essay which is well below the Horner et al. (2005) recommended minimum of five data points within each phase.

Previous studies investigating SRSD writing intervention have had favorable results; however, the current criteria dictates that studies must be replicated a minimum of five times with a combined number of at least 20 participants to be considered evidence based. In addition, articles must appear in peer reviewed journals and have been conducted by three different researchers across at least three geographic locations. Currently three different researchers, in three different geographic locations, including the current study have investigated SRSD writing instruction focusing on students with ASD; however, not all the research has looked at persuasive writing. Some studies have investigated story writing (Asaro & Saddler, 2009; Asaro-Saddler & Saddler, 2010) or vocabulary instruction and revision (Delano, 2007a), while Delano (2007b) and the current study focused on persuasive writing. Including this study, there have been five SRSD writing intervention studies focused on individuals with ASD, with a total of 14 participants; however, only nine of those individuals received persuasive writing instruction. The current study must await further replication and the dissemination of such results in order to begin to meet the evidence based practices criteria for single subject research as outlined by Horner et al. (2005).

Recommendations for Future Research

The limitations of the current study should be addressed in future research. Replication and extension of this study with a larger sample size would provide more validity to the findings of this study. In addition, future research needs to have a

minimum of five data points during each testing phase in order to meet Horner et al. (2005) guidelines of high quality research. Due to the limited number of research studies investigating writing instruction with students with ASD more studies are needed to add to the body of research in order to develop evidence based practices. In addition, conducting this study in a school setting with small groups of students would allow for greater generalization of the findings. As the number of students identified with ASD increases it is imperative for research to be conducted to determine evidence-based practices to assist in the education of these individuals.

Future research should investigate the instruction of other writing genres such as narrative or expository. In addition, incorporating mechanics of writing such as grammar, spelling, punctuation and revision into future writing intervention studies would provide further information on the effectiveness of these measures to help students with ASD. The ability to use written language to communicate is a skill needed to succeed in school and later in the workplace; therefore, students who struggle in this area will benefit from explicit instruction. Future research should administer maintenance and generalization probes at longer intervals in order to determine how long students can maintain gains.

Including parent and teacher interviews into future research could be beneficial to determine if student's attitudes about writing change through participation in a writing intervention. Because teachers and parents see the child write more often than a researcher, they would have a better vantage point for evaluating any changes in attitudes

that they may see at school while completing assignments or at home while doing homework.

Finally having teachers implement the SRSD POW+TREE strategy rather than the researcher in future investigations would be beneficial because it is teachers who must eventually integrate the strategy into their teaching. In addition, teachers are familiar with students and there may be fewer behavior issues when they implement the strategy than when implemented by a researcher (Cuenca-Sanchez et al., 2012; Hauth, 2012).

Pennington and Delano (2012) made the recommendation that future research should replicate and extend current research involving students with ASD using designs that are more robust. They go on to emphasize that researchers should evaluate strategies that have proven to be effective teaching writing to students without disabilities and investigate whether these strategies would be effective for students with ASD.

Conclusion

Writing is an important task that is difficult for many children to master. It is an important skill for students to master because it is a skill needed to succeed in school as well as later in life. Writing is a way to communicate, synthesize material, and demonstrate an understanding of learning as well as way of communicating knowledge. Pennington and Delano (2012) stated there were limited writing intervention studies for students with ASD.

As stated previously, the intent of this research was to replicate and extend previous SRSD persuasive writing studies (Delano, 2007b; Mastropieri et al. 2009; 2010;

2012) by focusing on upper elementary students with high functioning ASD. Individuals with autism in the high functioning range are often referred to as having Asperger syndrome (AS) or high functioning autism (HFA). HFA is a term used by parents and some researchers; however, there is no agreed upon definition of high functioning autism (Whitby & Mancil, 2009). DSM IV-TR identified individuals with AS as those who exhibit some impairments in social interactions, restricted or repetitive patterns of behavior, but have no delay in language skills and no delays in cognitive development (American Psychiatric Association, 2000). There are a total of five studies in which SRSD writing interventions have been used with a focus on students with ASD. Including this study, there have been a total of 14 participants (13 males and 1 female) in 2nd through 10th grade, ranging in age from 6 to 17.4 with high functioning ASD who have participated in these studies. In addition to these studies, there have been four studies with a focus on students with EBD that separately reported data on participants with ASD (Cerar, 2012, Hauth, 2012; Mason et al. 2010, Mills, 2012). This brings the total participants with ASD included in studies investigating SRSD instruction up to 20 (18 males and 2 females) in 2nd through 10th grade, ranging in age from 6 to 17.4. In addition to the above mentioned studies, Pennington and Delano (2012) identified 15 writing intervention studies that included students with ASD, five of the studies they identified (Asaro & Saddler, 2009; Asaro-Saddler, 2010; Delano, 2007a, 2007b, Mason et al., 2010) were addressed in this study. The other ten studies involving 20 students with ASD evaluated writing intervention strategies other than SRSD. The 10 additional studies identified by Pennington and Delano (2012), in which writing was taught to

student with ASD included 20 participants, 18 males and 2 females, ranging in age from four to 21. This brings the total number of students with ASD who have participated in writing instruction studies to 40.

Besides SRSD instruction, other writing intervention studies were identified by Pennington and Delano (2012) that have evaluated writing strategies for teaching students with ASD. Other strategies that were investigated in these studies included spelling, sentence construction, increasing the use of adjectives, story writing and persuasive writing. Pennington and Delano (2012) identified various methods of intervention used in the 15 studies to teach writing to students with ASD. These included various forms of electronic technology, the use of voice output communication aids to teach spelling, the use of video models to improve spelling, SRSD studies to teach persuasive and story writing, a prepackaged instructional program that helped students without disabilities work with students with disabilities on joint story writing activities as well as strategies to teach sentence-combining and increasing the use of adjectives. Many of the studies identified in Pennington and Delano (2012) involved students with autism who were lower functioning than those included in the current study, the strategies that were found to be effective with these students may be useful with higher functioning students.

This study enhances the writing literature in numerous ways. This study explicitly and independent of other methods of teaching, taught the SRSD POW+TREE writing strategy to students, a recommendation from Delano (2007b). Participants in this study were younger than those in most of the other studies (Cerar, 2012; Delano, 2007b;

Hauth, 2012, Mastropieri et al., 2009; 2010; 2012; Mills, 2012). Finally the results of this study add to the body of research investigating writing intervention focusing on students with ASD (Asaro, 2008; Asaro-Saddler & Saddler, 2010; Delano, 2007a, 2007b). Further research is needed in SRSD instruction involving individuals with ASD before more implications can be drawn and before results can be generalized to all students with ASD. However, based on the results of the current study it can be said SRSD instruction for persuasive writing using the POW + TREE strategy was effective in improving the writing performance of these students with ASD.

APPENDICES

Appendix A
Student Learning Contract



Learning Contract

Student _____ Date: _____
Teacher _____

Purpose of Instruction: _____

Short-term goal: _____

Long-term goal: _____

Target Completion Date: _____

Signatures: Student _____

Teacher _____

.....

_____ has successfully completed instruction

on _____

and agrees to use it in _____

Date: _____ Student: _____

Teacher: _____

Appendix B

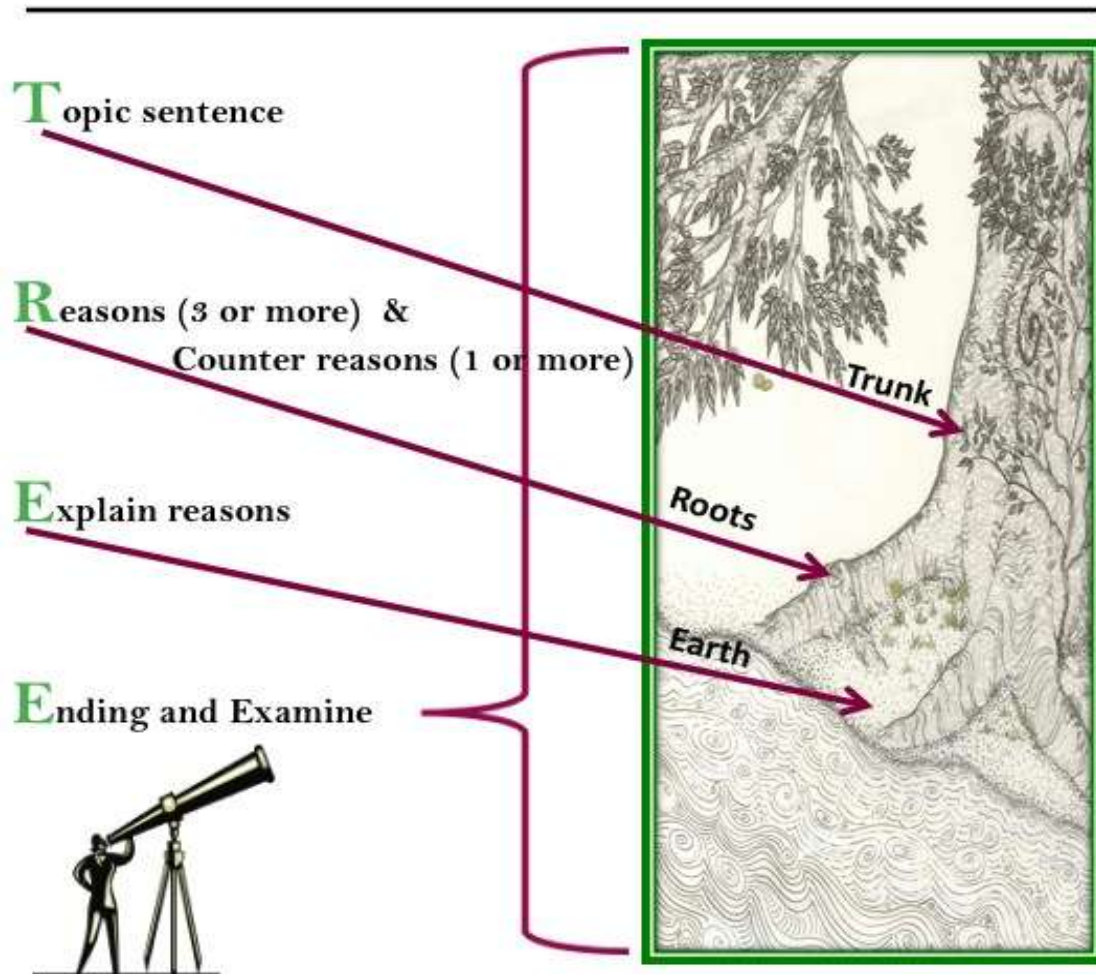
POW + TREE Chart

POW

P - Pick my idea

O - Organize my notes

W - Write and say more



Appendix C

Graphic Organizer

POW + TREE

T **TOPIC** Sentence
What do I believe?

--

TW **R** **REASONS** -3 or more
Why do I believe this?
Will my readers believe this?

E **EXPLANATIONS**
Say more about each reason.
What details will persuade my reader?

CR **Counter Reason**- 1 or more.
Who might disagree and why?

E **EXPLANATIONS**
Say more about the counter reason(s).

E **ENDING**
What do I want my reader to remember?

--	--

EXAMINE

Check my paper again, Do I have all my parts? Yes _____ No _____
 Did I use a capital letter at the beginning of each sentence? Yes _____ No _____
 Is there a punctuation mark at the end of each sentence? Yes _____ No _____

Appendix D

Transition Words Chart

Transition Words

Words you can use to show a reason

First	Second	Third	In addition
Another	To begin	Also	Additionally
Next	Finally	My final	Lastly
Furthermore	In the first place	Furthermore	Moreover
_____	_____	_____	_____

Words you can use to show a counter reason

However	Nevertheless	On the contrary	Rather
Yet	Instead	On the other hand	In contrast
_____	_____	_____	_____

Words you can use to conclude your essay

In conclusion	Therefore	With this in mind	To conclude
To summarize	In general	To sum up	Finally
Given these points	For this reason	Hence	In Summary
_____	_____	_____	_____

Appendix E
Self-Statements Chart

Self-Statements

To Help Me Get Started

While I Work

To Check My Work



Appendix F

Persuasive Essay Examples

Skateboards at the Mall

I think teenagers should be allowed to use skateboards at shopping malls. There are three reasons why I believe this. First, teenagers who use skateboards get places faster. Some malls like Tyson's Corner are really big and it takes a long time to walk from one end to the other. Second, shopping malls provide a lot of opportunities to practice tricks. The long railings and ramps are perfect for practicing jumps and slides. Finally, shopping malls are safer than streets. Skateboarders don't have to worry about getting hit by a car. Yet, some people might think that skateboarders could hit shoppers at the mall. Skateboarders could hurt shoppers. However, it would be safer to skateboard at the mall than in busy streets. In conclusion, teenagers should be allowed to use skateboards in shopping malls.

Keep Skateboarders Out of the Mall!

I do not think teenagers should be allowed to use their skateboards at shopping malls. There are three reasons why I believe this. First, someone could get hurt because there is not enough space to skateboard. Malls are not built to handle skateboarders. Second, someone could run into and hurt someone shopping. Shoppers are paying more attention to the stores than to kids doing tricks. Third, shopping malls do not allow skateboards on their property. Skateboarders could get kicked out of the mall or get a fine. However, some people might think that skateboarding at the mall is safer than skateboarding in the street. Skateboarding at a mall is safer than skateboarding in a busy street. Nevertheless, the mall is for shopping, not for skateboarding. In conclusion, teenagers should not be allowed to use skateboards at shopping malls.

Appendix G

Persuasive Essay Writing Prompts

Baseline Day 1:

Is it better to live in the city or the country?

Or

Should students your age have a set bedtime?

Baseline Day 2:

Is it better to have a bird or a fish as a pet?

Or

Should parents restrict what type of music you listen to?

Baseline Day 3:

Should public school students be required to wear uniforms?

Or

Is it better to buy books at a bookstore or borrow them from the library?

Baseline Day 4:

Should children be required to do chores around the home?

Or

Should school go to a year round schedule?

Post SRSD Day 1:

Is it better to rent movies or watch them at the theater?

Or

Should students have to do volunteer work over the summer?

Post SRSD Day 2

Would you rather receive a \$30 gift card as a gift or receive a sweater as a present?

Or

Which would you rather have to take pictures with: a digital camera or a disposable camera?

Post SRSD Day 3

Should pets like dogs and cats be inside or outside animals?

Or

Should students your age be allowed to vote for the President of the United States?

Post Fluency Day 1:

Should restaurants and indoor places ban (not allow) smoking?

Or

Should students your age have to do chores at home?

Post Fluency Day 2:

Should students be allowed to bring their ipods/D.S. (music player or handheld game system) to school?

Or

Which type of vehicle is better to have: a car, a truck, or a SUV?

Post Fluency Day 3:

Should elementary age students be required to take P.E. every day?

Or

Should schools require students to pass through a metal detector each morning as they enter school?

Maintenance Long:

Should parents send their kids to school when they have the flu?

Or

Should kids your age be allowed to decorate their clothes or shoes with markers?

Maintenance Short:

Should elementary school students get two recess times a day?

Or

Should students help develop school rules?

Generalization Long:

Should the age to get a drivers license be raised from 16 to 17 years in all states?

Or

Should students be required to complete public service hours for school?

Generalization Short:

Should people take public transportation (metro, trains, etc.) or car pool to work or school?

Or

Should nutritional information be reported for all products on menus at restaurants?

Appendix H

POW + TREE Daily Record Sheet

Name _____

POW+TREE Daily Record Sheet

Use this sheet to track how you did and what you complete each day. Look at the example on the first column.

Rate how well you did today -



3



2



1

Date	10/8												
Rate your performance today.	3												
Completed Graphic Organizer													
Wrote Topic													
Wrote Reasons													
Wrote Explanations													
Wrote Counter Reason & Explanation													
Wrote Ending													
Number of Transition Words	5												
Examined Essay (capitalization, punctuation)													
Used Self Statements													

Student Parts Record Sheet



Student Parts Record Sheet

A full page of blank graph paper with a uniform grid of small squares. The grid consists of 10 columns and 10 rows, creating a total of 100 square units. The lines are thin and black, set against a white background. There are no margins or additional markings on the page.

Appendix J

Lesson Plans

Lesson 1

Stage 1: Develop and Activate Background Knowledge

Purpose: Develop student's background knowledge of persuasive writing. Sign contracts and introduce POW + TREE, find persuasive essay parts in a sample essay.

Objectives: Students will sign contract committing to learning the POW+TREE strategy. Students will be introduced to the meaning of the mnemonic POW+TREE and look at a sample essay.

Materials: Agenda, Contracts, POW + TREE mnemonic, GO, handouts, Sample essay, paper, pencils, colored pencils, folders

___1. The lesson will begin with the teacher by reviewing the goals for the day as well as expectations for all sessions. **“During the following weeks we are going to be learning a writing strategy that will help you write persuasive/opinion essays. This writing strategy will be very useful for you. Every day we meet we will have an agenda and our goal is to cover all the items on the agenda. Today’s agenda is:”**

Agenda:

1. Sign the Contract
2. Discuss POW+TREE
3. Read and Examine Sample Essay
4. Introduce Graphic Organizer

___2. Contracts

Students will sign a contract in which they will commit to learn the strategy for writing persuasive essays. The teacher will also sign the contracts and commit to teaching the strategy. **“We are going to sign a contract in which you will commit to learn the writing strategy for persuasive essays and I will commit to teach you.”**

- a. The contract will state the purpose of the instruction – to write good persuasive essays
- b. The short term goals (I will (1) memorize the strategy, (2) practice writing essays, and (3) monitor my progress),
- c. The long term goal (write good persuasive essays with POW+TREE and apply the strategy in other settings)
- d. The expected date for achieving the goal,

- e. Point out that the contract will be reviewed after we have finished learning the strategy.

___3. Discuss with the students what the word persuade means and how we write to persuade

- a. Tell the students that today we will begin working on writing. Say **“We are going to learn a writing strategy or tool to help us write papers that tell a reader what you think or believe about a topic. This can be called an opinion/persuasive essay.”**
- b. **“What does the word opinion mean?”** – A view or belief
- c. **“What does the word persuade mean?”** - To convince someone of your position, to plead with or urge someone through reasoning
- d. **“Can you think of any examples where persuasion is used?”**
(Advertisements (toys, food, movies), political campaigns)
- e. **“These are ideas of persuading we may hear everyday. We will be learning how to use writing to persuade a person.”**
- f. **“What does the word essay mean?”** – a written response to a question in sentence and paragraph form

Display POW on top half of POW+TREE chart

___4. Describe and discuss POW:

“Now we are going to learn a trick, which will help you when writing a paper. This writing is called POW”

“Do you know what POW stands for?”

“What does it sound like? Can you think of a word that has POW in it?”
POW = POWER

“POW gives you POWER when you write. There are three steps, which will help you get POWER in your writing. The 3 steps are:”

Display the mnemonic POW on top half of POW+TREE chart

P – Pick my idea
O – Organize my notes
W – Write and Say more

“POW gives you power when you write essays. It is a trick good writers use when writing. You combine POW with other strategies (tools) depending on the type of essay you are writing.”

___5. Discuss what makes writing a persuasive essay powerful

“Do you know what makes a persuasive essay powerful?

- a. Tells the reader what the writer believes**
- b. Gives the reader at least three reasons why the writer believes what he does (it can have more)**
- c. Explains the reasons**
- d. Considers other peoples points of view**
- e. Has an ending sentence”**

___6. Describe and discuss TREE:

“Now we are going to learn a trick which will help you write a paper that tells the reader what you believe or think about something. This is called a persuasive essay. The trick for remembering the parts of a persuasive essay is TREE”

Display bottom half of POW+TREE chart

“Lets look at the picture here of a TREE – we are going to use this picture to help us remember the parts to a good persuasive essay.

T – topic – The topic sentence is like the trunk of a tree, it is strong and everything is connected to it

R – reasons (3 or more) – The reasons are like the roots of a tree, they support the trunk

E – explanations – The explanations are like the earth, they provide the nutrients to the tree

E – ending and examine – The ending and examine are like the whole tree and the image you see, it is the impression you want to leave your reader with.”

___7. Read and examine a persuasive essay

“Now we are going to read a persuasive essay and examine it to find out if the writer used all the parts. We need to look for a topic sentence (the writer stated what he believed), at least three reasons, explanations for the reasons and an ending.”

The Student will be given a copy of the essay to read along with the instructor. The student will be asked to underline the topic sentence, the reasons, the explanations and the ending. The student will then be asked to examine the essay and see if all the parts are there.

___ **8. Introduce the graphic organizer**

“We will be using this graphic organizer to help us organize the parts of our essay.” Lie out the graphic organizer and show student how the mnemonic POW + TREE is written on the top as a reminder of the parts that need to be included in an essay.

Model filling out the graphic organizer in note form from the parts they identified in the essay.

Introduce the term **transition words** and discuss with the student that **“these are words the writer used to show a reason or explanation.”** Model where transition words go in the graphic organizer.

___ **9. Verbally review the POW+TREE mnemonic**

___ **10. Lesson Wrap-up - Check off the agenda**

Lesson 2

Stage 2: Discuss It

Purpose: Review POW + TREE, Identify Parts of an Essay, Introduce Student Record Sheet

Objectives: The student will review the POW+TREE strategy. The student and teacher will review parts of a persuasive essay. (If student is having a difficult time identifying parts of an essay, additional essays will be reviewed.) Introduce counter reasons. Teacher will model using self-statements to fill out a graphic organizer and begin writing a persuasive essay. Student will graph a previously written essay on the record sheet.

Materials: Agenda, POW+TREE chart, POW+TREE GO, Transition Word Chart, Sample essays, Student Parts Record Sheet, pencils, colored pencils, paper, folders

___ **1. Instruction will begin with the teacher discussing the agenda: Today's agenda is:**

Agenda:

1. Review POW+TREE
2. Identify parts of an essay
3. Discuss counter reasons
4. Discuss Transition words
5. Discuss Graphic Organizer
6. Identify parts in your essay
7. Introduce Record Sheet

___ **2. Discuss POW+TREE**

“Yesterday we talked about persuasive essays. Do you remember what it means to persuade someone?” To convince someone about your point of view using good reasons and explanations to support your reasons. **“How are we going to be persuading someone?”** Through writing. **“We also learned a strategy to help us write persuasive essays – Do you remember the trick?”**

Review orally POW + TREE – “What are the parts of a good persuasive essay?”

“Do you remember what makes a persuasive essay powerful?”

- a. Tells the reader what the writer believes
- b. Gives the reader at least three reasons why the writer believes what he does (it can have more)

- c. Explains the reasons
- d. Considers other peoples points of view
- e. Has an ending sentence
- f. It makes sense

“To help us remember this we said a good persuasive essay should use the mnemonic TREE. What does TREE stand for again?” (Topic, Reason (3 or more), explanations and ending)

___3. Counter Reasons

“One way to make your essay more powerful is to include another person’s point of view. This is called a counter reason. Try to think of someone who would disagree with your argument. Including another person’s points of view lets the reader know that you are not focused just on yourself but you have considered the view of others. It is also good to provide an explanation to the reason, just like when we provide our reasons to support our belief or topic.”

___4. Practice transition words

“Yesterday we talked about transition word briefly at the end of the lesson. These are words that you find before a reason, counter reason and an ending. There are different types of transition words, for showing a reason, counter reason or an ending.” Show the student their transition word chart. “Can you come up with any additional transition words to write on the chart?”

___5. Graphic Organizer (GO)

“Last time we met, we filled out the graphic organizer after we read an essay to help us find the different parts. The graphic organizer is the O part of POW – which reminds us to “organize our notes”. The graphic organizer also has our mnemonic TREE to remind us of all the parts we need to include in an essay. There is even a space for us to write our transition words and a counter reason. Good writers organize their thoughts before writing in note format, which is what we will do on the GO.”

Review the parts of the GO

___6. Find parts in an essay (Repeat 1-3 times to make sure student can identify all parts).

“Now we are going to read a persuasive essay and examine it to find out if the writer used all the parts. What parts are we looking for?” (prompt if they

don't say) A topic sentence – the writer stated what he/she believed, at least three reasons, explanations for the reasons and an ending and a counter reason – the parts of TREE.

The student will be given a copy of the essay to read along with the instructor. “Underline the topic sentence, the reasons, counter reason, the explanations and the ending. Examine the essay and see if all the parts are there.”

Model filling out a GO based on parts identified in at least 1 essay (If students struggle with filling out the GO repeat)

_____7. Examine student essay

“Now we are going to look at an essay you wrote. I have typed the essay for you to make it easier to read and to identify the parts. Tell me the parts of the essay you have included. Now I would like you to fill out a graphic organizer with the parts you identified in your essay – remember just write notes not full sentences.”

“What parts are missing?”

“What could you do to make it better next time?”

_____8. Graph performance and set goals

Give student a copy of graph. **“We have been talking about what good writers do when they write a paper. We have talked about how they need to plan and organize their thoughts. They also need to monitor their progress. Why do you think this is important?”** (teacher adds if student doesn't say anything) **We are going to use this graph to help us monitor our progress. We will fill out how many parts were included in an essay. Fill in one space for each part of TREE (topic, one for each reason, one for each explanation, one for each counter reasons, one for an ending).”**

“Do you remember our goal?” To write good persuasive essays

“Next time our goal is to have all the parts and better parts when we write an essay. Next time I will model for you how to write a persuasive essay using all the tools we have learned so far. We want our essay to have 10 parts.”

____9. Verbal review POW + TREE

____10. Lesson Wrap-up - Check off the agenda

Lesson 3

Stage 3: Model It/Memorize It

Purpose: Review POW + TREE, Model, Introduce Self-Statements

Objectives: The student will state the meaning of POW+TREE and attend while the teacher models how to write an essay. The student will develop and record self-statements and graph an essay written by the teacher.

Materials: Agenda, POW+TREE chart, POW+TREE GO, Transition Word Chart, Self-Statements Chart, Student Parts Record Sheet, Daily Record Sheet
Pencils, colored pencils, paper, folders

___ **1. Instruction will begin with the teacher discussing the agenda. Today's agenda is:**

Agenda:

1. Review POW+TREE, graphic organizer, transition words, and counter reasons
2. Observe the teacher model how to write an essay
3. Self-Statements
4. Graph essay
5. Introduce daily record sheet

___ **2. Review POW + TREE**

“Tell me the parts of a persuasive essay.” (prompt if needed)

___ **3. Review Graphic Organizer**

“The second letter in POW is O – ORGANIZE my NOTES – is organize my notes. Like all good writers, I am going to use the graphic organizer to help me. Remember the Graphic Organizer has spaces for me to write all the parts I need to include in a good persuasive essay.”

“What is my goal? To write a good persuasive essays.”

“A good persuasive essay:

- a. Tells the reader what the writer believes
- b. Gives the reader at least three reasons why the writer believes what he does (it can have more)
- c. Explains the reasons
- d. Considers other peoples points of view
- e. Has an ending sentence
- f. It makes sense”

___ 4. Discuss Counter Reasons

“Yesterday we also talked about counter reasons. Can you tell me what a counter reason is?” A counter reason is a way to make your essay more powerful, by presenting another person’s point of view. **“Remember to provide an explanation to the reason, just like when we provide our reasons to support our belief or topic.”**

___ 5. Review Transition Words

“We talked about transition words yesterday. Transition words help us to identify reasons, counter reasons and the ending of an essay. Do you remember some transition words?”

___ 6. Model the Strategy

“Today I am going to model how to write a persuasive essay with your help, using all the materials we have been discussing. Pay attention today for self-statements, or positive things I say to myself as I write.”

- a. Read aloud the practice prompt
 - **“Some things I can say to myself when I need to start working – “take your time”, “focus on my work”, “a good idea will come”**
- b. Pick my Idea
 - **“Remember that the first letter in POW is P which stands for pick my idea. Before I start I need to clear my head, focus on what I am doing. OK Dani – you can come up with some good ideas.”**
- c. Organize my Notes. Model the entire process by filling in the GO using notes. Have the student help come up with ideas.
 - **“Now I can write down ideas for each part**
 - **First, What do I believe? What do I want to tell the reader I believe? That is a great idea.**
 - **Now I need to think of at least 3 reasons and give an explanation for each reason. Focus, think of good ideas.”** (Talk out and write notes for at least 3 reasons in note form.) **“Those are some great reasons. Can I think of any more reasons? How would I explain the reasons? I also need to remember to use transition words before each reason.”**
 - **“How can I make this essay stronger? I can think of another person’s point of view. Who would disagree with what I believe?”**
 - **“Ok finally I need end the essay. What could I say? That is a good ending. Nice job Dani.”**

- **“Now I need to look back at my notes and see if there is anything else I can add or if I need to change anything.”**

d. Write and Say More

“Now I can do W in POW – write and say more. I will use the notes from the Graphic Organizer to help me write my essay.

How should I start? I need to tell the reader what I believe. I need to write a topic sentence.” Pause and think and then write out the topic sentence. “Good start Dani. I need to remember to start each sentence with a capital letter and end the sentence with a punctuation mark.”

“Now I have to write down a reason and explanation. Don’t forget to use a transition word. My first reason is”

“And I can explain the reason by”

“Does this make sense?”

“Ok, good job staying focused. My second reason is”

“I can explain the reason”

“Did I remember to use transition words before my reason? Nice work.”

“Another reason is”

“I can explain the reason”

“I have three reasons and three explanations – good work”

“What else could I do to make my essay stronger? I could add a counter reason. A counter reason could be”

“I can explain the reason”

“Am I using all my parts so far? What do I need to do next?”

“I need to end my essay. I need a transition word and I need to leave my reader with a clear picture of what I believe.”

“My ending”

“Great job, I’m done!”

____ 7. Self-Statements

Pass out self-statement chart to student.

“Another thing good writers do is talk to themselves in positive ways. Why do you think this is important? Think about a time you were on a sports team, or cheering for your favorite team. What are some things you say to yourself or your team?” Give students a chance to give their own input. Write out these answers. **“ You tell yourself positive things, not negative things. Since we are working on becoming good writers, it is important for you to talk to yourself in a positive way.”**

“Write some things they could say to yourself on your self-statement chart.”

“What are some things I said or things you could say to yourself:

- a. to get started?**
- b. while you work?**
- c. when you finished?”**

Jot their ideas down on the self-statement chart. **“You do not need to say these things out loud, you can whisper them or say them to yourself”**

____ 8. Graph Essay

Model how to graph essay on the student parts record sheet. **“Remember good writers monitor their progress. How are we going to monitor our progress?”** (let student respond) **“Let’s fill out the student record sheet – remember we fill in one space for each part of TREE. How many parts did we have in our essay? Remember we want to have at least 10 parts.”**

____ 9. Daily Record Sheet

Students will be given a daily record sheet to record their progress each day.

“Let’s use the daily record sheet to rate our performance. Check off each item in the column that you completed today and write down today’s date.”

____ 10. Lesson Wrap-up - Check off the agenda

Lesson 4

Stage 5: Support It

(Repeat as often as necessary until student is ready to move on without the GO)

Purpose: Guided practice - Let the student lead as much as possible. Prompt and help as needed

Objectives: The student will review POW+TREE and collaboratively write a persuasive essay with teacher. The student will identify essay parts in essay.

Materials: Agenda, POW+TREE chart, POW+TREE GO, Transition Word Chart, Self-Statements Chart, Student Parts Record Sheet, Student Daily Record Sheet, Prompts (list of multiple prompt choices for repeating this lesson, pencils, colored pencils, paper, folders

___ **1. Instruction will begin with the teacher discussing the agenda. “Today’s agenda is:”**

Agenda:

1. Review POW+TREE
2. Review Transition Words
3. Write an essay (Use self-statements)
4. Graph essay

___ **2. Review POW + TREE**

“Tell me the parts of a good persuasive essay.”

___ **3. Review Transition Words:**

“On this piece of paper can you write down as many transition words as you can think of in two minutes?” Compare the list to the transition word chart.

___ **4. Collaborative Writing – Support It**

“Today you are going to begin writing persuasive essays on your own, with my help. Make sure you use all the material we have been using to help you write. Don’t forget to use a capital letter at the beginning of a sentence and to have a punctuation mark at the end.

You will do great! Remember to use self-statements and speak to yourself in a positive manner.”

Give student:

Graphic Organizer
Transition Word Chart
Self-Statement Sheet
Practice Prompt

Guided Help:

“Remember the first letter in POW is “P” – Pick my Idea. What is it you believe? Remember to use self-statements when beginning to help you think of ideas and reasons.”

“The second letter in POW is “O” – Organize my Notes. What are you going to use to help you organize your notes?” Graphic Organizer

“What is the mnemonic that will help you organize your notes?” TREE **“What should your goal be?”** To write a good persuasive essay, to tell the reader what you believe, it must have at least three reasons, explanations and an ending. **“How can you make your essay stronger?”** Add a counter reason and explanation. **“And most importantly, what you write needs to what?”** It needs to make sense.

Let the student generate their notes –

“Remember to look back over your notes to make sure you have all the parts or if there is anything that needs to be added or changed.”

“The last letter in POW is “W” – Write and Say More – now you need to write your essay using your notes. Remember to use self-statements” – I can write my paper, I need to focus. Let the student work independently on essay. Help if necessary. (If the student does not finish during the time, they can continue during the next lesson.)

____ 5. Graph Essay

“Remember good writers monitor their progress. How are we going to monitor our progress?” Student record sheet Let student fill out the student record sheet – **“remember fill in one space for each part of TREE. How many parts did you have in your essay?”** **“Did you use self-statements? Which ones did you use?”**

____ 6. Lesson Wrap-up - Check off the agenda

Lesson 5

Stage 6: Independent Performance

(Repeat until mastery)

Purpose: Independent practice/Wean off supportive materials

Objectives: The student will draw an organizer/organize notes and write a persuasive essay with at least 8 parts independently.

Materials: Agenda, Transition Word Chart, Self-Statements Chart, Student Record Sheet, Prompts (list of multiple prompt choices for repeating this lesson, pencils, colored pencils, paper, folders

___ **1. Instruction will begin with the teacher discussing the agenda. “Today’s agenda is:”**

Agenda:

1. Review POW+TREE
2. POW + TREE reminder
3. Draw own graphic organizer
4. Write an essay independently
5. Graph essay

___ **2. Review POW + TREE**

“What are the parts of a good persuasive essay?”

___ **3. Wean off Graphic Organizer**

“When you are asked to write a persuasive essay in class, you will not have a graphic organizer, so you will need to make your own in order to help you organize your notes.” Demonstrate how students can write down the mnemonic POW + TREE at the top of a page in order to jot down ideas next to each part prior to writing.

“On this piece of paper can you write down as many transition words as you can think of in two minutes?” Compare the list to the transition word chart.

___ **3. Writing - Wean off Support**

(If student did well in lesson 4, they may not need much support. Teacher should determine how much guidance to give student, and how much they need to do independently)

“Please get out self-statement chart.” Put out 2 essay prompts. **“Pick one prompt to write about.”** Let the student work independently but prompt and help as necessary. The student can make notes on a blank piece of paper where they wrote their reminder. Go through each of the following processes.

“Remember the first letter in POW is “P” – Pick my Idea. Refer student to self-statement chart to help them with their thinking. – My mind needs to be free. What do I believe? Why do I believe this?”

“The second letter in POW is “O” – Organize my Notes. I will use TREE to help me organize my notes and plan my ideas on a piece of paper. What should our goal be?” To write a good persuasive essay, to tell the reader what you believe, It must have at least three reasons, explanations and an ending. **“To make my essay stronger you could add counter reasons and explanations. And most importantly, what you write needs to what?”** Make sense

After the student has written their notes say – **“I must remember to look back over my notes to make sure I have all the parts and to see if there is anything that needs to be added or changed.”** Help them do this.

“The last letter in POW is “W” – Write and Say More” – Encourage and remind student to start by saying **“What is it I have to do here? I have to write a good persuasive essay. A good opinion/persuasive essay makes sense and has all the parts. I need to remember to use transition words. Remember to use self-statements, remember to start each sentence with a capital letter and end each sentence with a punctuation mark.”** – **“I can write my paper, I need to focus.”** Let the student work independently on essay. Help if necessary. Make suggestions if parts can be improved. (If the student does not finish during the time, they can continue during the next lesson.)

____ 4. Graph Essay

“Remember good writers monitor their progress. How are we going to monitor our progress?” Student record sheet - Let student fill out the student record sheet – **“remember fill in one space for each part of TREE. How many parts did you have in your essay?” “Did you use self-statements? Which ones did you use?”**

____ 5. Lesson Wrap-up - Check off the agenda

Lesson 6

Fluency

Purpose: To learn how to write a good persuasive essay in 10 minutes

Objectives: The student will discuss the components of a quick write essay, complete an essay in 10 minutes and graph how many essay parts they included and set a goal of how many parts they will write in their next essay

Materials: Prompt, POW+TREE Chart, Self-Statements, Transition Word Chart, Paper, Pencils

___ **1. “For the past few weeks we have been writing persuasive essays. You have done a GREAT job writing essays and learning these skills. Today we are going to discuss writing essays when we have a time limit or a shorter amount of time to write them. Before we start lets go over today’s agenda.”**

___ **2. Discuss agenda. “Today’s agenda is:”**

Agenda:

1. Review POW+TREE
2. Discuss writing a quick essay
3. Model how to write a quick essay
4. Graph essay and set goal for next essay
5. Student will write essay in 10 minutes
6. Student will graph essay and set a goal for next essay

___ **3. Review POW +TREE.**

“What are the parts of a persuasive essay?”

___ **4. Quick Write**

“When you have to a time limit on how long you can write an essay, your essay still needs to have all the parts, needs to be well organized and it needs to make sense.”

“Can you think of some times in school when you may have a limited amount of time to write an essay?” (Allow students time to respond – essay questions on a test, answering questions for social studies or science for homework, in-class writing assignments)

“You can use POW +TREE even if what you have to write is not a persuasive essay. When you are writing you want to make sure you have included a topic, reasons, explanations and an ending.”

___5. Model how to write an essay in 10 minutes

Include self-statements as you model. Ask student for ideas in order to take up the entire 10 minutes. If there is time left make sure to model the importance of examining your work.

- 1. Set timer for 10 minutes**
- 2. Post the prompt and read it aloud**
- 3. Jot down ideas with help from the student – Write TREE on a piece of paper and make and write one word reminders rather than phrases.**
- 4. Begin writing. Be sure to think aloud about transitions.**
- 5. If you finish before the time goes off say: “I still have more time, so I could add another reason or explanation or I still have time, so I can check my work and make sure my essay makes sense.”**
- 6. When timer goes off, put pen down**
- 7. Discuss what parts were included and what parts were missing. Point out transition words. Ask students to point out self-statements you used while working.**

___6. Graph Essay

Model filling out the POW+TREE student fluency record sheet. Make a goal of having more parts next time when doing a quick write. **“This time I had _____ parts in my paragraph, next time I want to have _____ parts.”**

___7. Student’s Turn

“It is your turn to write an essay in 10 minutes.” Give them paper, pencil, a prompt and a timer. Let the student work independently. Assist if needed.

___8. Graph Essay.

Once the timer goes off, have student graph their essay and set a goal for next time.

___7. Lesson Wrap-up – Check off the agenda

Lesson 7

Generalization

Purpose: Generalization to other classes

Objectives: The student will learn other areas in which they can use the persuasive essay strategy

Materials: Prompt, POW+TREE Chart, GO, Self-Statements, Transition Word Chart, paper, pencils

___ **1. “For the past few weeks we have been talking about persuasive writing. You have done an OUTSTANDING job writing essays and learning these skills. Today we are going to review everything we have talked about and then we are going to discuss how you can apply what you learned in other classes and in school.”**

___ **2. Discuss agenda. “Today’s agenda is”:**

Agenda:

1. Review POW+TREE
2. Generalization
3. Model how to write an essay
4. Graph essay

___ **3. Parts of a good persuasive essay**

“Can you tell me the parts of a good persuasive essay?”

___ **4. Generalization/Applying POW+TREE to other classes**

“Can you think of some classes where you can use POW+TREE?” (Let student brainstorm, help if needed by asking them what topics they are discussing in social studies or science)

For example in science you might write an essay about:

Why it is important to recycle?

Why should you throw trash in the trashcan instead of on the ground?

Electricity, clouds

VA history, civil war

-Write an essay that could be used to support an argument for careful use of the resources of the rainforest. Make sure you include information about the plant and animal life that would be affected if the rain forest didn't exist.

-Write a letter to your community to persuade people to save water at home. Provide at least three reasons why we should save water and three ways to do it. Be sure to support your position.

-Write an essay in which you explain the causes and effects of water pollution in our society today. Be sure to give specific details that support your explanations.

Apply persuasive writing in other circumstances

“Persuasive writing can also be used in other places or in other circumstances outside the school. Can you think of other situations where persuasive writing might be helpful?”

If students cannot think of good examples you can discuss with them the following:

Convincing a parent about something.

Writing a letter to a senator to persuade them to vote on a certain issue

PICK ONE OF THESE PROMPTS AND MODEL HOW TO WRITE AN ESSAY.

Schools are thinking about requiring students to buy school lunches in order to improve nutrition. Convince the school superintendent that students should be able to bring their lunch from home. Use self-statements

___ 5. Model how to write an essay.

Organize notes:

Discuss and model how to write down the reminder at the top of the page for organizing their essays: Use self-statements

Write out mnemonic at the top of a piece of paper in note form and model how to plan essay

**POW
TREE**

- **“Now I can write down ideas for each part”**
- **“First, What do I believe? What do I want to tell the reader I believe? That is a great idea.”**
- **“Now I need to think of at least 3 reasons and give an explanation for each reason. Focus, think of good ideas.”** (Talk out and write notes for at

least 3 reasons in note form.) **“Those are some great reasons. Can I think of any more reasons? How would I explain the reasons? I also need to remember to use transition words before each reason.”**

- **“How can I make this essay stronger? I can think of another person’s point of view. Who would disagree with what I believe?”**
- **“Ok finally I need end the essay. What could I say? That is a good ending. Nice job Dani.”**
- **“Now I need to look back at my notes and see if there is anything else I can add or if I need to change anything.”**

Write and Say More.

- **“Now I can do W in POW – write and say more. I will use the notes from the Graphic Organizer to help me write my essay. How should I start? I need to tell the reader what I believe. I need to write a topic sentence.”** Pause and think and then write out the topic sentence. **“Good start Dani. I need to remember to start each sentence with a capital letter and end the sentence with a punctuation mark.”**
- **“Now I have to write down a reason and explanation. Don’t forget to use a transition word. My first reason is”**
- **“And I can explain the reason by”**
- **“Does this make sense?”**
- **“Ok, good job staying focused. My second reason is”**
- **“I can explain the reason”**
- **“Did I remember to use transition words before my reason? Nice work.”**
- **“Another reason is”**
- **“I can explain the reason”**
- **“I have three reasons and three explanations – good work”**
- **“What else could I do to make my essay stronger? I could add a counter reason. A counter reason could be”**
- **“I can explain the reason”**

- **“Am I using all my parts so far? What do I need to do next?”**
- **“I need to end my essay. I need a transition word and I need to leave my reader with a clear picture of what I believe.”**
- **“My ending”**
- **“Great job, I’m done!”**

____ 6. Graph Essay.

Model how to graph essay on the student parts record sheet. “Remember good writers monitor their progress. How are we going to monitor our progress? Let’s fill out the student record sheet – remember we fill in one space for each part of TREE. How many parts did we have in our essay? Remember we want to have at least 10 parts.”

____ 7. Lesson Wrap-up – Check off the agenda

Appendix K

Directions for Essay Prompts:

Give each student a piece of blank lined paper and a pencil and copies of paper containing the two prompts.

Say: *“Please write your name and date on the top of the paper.”*

Then say: *“Please listen carefully as I read the prompts.”* Read prompts out loud to the students. *“Please write an essay response to one of the prompts on your paper.”* Read the prompts out loud again to the students.

Persuasive Essay Prompts (2 prompts from prompt ideas)

or

When the students are finished writing, collect all pencils and papers. They may not make corrections at this time. Be sure to make notes of words that you may have difficulty reading in later transcription.

Direction for Parts Probe

Distribute blank paper and say: *“Write your name and date on the paper. Now, write the parts of a good persuasive essay in the space below.”*

Appendix L

Persuasive Essay Parts Probe

Name: _____

Date: _____

What are the parts of a good persuasive essay below.

How are you feeling about writing and what we are learning?

Appendix M

Self-Efficacy Measure

Name: _____

Date: _____

Persuasive Writing Self-Efficacy

Directions: Read the essay prompts below. Circle the one you select to write about. Then, answer the items below based on how confident you are on your ability to do what the question asks.

Should your family do a staycation (i.e., vacation at home with day trips) instead of going away for a vacation?

OR

Should all kids your age be required to play a sport to stay physically active?

	0% Confident	25% Confident	50% Confident	75% Confident	100% Confident
1. How sure are you that you can write an essay that contains at least 10 persuasive essay parts?	1	2	3	4	5
2. How sure are you that you can pick one side of the topic to argue in your essay?	1	2	3	4	5
3. How sure are you that you can make a plan before writing your essay?	1	2	3	4	5
4. How sure are you that you can write enough on the major points?	1	2	3	4	5
5. How sure are you that you can write an essay that is organized into good paragraphs?	1	2	3	4	5
6. How sure are you that you can plan an essay containing good reasons to persuade the reader?	1	2	3	4	5
7. How sure are you that you can write your position in your essay?	1	2	3	4	5
8. How sure are you that you can plan arguments for both sides of the topic for your essay?	1	2	3	4	5
9. How sure are you that you can write good transitional sentences in your essay?	1	2	3	4	5
10. How sure are you that you can use good self-statements while doing your essay?	1	2	3	4	5
11. How sure are you that you can examine and revise your essay?	1	2	3	4	5
12. How sure are you that you can plan an ending for your essay?	1	2	3	4	5
13. How sure are you that if you get stuck you can continue to work on your essay?	1	2	3	4	5

Appendix N

Attitudes Measure

Name _____

Date _____

1. I can jump 1 foot.

1	2	3	4
— —	— —	— —	— —
Very Different From Me	Different From Me	Like Me	A Lot Like Me

2. I can jump 3 feet.

1	2	3	4
— —	— —	— —	— —
Very Different From Me	Different From Me	Like Me	A Lot Like Me

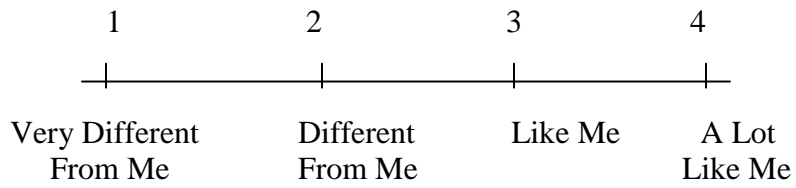
3. I can jump 6 feet.

1	2	3	4
— —	— —	— —	— —
Very Different From Me	Different From Me	Like Me	A Lot Like Me

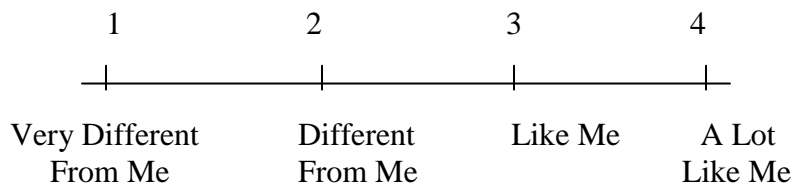
4. I can jump 12 feet.

1	2	3	4
— —	— —	— —	— —
Very Different From Me	Different From Me	Like Me	A Lot Like Me

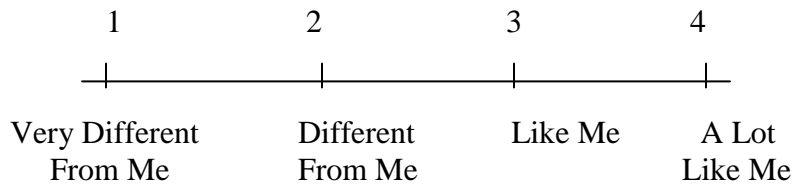
5. When I write, it is easy for me to get ideas for my paper.



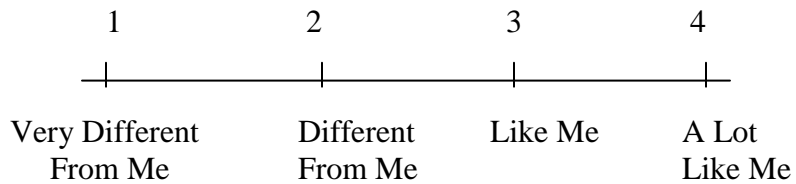
6. I would rather read than write.



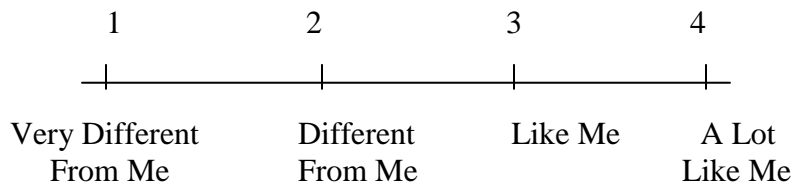
7. I do writing outside of school.



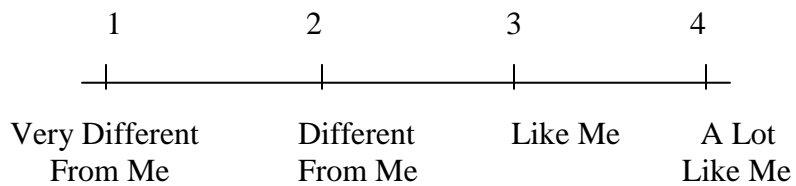
8. When my class is asked to write, my paper is one of the best.



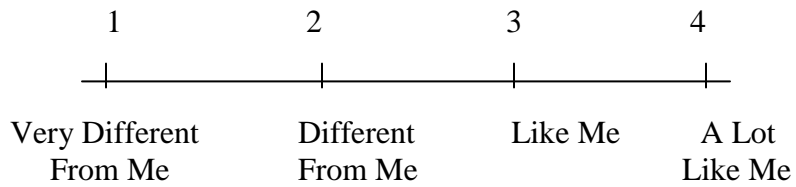
9. I would rather write than do math problems



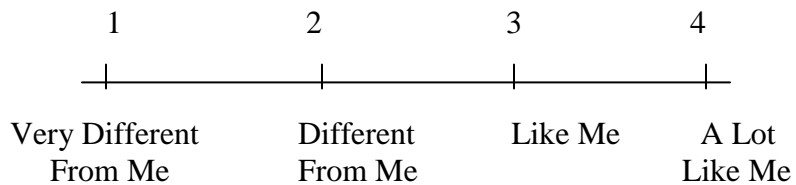
10. I write whenever I can.



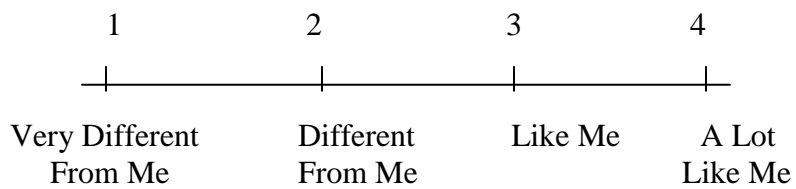
11. When writing a paper, it is hard for me to decide what goes first, second, third, and so on.



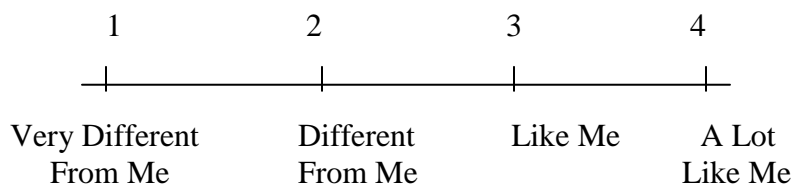
12. When I plan a paper, my plan is one of the best in my class.



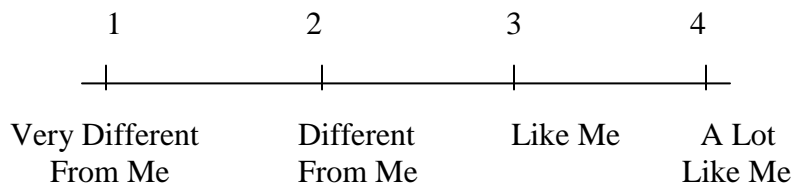
13. When writing a paper, it is hard for me to keep thinking of things to say.



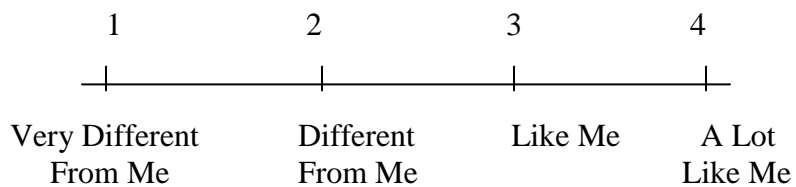
14. I do not like to write.



15. When writing a paper, I have trouble finding the right words for what I want to say.



16. I like to have my classmates read what I have written.



Appendix O

Initial Student Interview

Do you like to write?

When asked to write a paper for school, how do you feel? Why?

Can you tell me about a recent writing assignment? –Did you enjoy the assignment?

Do you think you are a good writer?

Can you tell me what you do when you have to write a paper?

When you write is it easy to get ideas for your paper?

Do you have a hard time deciding how to organize (structure – what goes 1st, 2nd, 3rd) your paper?

Do you do any planning before you write a paper?

Do you like to write for fun?

What do you think could help you with your writing?

Do you know any tools that help you with your writing?

Appendix P

Final Student Interview

Do you like to write?

Has that changed since we started?

When asked to write a paper for school how do you feel? Why?

Do you think you are a good writer? Why?

Can you tell me about a recent writing assignment? –Did you enjoy the assignment?

When you write is it easy to get ideas for your paper?

Do you have a hard time deciding how to organize (structure – what goes 1st, 2nd, 3rd) your paper?

Do you do any planning before you write a paper?

Do you like to write for fun?

Appendix Q

Social Validity Questionnaire (combo – GMU/PSU and original)

Directions: Tell students you are going to ask them some questions about what they learned about writing.

1. GMU #1: Tell me the writing strategy that you learned to use. (looking for POW+TREE and what each step means Be sure to prompt here with “can you tell me more” to ensure you obtain all student knows about the strategy -- remember we are also looking for counter arguments here now, too)
2. GMU #2: Draw a picture of the graphic organizer we used (ask student to label the parts or you write in labels if the GO is unclear)
3. GMU #3: What did you like most about this strategy?
4. PSU #1: Has using the POW+TREE strategy helped you become a better writer? How?
5. PSU #2: What did you learned when working with your writing teacher?
6. PSU #3: How do you think POW+TREE could help other students?
7. PSU #4: If you were the teacher, would you add anything to help students learn to write?
8. PSU #5: If you were the teacher, what would you change in the POW+TREE lessons? Why?
9. PSU #6: From the POW+TREE lessons, what things have most helped you become a better writer?
10. Dani #1: We used different writing time periods. One type allowed you as much time as you wanted to write an essay. The other type only allowed you ten minutes. Tell me which method you preferred and why.
11. GMU #4: Have you used POW+TREE in any other classes? If yes, ask, what other classes or assignments and how has it helped? (e.g., what class or classes? How did you do on those assignments? Better or worse than before?)
12. GMU #5: Tell me how you have used counter arguments in your writing. Why are counter arguments important?

Appendix R

Initial Parent Interview

Demographic information

- a. What is your child's diagnosis?
- b. What age was your child diagnosed?
- c. Do you agree with the diagnosis?
- d. Who diagnosed your child?
- e. What behaviors were you seeing at home that led you to obtain help/diagnosis regarding your child?
- f. Do you have any other children with special needs?

What are your child's strengths?

What are your child's limitations?

What type of school setting is your child enrolled in?

What are your child's attitudes about school and learning?

What are your child's attitudes about writing specifically?

What other additional services does your child receive?

Is there anything else you would like to tell me about your child?

What do you hope the outcome of this study will be?

Appendix S

Final Parent Interview

A review about the study...I have been working with your student for ____ days on a writing strategy. When I interviewed you before the study began you stated that you hope that ____ would be the outcome of the study. Did this happen?

Do you think the intervention was helpful?

Have you noticed any changes in your child's attitudes about writing since taking part in the study?

Have your child's attitudes about school changed at all since taking part in this study?

How do you plan on reinforcing what was learned during the study?

Is there anything else you would like to add?





Appendix T

Woodcock Johnson Writing Fluency Subtest

WOODCOCK-JOHNSON
Tests of Achievement
SUPPLEMENTAL BATTERY

FORM A

TEST 35
Writing Fluency

Sample A: good cake is		The cake is good.
Sample B: pig fat is		
Sample C: this ball big		
Sample D: bell ringing the		

13

TEST 35

Writing Fluency (cont.)

1. this
bat
is



2. boy
happy
is



3. hot
soup
my



4. the
foot
little



5. a
jumping
boy



6. milk
like
cold



Go on to the next page →

TEST 35

Writing Fluency (cont.)

7. dress
the
pretty



8. time
clock
tells



9. girl
sad
today



10. nail
very
is



11. dog
food
eats



12. cone
good
that



Go on to the next page →

TEST 35

Writing Fluency (cont.)

13. bank
dime
dropping



14. house
new
lives



15. plays
cat
with



16. ball
catch
can



17. TV
not
working



18. dig
shovel
I



Go on to the next page →

TEST 35

Writing Fluency (cont.)

19. happy
rabbit
boy



20. bed
out
boy



21. light
in
shining



22. the
hand
dog



23. tree
fast
around



24. toy
truck
use



Go on to the next page →

TEST 35

Writing Fluency (cont.)

25. race

ran

again



26. hair

over

her



27. in

you

paper



28. cards

soon

have



29. fire

running

house



30. letter

for

all



Go on to the next page →

TEST 35

Writing Fluency (cont.)

31. mail
puts
for



32. packed
shirt
in



33. jumped
pass
first



34. into
bite
when



35. land
tractor
drives



36. money
rich
ground



Go on to the next page →

TEST 35

Writing Fluency (cont.)

37. wing
and
plane



38. how
today
thinking



39. girl
who
I



40. magic
out
hat





Appendix U

Recruitment Letter



The Effects of Self-Regulated Strategy Development on the Written Language Performance of Students on the Autism Spectrum

Dear Parents,

I am a speech language pathologist who is a special education doctoral candidate at George Mason University's College of Education and Human Development. The purpose of my dissertation research project is to find out the effectiveness of a written expression instructional method for students on the Autism Spectrum. This approach has been effective with other categories of exceptionality.

Participants sought after:

4-6 students grades 4-6, who are high functioning students are on the Autism Spectrum who:

1. have normal intellectual functioning and documented difficulties with written expression
2. who can write a sentence with a subject and a verb
3. who live close to George Mason University

Course of action:

To see if the written expression method can help students with autism improve their writing skills:

1. I will work 1-to-1 with your child, 3 days a week for 45 minutes for approximately 2 months (24 sessions)
2. Sessions will be scheduled at a mutually agreeable time and location

If your student fits the criteria and you would like your student to participate please contact me. I look forward to hearing from you. If your child does not meet the criteria listed above and you know other parents with high functioning children on the Autism Spectrum, please feel free to pass this letter on to them. You may contact me by email at [XXX](#) or by phone at XXX-XXX-XXXX.

Sincerely,

Dannette Allen-Bronaugh, M.S., CCC-SLP
Doctoral Candidate

Appendix V

Parental Consent Form



The Effects of Self-Regulated Strategy Development on the Written Language Performance of Students on the Autism Spectrum

PARENTAL CONSENT FORM

RESEARCH PROCEDURES

This study is being done to find out the usefulness of teaching an effective written expression instructional method one-to-one with students on the Autism Spectrum. If you agree to let your child participate, your child will be asked to work individually with the researcher 3 days a week 45 minutes for approximately 2 months. Follow-up visits will occur about 3 and 6 weeks after the study is finished for 45 minutes each. The study will take place at a mutually agreeable time and location. In addition you will be asked to participate in a parental interview at the beginning and conclusion of the study.

RISKS

There are no risks in taking part in this research.

BENEFITS

There is no direct benefit to your child taking part in this study. Your child may benefit indirectly from participation by learning a writing method that could help them complete writing assignments in school.

CONFIDENTIALITY

The data in this study will be private:

1. Your child's name will not be used in the results
2. A code will be placed on your child's work
3. The researcher only, will be able to link work to your child
4. Videotaped teaching sessions will only be used to make sure all the lesson materials are being covered and will not be shown outside of the research facility
5. You will be asked to share information on your child's records that you have (such as - standardized test scores, grades, and Individual Education Program) and medical records (such as - information regarding your child's diagnosis).

PARTICIPATION

Your child's involvement is voluntary. Your child may withdraw from the study at any time, for any reason without penalty.

CONTACT

Dani Allen Bronaugh a student at George Mason University will carry out this research. She can be reached at XXX-XXX-XXXX. Additional questions can be directed to her teacher Dr. Margo Mastropieri at XXX-XXX-XXXX or the George Mason University Office of Research Subject Protections at 703-993-4121.

This study has been reviewed according to George Mason University procedures governing your participation in this research.

CONSENT

I have read this form and:

Participation:

_____My child may participate

_____My child may not participate

Videotaping:

_____My child may be videotaped

_____My child may not be videotaped

Parent/Guardian Signature

Name of Child

Printed Name

Date

Version date: 28 September 2010

Appendix W

Student Assent Form



The Effects of Self-Regulated Strategy Development on the Written Language Performance of Students on the Autism Spectrum

STUDENT ASSENT FORM

PROCEDURES

The reason for this study is to find a way to help students write better papers. I want to know if you want to be in this study.

If you decide to work with me, this is what will happen:

1. You will work with me one-to-one
2. We will work on writing.
3. We will meet 3 days a week for or 45 minutes for about 2 months. Three and 6 weeks later I will check on your writing.
4. I will videotape our lessons. I want to check my teaching.
5. I will look at records your parents have to see your grades and other information.

RISKS

There are no risks to being in this study.

BENEFITS

There is no benefit to you being in this study. The writing method may help you with writing work in school.

CONFIDENTIALITY

Your name will not be used in the report. I will be the only one to know what you wrote. I will keep this information in a safe place.

PARTICIPATION

You do not have to be in the study. Nobody will be mad if you say no. If you say yes and change your mind after we start, that is ok. If there is something you do not understand you can ask me.

CONTACT

My name is Dani Allen Bronaugh. I am a student at George Mason University. If you have questions my phone number is XXX-XXX-XXXX. My teachers name is Dr. Margo Mastropieri. Her number is XXX-XXX-XXXX. George Mason University knows about this study. They said it is OK for me to do it. If you have questions about this study call 703-993-4121.

CONSENT

I have read this form, and it has been explained to me:

Participation:

_____ Yes, I will be in this study _____ No, I will not be in this study

Videotaping:

_____ Yes, you can videotape the sessions _____ No, you cannot videotape the sessions

Write your name on this line

Date

Name of person explaining this form

Date

Version date: 28 September 2010

Appendix X

Holistic Quality Scoring Rubric

Score of 10. Persuasive essay includes topic sentence, at least three reasons with at least three explanations, and an ending sentence. Essay is written in a logical sequence that strengthens the writer's argument. Writer uses one counter argument/point and one counter explanation in the essay.

Score of 9. Persuasive essay includes topic sentence, at least three reasons, at least 3 explanations, and an ending sentence. Essay is written in a logical sequence that strengthens the writer's argument. Writer uses 1 counter argument/point in the essay.

Score of 8. Persuasive essay includes topic sentence, at least three reasons, at least 2 explanations, and an ending sentence. Essay is written in a logical sequence that strengthens the writer's argument.

Score of 7. Persuasive essay includes topic sentence, three reasons with at least two explanations, and ending sentence. Essay is written in a logical sequence that strengthens the writer's argument.

Score of 6. Persuasive essay includes topic sentence, three reasons with at least 1 explanation, and ending sentence. Essay's sequence is weak, therefore limiting the writer's argument.

Score of 5. Persuasive essay includes topic sentence, three reasons, and ending sentence.

Score of 4. Persuasive essay includes four of the following parts: topic sentence, reasons, and ending sentence.

Score of 3. Persuasive essay includes three of the following parts: topic sentence, reasons, and ending sentence.

Score of 2. Persuasive essay includes two of the following parts: topic sentence, reasons, and ending sentence.

Score of 1. Persuasive essay includes one of the following parts: topic sentence, reason, and ending sentence.

Score of 0. No essay parts.

Appendix Y

On-Task Behavior Coding Sheet

Date:

Student:

Lesson:

Start time:

End time:

Observer:

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30

CODES: 1=on task, 2=off task, 3=off camera/out of room, 4=student back in camera view/back in room from being out

Qualitative notes:

Today's lesson was...

Brief description of...

Classroom:

Students:

Specific behavioral examples:

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CURRICULUM VITAE

Dannette Allen-Bronaugh was born in Tucson, Arizona. As the daughter of a career Air Force officer, she attended many schools as she moved throughout the United States and Europe. Dani graduated from Foothill High School in Pleasanton, California in 1988 and attended the University of Vermont in Burlington, Vermont, where she received a Bachelor of Science degree in Communications Sciences and Disorders in 1992. In 1994, she obtained a Master of Science in Communications Sciences and Disorders from Massachusetts General Institute of Health Profession in Boston, Massachusetts.

After graduating from graduate school, Dani worked as a speech language pathologist for Fairfax County Public Schools in an elementary school and then with Child Find working with preschool children ages 3 - 5. She received her certificate of clinical competence in 1995, which has allowed her to provide children with private speech and language services. She holds a Virginia Teaching and a Virginia Department of Health Professions license.

Dani worked for three years as a graduate research assistant in the College of Education and Human Development's special education department at George Mason University. She was awarded a fellowship with Dr. Mastropieri and Dr. Thomas Scruggs on a U.S. Department of Education Doctoral Leadership Training Grant (H325D070008). The emphasis of this grant was on training, research, teaching and service for children with mild disabilities. In addition, through a grant with Pennsylvania State University, with a subcontract to George Mason University, Dani was able to assist Dr. Margo Mastropieri in the instruction of persuasive writing to adolescents with emotional and behavioral disorders (EBD). Through this partnership, Dani assisted with three different writing intervention projects in local schools. In addition she has helped numerous graduate students with their research projects.

Dani has also served as a guest lecturer in a variety of classes, teaching on a variety of topics, from speech and language issues to educational law. In the spring of 2011 she taught Characteristics of Students with Mild Disabilities Who Access the General Education Curriculum (EDSE 440) at George Mason University. She also appears in a recent video of 1, 2, 3 Magic for Teachers. Dani is currently an assistant professor in the Department of Exceptional Children at James Madison University, where she teaches a variety of undergraduate and graduate courses.