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EFFECTS OF SELF-MONITORING AND SELF-EVALUATION ON THE WRITTEN LANGUAGE PERFORMANCE AND ON-TASK BEHAVIOR OF ELEMENTARY STUDENTS WITH LEARNING DISABILITIES

DISSERTATION

Presented in Partial Fulfillment of the Requirements for the Degree Doctor of Philosophy in the Graduate School of The Ohio State University

By

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The Ohio State University 1998

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ABSTRACT

This study was conducted to determine the effects of self-monitoring (alone and in combination with changing criterion with public posting) and self-evaluation on the written language performance and on-task behavior of elementary students with learning disabilities. The subjects were seven elementary students enrolled in a private school for students with learning disabilities.

Throughout the study, students wrote for 10 minutes each session. Self-monitoring procedures for written language performance included having the students count and record the number of words and sentences written. Self-evaluation involved the students evaluating the quantity and quality of their writing as compared to the last session. The changing criterion with public posting condition involved the experimenter and/or student setting goals for the number of words written, then posting these totals in the classroom each day.

During all sessions, the experimenter collected data on written language performance, including number of words, sentences, different words, and adjectives written. For three students, the experimenter also collected on-task data each session.

Although results for self-monitoring alone were not compelling, during the changing criterion with public posting phase a positive relationship was shown between self-monitoring, combined with target aims and reinforcement and the number of words written for four students. Results for self-evaluation were not compelling regarding effects on written language output or quality. There were also no compelling results for on-task behavior associated with either self-monitoring or self-evaluation.
The results of the current study suggest that self-monitoring may be an effective procedure for some students when combined with goals for written language performance and reinforcement for meeting or exceeding those goals. However, further research should be conducted to determine under what conditions and for what students these effects could be replicated.
This work is dedicated to the memories of my father-in-law, Ralph E. Goddard, and my brother-in-law, Dr. Ralph E. Goddard, Jr., who were sources of encouragement and inspiration.
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Without the love, support, and encouragement of my husband, Roger, I may never have ventured upon this path. He is my inspiration and my guiding light. He has been an unwavering companion, challenging, supporting, and encouraging me each step of the way. Together we have made this journey and shared personal and intellectual growth. Together we will venture into new realms...

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**FIELDS OF STUDY**

Major Field: Education
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CHAPTER 1
INTRODUCTION

The academic achievement of students with learning disabilities falls consistently below that of their peers (Heward, 1996). Much of the research conducted with students with learning disabilities has focused on identifying “instructional techniques that serve to increase these students’ abilities to learn and perform academic problems in a consistent manner” (Dunlap & Dunlap, 1989). For example, the extant literature provides evidence of strategies that have been employed to improve reading (Mastropieri & Scruggs, 1997), mathematics (Laird & Winton, 1993; Marsh & Cooke, 1996), written language (De La Paz, 1997), spelling (Fulk & Stormont-Spurgin, 1995; McNeish, Heron, & Okyere, 1992; Okyere, Heron, & Goddard, 1997), and other academic skills (Barbetta & Heward, 1993; Mastropieri, Scruggs, & Whedon, 1997) for students with learning disabilities and other students in general education classrooms who are “at risk” struggle to keep pace with average-achieving peers, and present unique challenges for teachers.

Teachers are responsible for providing instruction to widely diverse groups of students. To accomplish this objective, teachers might rely on a host of strategies, most of which could be categorized into three main classifications: teacher-directed, peer-mediated, or self-directed. Given that a basic goal of education is to teach students to be as independent as possible, teachers might provide students with more responsibility for their own learning. Self-monitoring is one procedure that can aid in reaching this goal.

Self-monitoring is a self-management strategy that refers to “an individual’s systematically observing his own behavior and responding to the occurrence or
nonoccurrence of a specified target response" (Cooper, Heron, and Heward, 1987, p. 524). Although it began as a clinical method to help patients collect data on personal habits, such as overeating (Lipinski, Black, Nelson, & Ciminero, 1975) or smoking (Ober, 1973), self-monitoring has been used extensively in education settings. Two types of self-monitoring exist: self-monitoring of attention (SMA), and self-monitoring of productivity (SMP) (Reid, 1996). Several studies have assessed the effects of self-monitoring on attention (Blick & Test, 1987; Hallahan & Sapona, 1983; Harris, 1986b; Lloyd, Bateman, Landrum, & Hallahan, 1989; Reid & Harris, 1993). The collective upshot of this body of literature shows that incidents of on-task behavior increase when self-monitoring is introduced (see Appendix A for a brief synopsis of SMA studies). In addition to on-task behavior, the effects of self-monitoring on various academic behaviors have been examined, including mathematics (Dunlap & Dunlap, 1989; Lloyd, Bateman, Landrum, & Hallahan, 1989), spelling (Harris, 1986b), reading (Hallahan, Marshall, & Lloyd, 1981), and written language (Harris, 1986b; Harris, Graham, Reid, McElroy, & Hamby, 1994) (see Appendix B for a brief synopsis of SMP studies).

In the Harris et al., 1994 study, for example, Experiment 2 focused on the effects of self-monitoring on on-task behavior and academic performance as measured by the number of words produced in written stories. Students were provided black and white pictures as stimuli for writing and encouraged to use a five-step writing process that they had previously been taught. Under SMA conditions, students recorded whether they were on- or off-task at the sound of the tone, and tallied and graphed their responses at the end of each session. Under the SMP conditions, students counted and graphed the number of words written during the session. The authors concluded that self-monitoring increased on-task behavior, number of words written, and quality ratings of written work. These findings are important because "pupils with learning
disabilities lag behind their normally achieving classmates in many aspects of written expression” (Hallahan, Kauffman, & Lloyd, 1996, p. 288).

Self-monitoring procedures have potential benefits for teachers and students. Benefits for teachers include: a) more time to devote to other tasks, such as individualizing instruction for students; b) less time spent correcting student off-task behavior (i.e., classroom management); and c) improved academic performance (Harris et al., 1994). Students benefit through a) more positive, academic exchanges with teachers, rather than scolding or redirection for off-task behavior; b) potentially more academic task completion by staying on-task more often; c) self-monitoring techniques are transportable (useable in various classrooms); and d) the technique is learner-centered. Importantly, students and teachers have indicated that they like and would continue using self-monitoring techniques (Harris et al., 1994; Wolfe, 1997).

In addition to self-monitoring, self-evaluation is a promising self-management technique that may be useful for students with learning disabilities. Little research has been conducted to assess the effects of self-evaluation on academic outcomes. Results of the research that has been conducted indicate that self-evaluation may need to be combined with other methods, such as self-monitoring, to be effective (DiGangi & Maag, 1992). DiGangi and Maag suggested that self-evaluation seems to lend itself to being combined with self-reinforcement, but even so, this combination did not produce substantial results on appropriate or inappropriate verbalizations.

Other researchers have studied the effects of self-evaluation on handwriting legibility (Sweeney et al., 1993), frequency of disruptive behavior (Kaufman & O’Leary, 1972; Santogrossi et al., 1973), amount of study behavior, reading achievement (Kaufman & O’Leary, 1972), and appropriate behavior during independent seatwork (Sainato et al., 1990). To date, studies involving self-evaluation of written language behaviors are lacking.
CHAPTER 2
REVIEW OF THE LITERATURE

This chapter will provide a review of extant literature relevant to this study. It begins with a section on written language, including how written language deficits affect children with learning disabilities. Next, self-management is discussed. Literature on self-monitoring and self-evaluation is reviewed in the final two sections.

Written Language

Writing is defined as “language symbols or characters written or imprinted on a surface: readable matter” (Morris, 1981, p. 1478). Written language requires the ability to translate mental processes, including comprehension, reasoning, and expression into print. Some authorities believe that it is the highest level of language development and is the most difficult academic area for children (Smith, 1998; Smith, Dowdy, Polloway, & Blalock, 1997). The ability to communicate via print is an important skill, allowing the writer to compose notes, letters, stories, and poems, as well as complete job applications. Three major areas are involved in written expression: handwriting, spelling, and composition (Hallahan, Kauffman, & Lloyd, 1996). Of the three, composition is the most difficult to teach.

Composition

According to Bereiter (as cited in Hallahan, Kauffman, & Lloyd, 1996), a writer’s focus changes as the writer’s abilities become more sophisticated. Specifically, development progresses from the process of writing (which includes handwriting and spelling), to the written product, to getting the message across to readers. In composing,
a writer completes steps such as formulating, elaborating, sequencing, clarifying, and revising. These steps can be categorized into three discrete, but related, areas: prewriting, writing, and postwriting stages.

**Prewriting.** Polloway et al. (1989) refer to prewriting as the planning stage. During the prewriting stage the writer selects a topic, gathers and outlines information, and begins thinking about the intended audience. Hammill and Bartel (1990) outline a model of written language that includes input, motivation, and purpose as occurring during the prewriting stage. Sources of input for ideas include experiences, reading, visual stimuli, and talking to others. Motivation refers to the author’s desire to communicate via writing. Purposes for writing might be expressive or utilitarian. Expressive writing allows a writer to be flexible in selecting content, and to adopt a more personal perspective in content, while utilitarian writing requires an understanding of the task objective, an ability to identify a target audience, and choice of the appropriate framework in which to present the writing.

Hammill and Bartel (1990) also present abilities typically associated with each writing stage. For prewriting, competent writers have experiences upon which to draw, possess the necessary receptive and expressive language skills, write legibly, and are motivated to write.

**Writing.** The writing stage, in which students pen their draft, involves handwriting, spelling, and mechanics (including vocabulary, sentence form, and sequence of ideas). However, the focus should be on content rather than form and grammar. Hammill and Bartel (1990) believe that the writing stage should include several pauses during which time the writer rereads what has been written, consults other sources (such as peers, adults, reference texts), engages in self talk, and rephrases the content of the written draft. Typical competencies required for this stage include the
ability to write simple, compound, and complex phrases and sentences, use appropriate capitalization and punctuation, use descriptive and varied vocabulary, write in complete paragraphs, and express creative ideas in writing.

**Postwriting.** During the postwriting stage, students focus on proofreading and editing. An accomplished writer spends time choosing and organizing words to convey meaning, to excite readers, and to describe complex ideas. Writers must be able to identify gaps in their writing and reorganize existing material or add new material. In addition to the ability to edit for capitalization, punctuation, sentence structure, word usage, content, and organization, Hammill and Bartel (1990) point out that competent writers must also be able to focus on readability, including linking paragraphs using transitional phrases and deleting irrelevant material.

The skills involved in the writing process are complex. Hallahan, Kauffman, and Lloyd (1996) indicate that students' writing changes as they grow. When they first begin writing, children typically focus on mechanical skills, such as handwriting and spelling. From there, they begin to organize and display their ideas in writing. By high school, most students should have mastered handwriting, spelling, and grammar skills and the focus of writing should be on communicating ideas and refining style. These skills reach far beyond the simple task of getting symbols onto paper (Salvia & Ysseldyke, 1998). However, students with learning disabilities in written language often struggle with the basics of writing.

**Students With Learning Disabilities in Written Language**

Until the early 1970s, characteristics of written language deficits in children with learning disabilities were not often studied by researchers (Hallahan et al., 1996). Since then, researchers have found that students with learning disabilities in written language achieve at slower rates than do their typically-developing peers. Students with learning disabilities: a) tend to use a lower level of vocabulary, b) struggle with idea generation,
c) use immature themes, d) have difficulty with spelling, grammar, organization, cohesion, and use of descriptives, and e) write fewer words, ideas and details (Smith et al., 1997). Graham and Harris (1992) concluded that “the most consistent finding across studies is that LD students’ compositions are shorter than those written by their normally achieving peers” (p. 92). In summarizing a study by Nodine and her colleagues, Graham and Harris report that stories of eleven-year-old students with learning disabilities averaged 54 words in length, while their nondisabled peers wrote stories averaging 104 words long. Researchers have also noted that students with learning disabilities have difficulty organizing compositions and less ability than their typically-developing peers to distinguish essential from nonessential information and to summarize content (Smith et al., 1997).

Reinforcement for Written Language Performance

Research has shown that providing reinforcement for various aspects of written language performance produces increases in the targeted skill (Hallahan et al., 1996). For example, Brigham, Graubard, and Stans (1972) conducted a study with thirteen fifth graders identified as experiencing behavior problems and/or academic failure. Using a multiple baseline across groups design, the researchers began with baseline, in which students were reinforced for general work behaviors. Following that, a series of contingencies were sequentially changed; first, students were reinforced for increasing total number of words, then for number of different words, and finally for number of new words (words never used before in their stories) written. Brigham et al. found that when teachers made reinforcement contingent on writing a higher number of words, students wrote more words. If reinforced for writing different words, students used a wider written vocabulary. When reinforced for writing new words, the students spent more time reviewing the lists of words they had already used, writing fewer total words during that phase, but simultaneously using more new words. Additionally, writing
quality, as assessed by objectives judges, was assessed along five dimensions. Writing quality increased slightly for the total number of words condition, very little for the number of different words condition, and substantially during the number of new words phase. The authors also noted changes in students' expressions about writing, from being negative at the beginning of the study to enthusiastic at the end. The authors suggest that the analysis of the effects of reinforcement on "creative" aspects of composition is a promising area for future research.

Hallahan et al. (1996) caution that using reinforcement for a particular area may not increase performance in other areas. Further, they indicate that reinforcement should be used in conjunction with other techniques to improve written language composition.

**Teaching and Remediating Written Composition Skills**

To improve their written composition skills, students should receive instruction pertaining to each stage of the writing process (Hammill & Bartel, 1990). During prewriting, students need to learn how to brainstorm ideas and write key words and phrases related to their ideas. The writing stage requires practice in fluency (getting words onto paper) and instruction in organizing and enhancing content. The final stage, postwriting, involves instruction in editing. Harris and Graham (1996) suggest a three-step writing strategy that encompasses prewriting and writing: Think about who will read this and why I am writing it, Plan what I will say, and Write and say more. Mercer and Mercer (1985) describe COPS, an approach for editing (the postwriting stage). COPS refers to Capitalization, Overall appearance (e.g., logical, legible), Punctuation, and Spelling, and serves as a mnemonic to help students during the editing process.

Additional writing strategies include the language experience approach (Hammill & Bartel, 1990), in which each student's background and interests are drawn upon to enhance motivation and content quality. Students assume increasing levels of responsibility for writing as their skills improve, beginning with the teacher writing a
student's verbal reporting of objects or events and eventually requiring the student to write complete compositions. Hammill and Bartel also present several commercially available programs and computer programs that may be useful in teaching written composition skills.

Heward et al. (1991) point out that students should have the opportunity to write daily and should receive immediate, precise, positive, and frequent feedback for their writing. However, teachers, especially general education teachers, simply do not have the time required to read and provide specific feedback on each student's daily compositions. Heward et al. suggest a selective grading strategy in which teachers read and evaluate 20% to 25% of each day's papers and use portions of those papers as instructional examples. Various self-management strategies might also be used to allow daily writing and specific feedback, while simultaneously relieving the teacher's burden for reading each student's daily work and placing more responsibility with the students.

Self-Management

Self-management, or self-control, is defined as "the personal and systematic application of behavior change strategies that result in the desired modification of one's own behavior" (Cooper, Heron, & Heward, 1987, p. 517). Two responses comprise self-management: the controlling response (i.e., the response emitted to control the target behavior), and the controlled response (i.e., the target behavior). Self-management strategies include stimulus control techniques (e.g., confronting oneself with controlling stimuli, altering the environment to prevent undesirable behaviors from occurring), self-delivery of consequences, and self-monitoring (Cooper et al., 1987). DiGangi and Maag (1992) also consider self-evaluation as a self-management technique.

Effectively, self-monitoring and self-evaluation focus on the middle term of the three-term contingency (the behavior) although all three components are involved (Cooper et al., 1987). Within the rubric of self-management, the controlled response in
self-monitoring and in self-evaluation is the target behavior (e.g., on-task behavior); the
controlling response is the self-monitoring intervention (e.g., assessing and recording
instances of on- and off-task behavior). Similar to self-management, self-monitoring is
composed of two elements: self-observation, in which a person observes his or her own
behavior to determine whether the target behavior has occurred, and self-recording (Carr
& Punzo, 1993; Nelson & Hayes, 1981; Reid, 1996). Self-evaluation consists of self-
assessing and recording one’s behavior along a rating scale (DiGangi & Maag, 1992).
DiGangi and Maag also included a self-reinforcement component with self-evaluation,
pointing out that the two responses are often paired.

Self-Monitoring

Definition

Self-monitoring is defined as “an individual’s systematically observing his own
behavior and responding to the occurrence or non-occurrence of a specified target
response” (Cooper et al., 1987, p. 524). Further, Harris (1986b) and Harris et al.
(1994) suggest that self-monitoring is usually followed by self-recording the behavior.
Terms that may be interchangeable with self-monitoring include self-recording, self-
observation, and self-assessment. The term self-monitoring will be used for purposes of
this study.

Advantages for Students and Teachers

Self-monitoring procedures help students become more aware of their behavior
and encourage self-responsibility (Watson, 1996; Wolfe, 1997). Harris et al. (1994)
state that “self-monitoring of behavior is an important component of self-regulated
learning” (p. 121). For students with learning disabilities, behavioral regulation is often
left to parents and/or teachers. By putting the student in control, self-monitoring enables
Students are reinforced when in control of their own behavior (Watson, 1996); therefore, self-monitoring can also be motivating (Wolfe, 1997). Self-monitoring allows students to become active participants in observing, evaluating, recording, and reinforcing their own behavior. It is a learner-centered technique that increases student engagement, productivity, and learning (Blick & Test, 1987).

By remaining on-task more often, students may experience more academic task completion, although this relationship is more correlational than causal. In addition to the academic benefits inherent in this improvement, students and teachers may have more positive exchanges that are more focused on academics than scolding or redirection. Over time, these positive exchanges may influence students’ attitudes toward school. Blick and Test (1987) found that students liked the experimental periods better than other classes because the teachers did not complain about students completing their work or paying attention.

Self-monitoring has been shown to increase maintenance of behavior change (Dunlap & Dunlap, 1989; Watson, 1996). Maintenance is enhanced because self-monitoring techniques are transportable. Additionally, improved generalization has been an outcome of self-monitoring (Blick & Test, 1987; Watson, 1996). Self-monitoring is a flexible method that can be applied to a variety of behaviors (Wolfe, 1997) and, importantly, students and teachers like the method (Harris et al., 1994, Wolfe, 1997).

Teachers who implement self-monitoring techniques can focus more on academic teaching duties because of reduced time requirements for classroom management (Blick & Test, 1987; McDougall & Brady, 1998; Watson, 1996; Wolfe, 1997). Further, teachers can be confident that they are implementing an effective teaching technique (Dunlap & Dunlap, 1989). Self-monitoring fits within Heward’s (1994) definition of a good educational model: it is supported by extensive empirical
research and is relevant to classroom realities. Finally, self-monitoring is a low-tech strategy, meaning that it is inexpensive and easy to implement (Heward, 1994).

**Disadvantages for Students and Teachers**

Students may find some aspects of self-monitoring procedures intrusive or laborious (Harris et al., 1994; Reid & Harris, 1993). Some studies have shown that self-monitoring techniques may require intervention by an external agent (e.g., teacher or parent) for maintenance of behavior change to occur (Cooper et al., 1987). Therefore, initial changes in behavior may not be immediately effective for some students, unless another person intervenes first. Cooper et al. suggest that this may be a motivational factor; students who have a desire to change may benefit more from self-monitoring than students who do not.

In the Harris (1986b) study, teachers indicated that having students self-monitor their on-task behavior created additional demands due to equipment and space requirements. Additional disadvantages concern the teacher as change agent. Kazdin (1975, as cited in Watson, 1996) pointed out that not all behaviors can be noticed by external agents, especially if a teacher is working with a large number of students. Further, external agents may acquire stimulus control, acting as a cue for emission of the target behavior (e.g., presence of the teacher within arm's length may be a cue for a student to focus on academic work). Finally, Kazdin argued that generalization may be limited if externally-administered contingencies have not been applied.

**Social Validity**

Social validity incorporates various measures designed to assess the acceptability or viability of an intervention (Schwartz & Baer, 1991). In self-monitoring studies, social validity is generally assessed via interviews (Harris, 1986b) or questionnaires (Harris et al., 1994; Wolfe, 1997). Harris et al. (1994) found that when given a choice, most students selected self-monitoring of performance, although all but one made
positive statements about self-monitoring of attention. Other studies indicate that students and teachers found self-monitoring helpful and liked doing it (Blick & Test, 1987; Carr, Taylor, & Austin, 1995; Harris, 1986b, McLaughlin, 1984; Wolfe, 1997).

Reactivity

Reactivity occurs when changes in a target behavior are produced by an intervention procedure (Cooper et al., 1987) or because a person is aware of being observed (Carr, Taylor, & Austin, 1995). "Under certain conditions, self-monitoring produces alterations in response frequency. Such changes in behavior rate have been labeled the reactivity of self-monitoring" (Nelson & Hayes, 1981, p. 4). However, Nelson and Hayes indicate that self-monitoring does not always cause reactivity effects.

Reactivity has the potential to negate effects attributable to the independent variable being studied. Therefore, "it is imperative that behavioral observers understand reactivity and take measures to counter, assess, or take advantage of it" (Carr, Taylor, & Austin, 1995, p. 141). Reactivity effects can be countered by achieving a stable baseline and maintaining the integrity of the measurement system throughout the intervention (Baer, Wolf, and Risley, 1968). Although generally viewed in a negative light, reactivity can "be a positive and useful phenomenon to the behavior analyst" (Carr et al., 1995), especially in relation to self-monitoring, because most behavior change attributable to self-monitoring occurs in the desired direction (Cooper et al., 1987).

Self-monitoring has often been used in clinical interventions as a nonintrusive information-gathering technique for behaviors, thoughts, and feelings accessible only to clients (Carr, Taylor, & Austin, 1995; Reid, 1996; Reid & Harris, 1993). Clinicians soon discovered that self-monitoring itself often brought about changes in behavior; subsequently, self-monitoring became an intervention in its own right (Carr, Taylor, & Austin, 1995; Reid, 1996).
Within a school setting, Broden, Hall, and Mitts (1971, Exp. 1) found that merely having a student record instances of study behavior when she thought of it during a history class resulted in higher levels of study behavior. Although Liza, the subject, was not always accurate in recording (in fact, later in the study, she began forgetting to record her study behavior), the presence of the recording slip apparently resulted in maintained higher levels of study behavior when compared to baseline. The authors conclude that perhaps the slip functioned as a discriminative stimulus for study, regardless of whether it was used to record study behavior.

Methods for Training Self-Monitoring

While not intended to be exhaustive, this section describes three popular methods used to conduct self-monitoring studies: in-school series of training sessions, individual conferences, and whole class instruction. Despite various procedural differences between studies, the majority of training sessions have used a direct instruction approach to train self-monitoring (e.g., providing examples and non-examples, model-lead-test format).

In-school series of training sessions. Marshall and Heward (1979) taught eight males, ages 16 to 17, to employ self-management/monitoring skills over a 13-day period. Essentially, the 13 sessions were divided into key elements such as: defining target behaviors, measuring behavior, graphing, providing reinforcement, and so forth. A paper and pencil posttest was completed at the end of the 13-day period to assess skill acquisition. The students' scores improved from an average of 36% correct on the pretest to 81% correct on the posttest. Additionally, ratings of students' self-management projects along 20 different criteria showed that students' projects were technically accurate, with some weaknesses in defining target behaviors.

Blick and Test (1987) conducted self-monitoring training over a two-day period. The training period was recorded as a separate phase between baseline and intervention.
During training, students were taught the definition of on-task behavior using examples of on- and off-task behavior. Additionally, the benefits of increased on-task behavior were explained to students. During the two-day training period, students were reminded throughout practice sessions of the definition of on-task behavior and were reinforced for accuracy of recording. Reminder prompts of the definition were faded during self-monitoring conditions to every two days at the beginning of the class period only.

**Individual conferences.** In both experiments conducted by Harris et al. (1994), students met with the teacher individually on the first day of each of the two self-monitoring interventions (self-monitoring attention and self-monitoring performance). For self-monitoring of attention, the student and the teacher first discussed the importance and definition of being on-task. The student was then taught to ask, "Was I paying attention?" at the sound of a tone and was taught how to use the self-monitoring of attention worksheet. Training for self-monitoring of written language performance was similar, except that students were taught to count the number of spelling words written correctly at the end of the spelling session, and how to graph that amount.

**Class as a whole.** Students in the Wolfe (1997) study were taught both self-monitoring procedures using a model-lead-test format, as an entire class. During training, students were taught the definition of on-task behavior followed by training on how to record their on- or off-task behavior on a recording sheet at the sound of a tone. Immediately following training for on-task behavior, students were taught how to self-monitor their written language performance by counting and graphing the number of words written during a 10-minute writing period. Training occurred within one day.

**Ensuring the Accuracy of Self-Monitoring**

Research has shown mixed results regarding the necessity for accuracy in recording during self-monitoring. Blick and Test (1987) found that students who recorded instances of on- and off-task behavior accurately were on-task more often than
those students who were less accurate in recording. McLaughlin (1984) found that students who earned points in an existing token economy system for accurate self-recording of on-task behavior performed at higher levels on on-task and academic measures than did students who self-monitored without reinforcement for accuracy. Other researchers claim that accuracy of self-monitoring is not important for self-monitoring to be effective (Broden, Hall, & Mitts, 1971; Hallahan et al., 1979; Harris, 1986b; Harris et al., 1994; Nelson & Hayes, 1981).

**Effectiveness in Educational Settings**

**Populations studied.** Self-monitoring has been conducted at elementary (Brown & Frank, 1990; Harris et al., 1994; McLaughlin, 1984) and secondary (Blick & Test, 1987; Martin & Manno, 1995) levels, with students with behavioral disorders (Carr & Punzo, 1993; McLaughlin, 1984) and learning disabilities (Brown & Frank, 1990; Harris et al., 1994). Mastropieri and Scruggs (1997) conclude that self-monitoring is a “best practice” strategy when teaching reading comprehension to students with learning disabilities. Their criteria for “best practice” explicitly met two of the five criteria cited by Peters and Heron (1993) as tests for claiming best practices: consensus with existing literature, and producing desired outcomes.

**On-task behavior.** The primary goal of self-monitoring attention (SMA) is to increase on-task behavior, assuming that if students are attending, they will experience improved academic performance (Harris et al., 1994; Reid, 1996). Blick and Test (1987) found positive effects of self-monitoring on on-task behavior for high school students. Harris (1986b), Harris et al. (1994), and Reid and Harris (1993) all found that while on-task behavior increased to a meaningful degree during both self-monitoring of attention (SMA) and self-monitoring of productivity (SMP), no significant differences were found between the two conditions on on-task behavior (i.e., one condition does not appear to be more effective than the other). Kern et al. (1994) found that when
students with emotional and behavioral disorders self-monitored their on-task behavior. Rates of on-task behavior increased, while rates of disruptive behavior decreased.

In a study conducted by Hallahan et al. (1979), self-monitoring attention led to positive effects on two academic tasks: math and writing, as well as on-task behavior. The subject was an 8-year-old boy, Edwin, who was identified with a learning disability and who was noted to be on-task for approximately 57% of the time. Dependent variables included on-task behavior and academic productivity, including measures of handwriting (number of correct words - words that were legible with letters in the correct order - produced per minute) and mathematics (number of correct answers written per minute). A combination multiple baseline and reversal design across responses (handwriting and mathematics) was employed for this study. Following baseline, Edwin was taught to self-monitor his on-task behavior using a tape recorder with tones occurring an average of 45 seconds apart, and a recording sheet where, in response to the tone, he marked “yes” or “no” to the self-asked question “Was I paying attention?” The first two phases were repeated. Following that, Edwin self-monitored on-task behavior without the use of a tape player. During this phase, he occasionally asked himself if he was paying attention and recorded his response on his record sheet. Next, the researchers implemented a self-praise phase, using the self-monitoring without tape procedures and requiring Edwin to provide feedback to himself based upon his responses to the question “Was I paying attention?” If his answer was “yes,” he was instructed to say “Good job” or an equivalent phrase to himself. If the answer was “no,” Edwin was instructed to say to himself “I better start paying attention” or some equivalent phrase. A follow-up session was conducted one month later during mathematics to observe and record his on- and off-task behavior. Substantial increases occurred in on-task behavior for self-monitoring with the tape player over both baseline phases during both handwriting and math. The final three treatments: self-monitoring
without tape, self-praise, and follow-up resulted in continued high levels of on-task behavior for handwriting and math. Results for academic behavior were not as pronounced. Of note is that, although Hallahan et al. claim positive effects of self-monitoring on both academic procedures, there is a consistent positive slope across all treatment conditions for the number of correctly written words. Also notable is that a return to baseline did not produce levels as low as the initial baseline phase. For math performance, increases over previous baseline phases occurred for both self-monitoring with tape conditions. The self-monitoring without tape condition produced results similar to, but more variable than, self-monitoring with tape phases. During the self-praise treatment, Edwin's math performance was initially at levels higher than previous phases, but experienced a dramatic rapidly decelerating trend. Of further note is that, throughout the study, including all phases, Edwin received a backup reinforcer at the end of each class period if he completed his work. The authors suggest further research to study the effects of self-monitoring in the absence of reinforcers to determine the necessity for external reinforcement when using self-monitoring procedures.

**Academic performance.** Teachers and researchers assume that self-monitoring academic performance leads to improvements in both academic performance and on-task behavior (Harris et al., 1994; Reid, 1996). Researchers have examined the effects of self-monitoring on mathematics (Brown & Frank, 1990; Dunlap & Dunlap, 1989), reading (Mastropieri & Scruggs, 1997; McLaughlin, 1984), spelling (Harris, 1986b; Harris et al., 1994, Exp. 1; McLaughlin, 1984), and written language (Harris et al., 1994, Exp. 2; Martin & Manno, 1995).

Dunlap and Dunlap (1989) conducted a study using self-monitoring checklists to teach subtraction to students with learning disabilities. Students began earning points prior to self-monitoring (during baseline) for accurate completion of subtraction problems. The researchers then conducted an error analysis and constructed
individualized self-monitoring checklists for the students. During self-monitoring, students were reinforced for accurate responses and for each problem in which all self-monitoring steps from the checklist were completed correctly. The final phase was a maintenance phase in which the self-monitoring checklists were removed. When self-monitoring was introduced, each student experienced dramatic gains in accuracy when subtracting that were maintained throughout the self-monitoring phase. Further, these results were maintained once the self-monitoring package was withdrawn.

Few self-monitoring studies have examined the effects of self-monitoring on students' written compositions (Harris et al., 1994, Exp. 2; Martin & Manno, 1995; Wolfe, 1997). This is an important area for research, because students with learning disabilities "generate an inordinately small amount of content when writing" (Harris et al., 1994, p. 124). Martin and Manno (1995) conducted a written language self-monitoring study in a resource room setting with three middle school aged boys with learning and behavior problems. The teacher chose pictures from popular magazines to present to students, telling the students to choose a picture and write the best story they could about the picture. Students were taught how to plan their compositions, then to complete a checklist addressing six elements of a story (main character, other characters, setting, problem, plan, and ending) as each element occurred in their stories. All three students increased their use of the six elements after being taught the self-monitoring steps. The researchers were also interested in discovering whether writing quality was related to increases in number of words, number of legible words, number of correct word sequences, and words per minute. They found a moderate relationship between the number of words written and story quality. Specifically, the more words students wrote, the higher the quality scores for their stories. No substantial relationships were discovered between the other variables (number of legible words, correct word sequences, and words per minute) and self-monitoring.
In his summary of self-monitoring articles, Reid (1996) concluded that self-monitoring can have positive effects on academic performance. He qualified this statement by noting that SMA and SMP may increase the rate or number of responses, but that effects on academic accuracy are not as clear. This qualification is based on the limited number of studies assessing the effects on accuracy and the contention that self-monitoring does not teach new behaviors; rather it may have an effect on behaviors already existing in a students’ repertoire.

Comparisons of Self-Monitoring Attention and Self-Monitoring Academic Performance

The majority of self-monitoring studies have involved self-monitoring attention (SMA), or on-task behavior (Reid, 1996). In fact, “on-task behavior is the single most common dependent variable reported in self-monitoring research in school settings” (Reid, 1996, p. 318). SMA involves teaching students, when cued, to determine whether or not they are on-task (or paying attention) and to record the results.

Studies of self-monitoring performance (SMP) have involved teaching students to self-assess and self-record instances of academic behavior. According to Reid, researchers’ approaches to SMP have varied, and may focus on teaching students to self-monitor “productivity (e.g., the number of math problems they attempted), accuracy (e.g., the number of math problems completed correctly), or strategy use (e.g., self-monitoring whether or not steps in a strategy were performed)” (1996, p. 318).

Harris (1986b) conducted a study with students with learning disabilities, assessing the effects of self-monitoring attention versus self-monitoring of performance on on-task behavior and academic output in spelling. In the SMA phase, at the sound of a tone, students were instructed to ask the question, “Was I paying attention?” and to mark “yes” or “no” on a recording sheet. Students did not graph their on-task behavior. SMP occurred in a separate phase during which students counted the number of spelling words they had written at the end of the spelling period and recorded the data on a
graph. Findings of this study indicated a substantial increase in on-task behavior over baseline for both SMA and SMP conditions. However, results were not as clear for academic performance. The outcomes of the study support what Harris stated in the introduction to the paper: “research has indicated that increased time on-task does not necessarily improve academic performance....Researchers have argued that it is not only attending but making an active academic response that is crucial to learning” (p. 417).

Reid and Harris (1993) conducted a study similar to Harris (1986b), in which the effects of SMP and SMA were compared for the dependent measures of on-task behavior and average number of correct spelling practices. Twenty-eight students with learning disabilities participated in the 4-week study. For the first week, all participants were taught a spelling study procedure. During the second week, the students were split into two groups, one of which was taught an SMA procedure, while the second group was instructed using an SMP procedure. No treatment was given during the third week, to minimize possible carryover effects of the second-week treatment. The two groups switched conditions during the fourth week (i.e., the SMA group was taught to use SMP procedures and vice versa). For on-task behavior, both SMA and SMP resulted in average increases over the strategy condition, with SMA producing a higher average than SMP. SMA and SMP resulted in an increase in the number of correct spelling practices when compared to a strategy condition alone, although mean performance for SMA was slightly lower than for SMP. Performance on weekly tests indicated higher average performance for the spelling strategy, followed closely by SMP; average performance during SMA fell below the results for the other two treatments. Results of maintenance tests indicated similar outcomes for the spelling strategy treatment and SMP, with performance during SMA falling well below the other two conditions. In summary, SMP procedures produced better outcomes for academic performance than SMA, while SMA produced higher levels of on-task behavior. Additionally, many
students revealed that stopping at random intervals during the SMA condition, to record whether they were on- or off-task, was intrusive. The authors conclude that this procedure may not have been appropriate for students with learning disabilities.

Maag, Reid, and DiGangi (1993) conducted a study comparing the effects of SMA and SMP on mathematics performance. Subjects were four fourth graders and two sixth graders who were identified as learning disabled. Training occurred in a special education classroom, but data were collected in general education classrooms. Three dependent variables were measured: on-task behavior (SMA), and two SMP procedures: accuracy (defined as the number of problems worked correctly) and productivity (defined as the total number of problems attempted). Using a combination multiple baseline and alternating treatments design, students were taught to self-monitor their on-task behavior, accuracy, and productivity. One of the three self-monitoring procedures was used each day. For self-monitoring attention, students recorded whether they were on- or off-task at the sound of a tone. Self-monitoring productivity required students to stop working when they heard the tone, mark the problem they were working on, and count and record the number of problems completed since the last tone. The procedures for self-monitoring accuracy were similar to self-monitoring productivity, with the additional step of counting and recording the number of problems completed correctly. All three self-monitoring procedures produced increases in on-task behavior for four of the six students. Neither self-monitoring attention nor self-monitoring accuracy had substantial effects on productivity, but self-monitoring performance procedures resulted in increasing mathematics productivity for all students. Notably, for fourth-grade students self-monitoring productivity (number of problems attempted) resulted in the highest gains for number of problems completed and for accuracy, while for sixth graders self-monitoring accuracy produced higher percentages of problems correct and self-monitoring productivity resulted in increased number of problems completed. The
authors point out that to achieve the greatest effects on academic productivity and accuracy, self-monitoring academic outcomes is more effective than self-monitoring attention. Further, they found that students preferred monitoring academic outcomes.

To summarize, studies comparing the effects of self-monitoring attention (SMA) and self-monitoring academic performance (SMP) have shown varied outcomes. Carr & Punzo (1993) reviewed several studies and concluded that, in the majority of studies, self-monitoring of attention led to increased on-task behavior without similar gains in academic performance. Reid (1996) concluded, in his summary of SMA and SMP studies, that no meaningful differences have become apparent between SMA and SMP regarding their effects on on-task behavior. Both techniques (SMA and SMP) have been shown to increase on-task behavior similarly.

Results of SMP procedures have differed across studies, making comparisons difficult (Reid, 1996). Differences involve target variables, cueing, and use of graphs. Further, some researchers (e.g., Lloyd et al., 1989; Maag et al., 1993) have required students to stop their academic work when cued and assess their productivity or accuracy since the last cue, while others (e.g., Harris, 1986b; Harris et al., 1994) required students to self-assess once the task was completed. Reid (1996) points out that having students self-monitor during task performance a) subtracts from the work time that students have available (i.e., reduced the amount of time students spend actively responding to the task) and b) may be considered intrusive or aversive by some students. Therefore, Reid contends that, “when evaluating studies where no difference between SMA and SMP are reported, these factors should be considered, as they may have adversely affected outcomes in the SMP conditions” (p. 325). In studies where there were differences reported between SMA and SMP, two similarities exist. First, with one exception (Maag et al., 1993), the studies required students to self-monitor
upon completion of the task. Second, the studies were designed so that students did not simultaneously self-monitor both attention and performance (i.e., student performed either SMA or SMP, but not both at the same time).

In Experiment 2 of the Harris et al. (1994) study, students wrote stories when presented with black-and-white pictures as stimuli. Academic performance was defined as the total number of words written by students. Quality ratings for students' writing were collected by having two teachers, who were unfamiliar with the students and the study, complete holistic rating scales on students' compositions. On-task behavior was assessed in a separate treatment phase. Under SMA conditions, students recorded whether they were on- or off-task at the sound of the tone, tallied their responses at the end of each session, and graphed the results. Under the SMP conditions, students counted and graphed the number of words written during the session. Results showed an increase in on-task behavior, number of words written, and quality ratings over baseline levels. There were no significant differences between the effects of SMA and SMP on either on-task behavior or academic performance.

Harris et al. (1994) suggested that "self-monitoring of performance and self-monitoring of attention might be used in tandem to achieve the greatest benefits for the student" (p. 138). To date, one study (Wolfe, 1997) required students to monitor on-task behavior and academic performance during the same time period. The study took place during daily 20-minute writing periods in which, for the first 10 minutes, the class discussed a writing topic while the teacher drew a story web on the chalkboard. During the second 10 minutes, students wrote a story using information from the chalkboard web. While writing, students assessed whether they were on- or off-task at the sound of a tone, recorded instances of on- and off-task behavior on a pre-printed form, and totaled the results following the 10-minute recording period. At the end of the same 10-minute period, students counted and recorded the number of words written in their
stories. Experimenter data on on-task behavior, collected simultaneous with student self-monitoring, was compared daily to student data and students were reinforced for accuracy of recording. As in other studies, the effects of self-monitoring were significant for on-task behavior, but were not as clear for written language.

**Self-Monitoring Combined With Reinforcement**

Some researchers claim that self-monitoring can be effective in the absence of self-reinforcement (Broden, Hall, & Mitts, 1971, Exp. 2). Others disagree. Ballard and Glynn (1975) examined the effects of self-monitoring, first in the absence of reinforcement, then with reinforcement added, on the on-task behavior, writing responses, and quality of writing for 14 third-grade students. Dependent variables included on-task behavior and number of sentences, action words, and describing words written. On-task behavior was collected by observers without the knowledge of the subjects. A partial-interval design was used, with students being recorded as on-task if they met the definition for on-task for 7 of 10 seconds during each observation. A multiple-baseline-across-behaviors design was used with five phases, beginning with baseline followed by self-assessment plus self-recording. Subsequently, three reinforcement phases were introduced. During the first of these phases, self-assessment plus self-recording plus reinforcement for number of sentences written, students counted and recorded number of sentences written and gave themselves one point for each sentence. The following two reinforcement phases were similar, except that reinforcement was contingent on number of different action words and different describing words used respectively. Ballard and Glynn found that self-assessment plus self-recording (i.e., self-monitoring) alone had no effect on target responses. However, during the reinforcement phases, nine of the fourteen students experienced substantial gains in number of sentences written, number of different action words, and number of different descriptive words when reinforcement was applied contingent on each
particular behavior. Said another way, when students were reinforced for number of sentences written, they wrote more sentences. When reinforced for number of different action words, they wrote more action words, and when reinforced for number of different descriptive words, students wrote more descriptives. Although for some students mean on-task percentages increased for the reinforcement phases when compared to baseline and self-monitoring alone, a higher degree of variability was evidenced for on-task behavior as compared to academic responding. For two students, reinforcement contingencies for academic responding produced no conclusive effects on on-task behavior. Stories written under reinforcement conditions were given higher quality ratings than those written during the first two phases. The highest ratings occurred for the different action words phase. Also of note is that students' accuracy in self-monitoring particular responses (i.e., number of sentences, etc.) improved when reinforcement was contingent on that response.

Self-Evaluation

Definition

Definitions of self-evaluation vary somewhat, but self-evaluation is generally considered to fall under the rubric of self-management (DiGangi & Maag, 1992). Some authors define it as self-rating, involving students being taught to appraise their own behavior along a given rating scale (Santogrossi et al., 1973; Workman, 1982). DiGangi and Maag (1992) defined self-evaluation as having students answer self-asked questions covertly that had been provided by the experimenter.

Studies Involving Self-Evaluation

Overall, few studies involving self-evaluation have been conducted. However, Sweeney et al. (1993) found that self-evaluation training produced improvements in the legibility of five secondary special education students’ handwriting.
Using a sequential-withdrawal-of-treatment design, Sainato et al. (1990) taught preschool children with disabilities to self-evaluate their independent seat work skills. The children were taught to assess whether they had exhibited appropriate behaviors by using picture prompts of themselves as models engaging in appropriate behavior, and marking a smiley or frowny face next to each picture. Initially, self-assessment was combined with matching teacher assessment and reinforcement for correct matching and for appropriate behavior. A second baseline phase was followed by the full treatment package; subsequently, components of the package were sequentially withdrawn, beginning with reinforcement, then teacher matching, and ending with self-assessment only. The researchers found the following: a) for all four children, appropriate behavior was initially maintained by high levels of teacher praise and prompting, b) once teachers began to reduce the levels of praise and prompting, all four children experienced decreases in appropriate behavior, c) introducing the full, three-component self-assessment package resulted in immediate and substantial gains in appropriate behavior for all four children, d) experimenters were able to systematically reduce package components to minimal levels of complexity and effort, with maintenance of appropriate behavior for three children, and e) teachers did not have to return to high levels of praising and prompting for appropriate behavior to be maintained.

Kaufman and O'Leary (1972), conducted a study with 16 adolescent students housed in a psychiatric hospital who were identified with reading deficiencies and high rates of disruptive classroom behavior. During baseline, normal classroom procedures were followed while data on the dependent variables, frequency of disruptive behavior, amount of study behavior, and reading achievement, were collected. During Phase 1, students were assigned to one of two classes: in the Reward class, students could earn points for following classroom rules; students in the Cost class were given 10 tokens at the beginning of each period and were told that they could lose up to 10 tokens if they
did not follow classroom rules. Phase 3 involved a withdrawal of the tokens. Tokens were reinstated during Phase 4, which served as a replication of Phase 2. Phase 5 involved keeping the tokens in place exactly as in the previous phase, but switching class times. During the final phase, when self-evaluation was introduced, the researchers transferred evaluation of student behavior from the teacher to the students. Both the Reward and Cost classes experienced reductions in disruptive behavior and increases in study behavior and reading achievement, with no substantial differences between the two classes. Low rates of disruptive behavior continued through the self-evaluation phase, but self-evaluation did not produce marked changes in behavior.

Santogrossi et al. (1973) conducted a study in which nine adolescent boys who attended an after-school remedial reading class in a children’s psychiatric hospital were taught to rate (self-evaluate) their own behavior. In addition to reading skill deficiencies, the boys exhibited high rates of disruptive classroom behavior. During baseline, experimenters conducted behavioral observations in the absence of experimental manipulations. Following baseline, the subjects were taught to self-evaluate their behavior and compare their ratings to those of their teacher. During this phase, the subjects received no reinforcement for their rating nor for agreement of their ratings with the teacher’s. The third phase involved the teacher providing reinforcement (via a point-based token economy) for low rates of disruptive behavior, but did not require the subjects to self-evaluate. During the fourth phase, the students received points based upon their own ratings, which were not required to match their teacher’s ratings. Phase 5 required that the subjects’ ratings matched their teacher’s ratings within one point to receive reinforcement. If self-ratings differed from those of the teacher by more than one point, three token points were subtracted. Phases 6 and 7 were replications of Phases 3 and 4 respectively. Self-evaluation in the absence of reinforcement produced no substantial changes in disruptive behaviors. When the third phase was implemented, a
dramatic decrease in disruptive behavior occurred. These low rates of behavior continued through the first few sessions of the next phase, but gradually returned to baseline levels by the end of the third phase. Although disruptive behavior increased, student self-evaluations of their behavior remained high. When Phase 5 was introduced, in which students were required to match ratings with the teacher, the students protested, refused to cooperate, and reached their highest level of disruptive behavior during the study. Therefore, the researchers chose to terminate the phase after the first session, so that school personnel would not become antagonized by higher rates of disruptive behavior. In Phase 6, a return to teacher-determined points (in the absence of student self-evaluation) did not replicate the low levels of disruptive behavior recorded in Phase 3. Student performance in Phase 7 was similar to Phase 4, in that students began with lower rates, but ended with increasingly higher rates of disruptive behavior. Apparently, two students discovered that they could lie on their self-rating sheets (during Phases 4 and 7) and still receive reinforcement. These students subsequently pressured their classmates into lying also. The researchers suggest that the matching phase may have been more readily accepted by the subjects if students' rating behavior had been shaped to match their teacher's ratings. The conclusion includes a caution for use of self-evaluation or self-reinforcement procedures with clinical populations.

DiGangi and Maag (1992) examined the effects of various components of a self-management package on rates of appropriate and inappropriate behaviors of three junior high school boys. The self-management components were combined and introduced in eight separate phases: baseline; self-monitoring; self-monitoring and self-evaluation/self-reinforcement; self-evaluation/self-reinforcement; self-instruction; self-instruction and self-monitoring; self-instruction and self-monitoring plus self-evaluation/self-reinforcement; and self-instruction and self-evaluation/self-reinforcement respectively. Self-monitoring involved having students tally appropriate verbal interactions in the left-
hand column of an index card and inappropriate verbalizations in the right-hand column each time they made a verbal statement. For self-evaluation/self-reinforcement the students were provided an index card with two questions as prompts at the top: “How is this working out?” and “How am I doing?” The students asked themselves these questions and, if doing well, told themselves “I’m doing a great job.” Using a six-step training procedure for self-instruction, students were taught to ask themselves questions such as “What don’t I understand?” and “Should I raise my hand or talk out loud?” Self-monitoring alone did not produce major effects on target behaviors. The combination of self-monitoring with self-evaluation/self-reinforcement resulted in some gain for Students 2 and 3, but a decrease in target behaviors for Student 1. When self-monitoring was removed from self-evaluation/self-reinforcement, target behaviors decreased for all three students. Self-instruction alone resulted in decreasing trends in inappropriate behavior for all three students concurrent with gains in appropriate behavior for all three students. During the two phases subsequent to self-instruction, inappropriate behavior remained low or decreased, while appropriate behavior remained high or increased. The last phase, self-instruction and self-evaluation/self-reinforcement, resulted in pronounced decreases in appropriate behavior for all three students, concurrent with increased levels of inappropriate behavior for two students. In conclusion, two conditions, self-monitoring alone, and self-evaluation/self-reinforcement alone, were the least effective treatments for all three students. However, when self-evaluation/self-reinforcement was combined with self-instruction and self-monitoring, the power of these latter treatments was increased. Self-instruction was the most effective component when employed in isolation of the other self-management components. The authors suggest that considerably more research is warranted to better understand the complex mechanisms underlying self-management components and their interaction.
Summary of Literature Review

The literature review has highlighted several key points. First, written language composition is an area in need of further study with students with learning disabilities. Self-management techniques encompass several promising behavior management strategies, some of which may be useful in helping students with learning disabilities improve their written language performance. Second, self-monitoring is a self-management technique that has been used with various populations to improve both on-task and academic behaviors. There are two types of self-monitoring: self-monitoring of attention (SMA) and self-monitoring of performance (SMP). Results of these two methods are somewhat mixed with respect to effectiveness. Third, self-monitoring is a socially valid technique. Students, teachers, and parents like it.

Despite the fact that self-monitoring has been used extensively in schools for academics, most of the content has been focused on reading and math. Far fewer studies have examined self-monitoring with respect to other language arts skills, especially the critical skill of written language. Further, some researchers contend that self-monitoring may not be as powerful alone as it is when combined with reinforcement.

Another key outcome of the literature review pertains to self-evaluation. Far fewer studies have been conducted to assess the effects of self-evaluation on on-task and academic behaviors than have been done with self-monitoring. Those studies that have been conducted concluded that self-evaluation alone may not be as powerful as when combined with other measures, such as self-monitoring or self-instruction. Researchers have stated that further research should be conducted to determine the effects of self-evaluation on various behaviors and populations.

PURPOSE

The purpose of this investigation was to systematically replicate Wolfe's (1997) study, which examined the effects of self-monitoring on students' on-task behavior and
written language performance. However, a distinguishing feature of the present study was to examine the contributing effect of self-evaluation to improve students' written language performance.

RESEARCH QUESTIONS

1. What effects will self-monitoring written language performance have on the number of words, number of sentences, number of different words, and number of adjectives produced by students during a 10-minute writing period?

2. What effects will self-monitoring written language performance have on the percentage of intervals of student on-task behavior during a 10-minute writing period?

3. What effects will self-evaluation alone have on the number of words, number of sentences, number of different words, and number of adjectives produced by students during a 10-minute writing period?

4. What effects will self-evaluation alone have on the percentage of intervals of student on-task behavior during a 10-minute writing period?

5. Will the students view the self-monitoring activities positively?

6. Will the students view the self-evaluation activities positively?

7. Which method will students prefer: self-monitoring or self-evaluation?

8. What are the classroom teachers' opinions of self-monitoring?

9. What are the classroom teacher's opinions of self-evaluation?

10. Which method will classroom teachers prefer: self-monitoring or self-evaluation?
CHAPTER 3

METHOD

This chapter describes the subjects, setting, experimenter, and dependent and independent variables employed in this study. Further, a description of the experimental design and procedures are addressed.

Subjects

The subjects were three female and four male fifth and sixth-grade students with identified learning disabilities and/or attention difficulties enrolled in a suburban private school setting (see Table 1). Subjects were selected because they lacked appropriate on-task and written language skills. The students were chosen based on identification by their teacher as students who had the academic skills and ability to do their work, but who lacked the attending skills to complete their assignments. Written language deficits were authenticated by examining achievement data from the students' school records.

While data were recorded only for the described subjects, all sixteen students in the class participated in the exercises. All of the students received instruction on self-monitoring written language performance and self-evaluation and practiced these activities. The data for the non-participating students were not recorded, but were available to the teachers for instructional purposes. Confidentiality for all students was maintained during and after the study.

Setting

The study took place in a classroom within a suburban private school for students with learning and attention disabilities and occurred during a 15-minute writing lesson in which all students normally participate. In addition to two classroom teachers.
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<th>Age</th>
<th>Ethnicity</th>
<th>IQ</th>
<th>Overall Achievement ¹</th>
<th>Written Language Achievement ²</th>
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<td>Average</td>
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<td>108</td>
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Table 1

Student Demographic Information

1 Scores derived from the Woodcock Johnson Psychoeducational Battery-Revised, maintained in students' permanent school records.

2 Scores derived from the Woodcock Johnson Psychoeducational Battery-Revised, Broad Written Language scale, maintained in students' permanent school records.
there were 16 students in the class, ranging in age from 10 to 12, in grades five and six. Instructional procedures took place in a classroom measuring 7.9 meters by 9.8 meters and contained two teachers’ desks, 10 individual student desks, and three tables at which six students sat during instruction (see Appendix C for a schematic of the classroom).

**Experimenter**

The experimenter was a graduate student at The Ohio State University, working toward a doctoral degree in special education with an emphasis in applied behavior analysis. She had four years of prior experience as a teacher of students with mild disabilities at the elementary and secondary levels in Salisbury, Maryland. She held K-12 teaching certifications from Maryland and Pennsylvania in generic and cross-categorical special education, respectively. Also, she had supervisory certification in Ohio. Additional experiences included serving as an intern at Children’s Hospital Behavior and Learning Disabilities Clinic in Columbus, Ohio, during which time she consulted with parents, performed formal and informal educational assessments, wrote assessment reports, and suggested intervention strategies.

**Definition and Measurement of the Dependent Variables**

There were three dependent variables in this study: written language output, written language quality, and on-task behavior. Written language output was defined as (a) the number of words written and (b) the number of sentences written during a 10-minute writing period. Written language quality was defined as (a) the number of different words written (Type Token Ratio) and (b) the number of adjectives written during a 10-minute writing period. On-task behavior was defined as the percentage of 5-second intervals (out of 20 possible) that students spent oriented toward the writing task during a 10-minute writing lesson.
Number of words written. The number of words written was defined as total words written, including words misspelled and words repeated (but not words that were repeated more than once consecutively). Numerals were not counted, nor were illegible words. Abbreviations (e.g., a.m., m.p.h.) were counted as one word. Compound words that were split into two separate words were counted as two words. For example, if the word inside was split into in and side, two words would be counted. However, if a word was split into syllables that were not words, only one word would be counted. For example, if the word restaurant were split into syllables res, tau, and rant only one word would be counted. As an example of total words written, in the sentence, I saw seven people, the total words would be scored as four (assuming that all words were legible). If, however, the student wrote, I saw 7 people, the total words would be scored as three. As another example, in the sentence, Mary went to the the stor, the total words would be scored as six. However, if the student wrote, Mary went to the the the stor, the total words would still be scored as six (the third the would not be counted). Words could be written in cursive or manuscript style using pen or pencil.

Number of sentences written. The number of sentences written were scored by counting the total number of ending punctuation marks (e.g., period, question mark, exclamation point), regardless of whether the sentence began with a capital, was grammatically correct, contained misspelled words, or included punctuation errors. For instance, in the passage below, only one sentence would be recorded.

100 years ago cave men eate woley mameth they used spers to kill it they used it's bones for wapns the wemen hed bind Rock's some were killed buy the river.

If the student would have written the same sentence, but in the format shown below, five sentences would have been recorded.

100 years ago cave men ate woolly mammoth. They used spears to kill it. they used it's bones for weapons. The women hid behind rock's. some were killed by the river.
Number of different words written. A type token ratio was calculated daily by the experimenter and recorded on the Experimenter Recording Sheet for Written Language Performance (see Appendix D). The type token ratio was calculated by counting the number of different words written by a student and dividing that total by the total number of words written. Number of different words was defined as the number of unrecorded words in a composition. Words that were spelled differently were counted separately. For example, in the sentence, Ben went home because his ball is at horn, would be counted as nine different words. However, if the student had written, Ben went home because his ball is at home, eight different words would be counted.

Number of adjectives written. The total number of adjectives (words that describe nouns) were counted as a measure of quality. For example, in the sentence, The big, brown bear was walking through the forest and he saw a huge alligator, three adjectives would be counted (big, brown, and huge). If an adjective was misspelled, it was still counted. For instance, in the sentence, The big, brown bear was walking through the forest and he saw a hug alligator, three adjectives would be counted.

During self-monitoring conditions, measures for number of words and number of sentences written were recorded once daily on student and experimenter self-monitoring recording sheets (see Appendices D and E). The students counted the number of words and sentences written and recorded this number. Additionally, using a pre-printed recording sheet, students graphed the number of words written for the day during self-monitoring conditions (see Appendix F).

Additionally, throughout the study (i.e., for every session, during every condition), the experimenter recorded data on all written language dependent variables (see Appendix D for Experimenter Recording Sheet for Written Language Performance). At the end of each session throughout the study, the experimenter photocopied target student entries for the day. Using this permanent product, the experimenter counted and
recorded the number of words and sentences written, number of different words written (type token ratio), and number of adjectives written and recorded these totals on the Experimenter Recording Sheet for Written Language Performance (see Appendix D).

On task. On-task behavior was collected for three of the selected target students identified by their teachers, and via observation prior to the initial baseline condition, as having difficulty staying on-task during writing periods. On-task behavior was defined as any activity in which a student engaged that was related directly to completing the assigned work. On-task behavior included time a student spent: a) engaging in writing with eyes on paper and pencil in hand, b) looking at an assignment on the desk, or c) asking the teacher a question. Looking around the room or out the window, doodling, or writing nonsense responses was not considered on-task. The data for on-task behavior were gathered as the students wrote during the 10-minute period and was recorded by the experimenter on the on-task behavior recording sheet (Appendix G). A whole-interval recording procedure was used in which the three students were observed (in random order each session) 20 times, for 5 seconds at a time, during the 10-minute writing period. A pre-recorded tape instructed the experimenter to look at Student 1. Five seconds later, the tape instructed the experimenter to record. The experimenter had five seconds to record, after which time the tape instructed the experimenter to look at the next student (Student 2), etc.. If, during the five-second observation period, the student was on-task for the entire five seconds, the experimenter circled “On” in the correct box on the recording form. If the student was off-task for any portion of the five-second observation period (e.g., if the student glanced up at someone walking into the room, or looked up at the clock), the experimenter circled “Off” in the correct box on the recording form. On-task behavior was measured as the percentage of intervals that students were on-task during the 10-minute writing period.
Interobserver Agreement Procedures

Three trained observers collected data on number of words and sentences written, number of different words written, and number of adjectives during for at least 25% of the observation sessions, to ensure reliability of the data collected by the experimenter. Although two training sessions for defining and identifying adjectives were provided for the three observers, these undergraduate students had difficulty consistently discriminating adjectives accurately, often mistaking adverbs for adjectives. Therefore, a fourth observer, a graduate student who was skilled with discriminating adverbs from adjectives, was trained to collect these IOA data for this dependent variable. Written language data were recorded using the Experimenter Recording Sheet for Written Language Performance (see Appendix D). Additionally, trained observers collected on-task behavior simultaneously with the experimenter, using a duplicate tape and headset, while seated across the room from the experimenter. On-task data were collected using the Experimenter Recording Sheet for On-Task Behavior (see Appendix G). Interobserver agreement for each dependent variable was calculated by dividing the number of agreements by the total number of agreements plus disagreements and multiplying by 100. Scored and unscored agreement measures were calculated to determine the most conservative reporting procedures.

Finally, trained observers collected procedural integrity data for at least 25% of the sessions to ensure that procedures were properly implemented. These observers responded to questions regarding whether the independent variable was being followed. The responses to these questions were “Yes,” “No,” or “N/A” (“not applicable,” for questions that applied to a specific condition, such as self-monitoring, which was not being implemented at the time). A percentage was calculated as above with a “Yes”
response meaning agreement and a “No” response meaning a disagreement. “N/A” responses were not averaged into the score (see Appendix H for the procedural integrity recording form).

**Materials**

- Timer
- Pre-recorded audio tapes
- Audio cassette players with headsets and batteries
- Student recording sheets for written language performance and self-evaluation
- Student graphs for number of words written
- Experimenter recording sheets for written language performance and on-task behavior
- Procedural integrity recording forms
- Experimenter graphs for each student
- Poster board with teacher pre-writing prompts
- Calculator
- Pencils/pens

**Experimental Design**

A single-subject reversal (ABABCBCADE) experimental design was used for this study. The first phase (A1) was baseline, the second phase (B1) was the self-monitoring (intervention) of written language condition. In the third phase (A2), baseline was reimplemented (i.e., the self-monitoring intervention was withdrawn), then the self-monitoring condition was reintroduced for written language during the fourth phase (B2). Next, self-evaluation (C) was introduced alone, followed by the
reintroduction of self-monitoring (B). Consequently, self-evaluation (C) was reintroduced in sequence. Subsequent to the final self-evaluation phase, baseline (A3) was implemented once more. A teacher-token phase (D) followed this third baseline phase. The final phase in the study was a changing-criterion with public posting phase (E).

The first baseline phase served as a prediction phase, allowing the experimenter to make predictions on the effects of the independent variables (i.e., increase, decrease, stay the same). To report that a behavior change occurred, the observed behavior should change markedly once the self-monitoring (the independent variable) was introduced; such changes should be reflected by the data. To verify this change, a return to baseline was required. The second baseline phase (A2), was designed to act as verification that the first baseline results would have continued had the self-monitoring for written language not been introduced. Upon re-introducing self-monitoring (i.e., in the second intervention phase, B2), the experimenter would expect to see a trend in the data similar to the first self-monitoring phase. Self-monitoring2 was designed to serve as a replication of changes in behavior affected by the independent variable. The second self-monitoring condition was designed to serve the dual purpose of being the replication condition for the (A-B-A-B) sequence as well as the "prediction" phase for the four-sequences that followed (B-C-B-C). That is, self-monitoring was used to predict the contributing effects of self-evaluation (C). The third baseline phase was designed to verify that the first two baseline phases would have continued had the self-monitoring and self-evaluation phases not been implemented. The final two phases, teacher token and changing criterion with public posting, were implemented to assess the effects of external reinforcement and teacher feedback in conjunction with previously-introduced self-monitoring procedures.
To claim a functional relationship, the experimenter reported baseline, then attempted a behavior change by introducing the independent variable, self-monitoring. Returning to baseline and withdrawing the use of the independent variable was expected to “turn off” the behavior change; reintroducing the independent variable in the self-monitoring phase was expected to “turn on” the behavior change or affect the change in behavior seen in the prior intervention phase. This “turning on and off” of the behavior (under self-monitoring and self-evaluation) was designed to allow the experimenter to report the contributing effects of the independent variables, self-monitoring and self-evaluation. The third baseline phase was designed to once again “turn off” the behavior change. Introducing the independent variable of self-monitoring in conjunction with teacher feedback and reinforcement during the final two phases was designed to once again “turn on” the behavior change.

Using this design, each student’s data are displayed graphically on separate graphs. In other words, the effects of self-monitoring on the three dependent variables are displayed separately.

Training of Self-Monitoring of Written Language Performance

Training in self-monitoring occurred for approximately one hour prior to the 15-minute writing period, on the first day of the self-monitoring intervention. Following a model-lead-test format, training occurred in three stages: 1) orientation/presentation, 2) teacher modeling and group discussion, and 3) role play and practice. In addition to modeling and role playing, students received direct instruction for the training components.

Orientation/presentation. The teacher began by introducing self-monitoring, showing how it can be used to improve writing and why it is important to write well. Next, the teacher provided students with a copy of the written language recording sheet
(see Appendix E) and explained how the recording sheet would be used by students to count words and sentences written. Finally, the teacher provided direct instruction regarding what was counted as a word and how to score sentences.

**Teacher modeling and group discussion.** The teacher provided demonstrations of counting words, recording the total on the recording form, and graphing the total. Then the teacher demonstrated how to count and record sentences.

**Role play and practice.** Following modeling, the students had repeated practice opportunities to count and record words and sentences while the teachers walked around the room and provided feedback and reinforcement for accuracy (see Appendix I for the training script for self-monitoring written language performance).

**Training of Self-Evaluation**

Using the recording sheet for self-evaluation (Appendix J), students were taught, using a model-lead-test format, to evaluate the quantity and quality of their written language performance at the end of each session (see Appendix K for the training script for self-evaluation). Based on their self-assessment, students were taught to make encouraging or reinforcing statements to themselves (i.e., privately). If, for example, when assessing quantity and answering the question, “How much did I write today?”, the student circled the numeral 2, (“Some, but I can still improve”), the student was taught to provide self-encouragement (e.g., “I need to keep trying to improve”). If, for instance, a student circled the numeral 4 on the recording sheet (“More than last time. I’m making progress!”), the student was taught to make a positive statement to him/herself, such as “Good job. I’m getting better!”

When the student self-evaluated quality, if, in response to the question, “How well did I write today?” the student circled the first numeral (“I didn’t do so well today. I can do better.”), the student was taught to make a self-statement such as “I know I can do better. I’ve done better before.” If, however, the student circled the third option
the student was taught to make a self-statement such as “I’m doing okay, but I want to write an even better story next time.” The students were taught to circle the fifth option, “Awesome! I’m a fantastic writer!” when they believed they had written one of their best stories ever and were taught to make a self-statement such as “Wow! I’m absolutely awesome!”

During training, students verbalized audibly, so that the teachers could provide feedback. However, feedback was later faded to an inaudible level. During self-evaluation conditions, self-evaluation was done so that others in the room could not hear the response (i.e., the students made statements “in their heads”) to avoid competition between students. The students were taught that the purpose of self-evaluation was to compete with oneself and to improve their own scores continually.

**Procedures**

**Baseline.** During baseline conditions, normal classroom procedures were in effect, meaning the teachers did not provide feedback on student writing for this 15-minute period. To assess the effects of self-monitoring and self-evaluation in isolation (i.e., to eliminate possible confounds), students did not receive external reinforcers. Students merely wrote their stories in composition books, turned them in at the end of the 10-minute timed period, and picked them up the next day at the beginning of the 15-minute writing period. For the first five minutes of the writing period, the teacher presented the class with a story starter. Students spent the last 10 minutes of the period writing their story based on the story starter. The experimenter and data collectors collected data on on-task behavior, for three selected students, during the final 10-minute portion of the 15-minute writing period. Data for the other two dependent variables were collected daily. The experimenter made copies on a photocopy machine of target students’ stories each day. Written language output was recorded daily by counting the number of words and the number of sentences written during the 10-minute
period. A qualitative measure was also collected daily by scoring the number of different words written and the number of adjectives written. To record data for on-task behavior for the three selected students, data collectors responded, at the end of a five-second interval, to the question, “Was the child on-task for the entire five-second interval?”

**Self-monitoring of written language performance.** Self-monitoring of written language performance began after training, on the same day training occurred. At the end of each 10-minute writing session during this phase, students counted the number of words and number of sentences they wrote and recorded these totals on a pre-printed record sheet (see Appendix D). Students also recorded the number of words written on graphs maintained in individual student folders. Students were reinforced by the teachers for accuracy of counting and recording. In addition to the data described above, the experimenter also calculated and reported the number of different words and the number of adjectives written for each subject. Amounts were transferred to experimenter-maintained graphs daily. Simultaneously with self-monitoring of written language performance, self-monitoring of on-task behavior also occurred for three students during this final 10-minute writing period. Amounts were transferred to experimenter-maintained graphs. Hence, at the end of the 15-minute period, the final 10 minutes of which involved writing, students: 1) tallied the total number of words written and recorded that number on their written language recording sheets, 2) tallied the total number of sentences written and recorded that number on their written language recording sheets, and 3) graphed the total number of words written on individual student graphs.
**Baseline.** During Baseline, conditions that were in effect in Baseline, were reintroduced.

**Self-monitoring of written language performance.** During Self-monitoring of written language performance, conditions that were in effect previously were reintroduced.

**Self-evaluation.** During self-evaluation conditions, normal classroom procedures were in effect, as in previous phases, and the experimenter and data collectors continued collecting data on all three dependent variables, written language output, written language quality, and on-task behavior, as described in the self-monitoring condition. Students continued to complete story starters, as in previous phases. However, students no longer self-monitored their written language performance. Following training for self-evaluation (see Appendix K) students completed the self-evaluation form (Appendix J) based on their own judgments about their writing. Then, they provided self statements about their writing.

**Self-monitoring of written language performance.** During Self-monitoring of written language performance, conditions that were in effect previously were reintroduced. Students once again self-monitored by counting and recording the number of words and sentences written, as described previously.

**Self-evaluation.** During Self-evaluation, conditions that were in effect in Self-evaluation, were reintroduced.

**Baseline.** During baseline, conditions that were in effect in Baseline, were reintroduced.

**Teacher tokens.** During the teacher token phase, normal classroom procedures were in effect, as in previous phases, and the experimenter and data collectors continued collecting data on all three dependent variables, written language output, written language quality, and on-task behavior, as described in the self-monitoring condition.
Students continued to complete story starters, as in previous phases, and self-monitored by counting and charting words as described in self-monitoring. Additionally, the teachers designed a reinforcement system to fit within the token economy system that existed in the classroom throughout the day, in periods other than the 15-minute writing period in which this study was conducted. For every word beyond the highest total written during the previous baseline phase (baseline), students earned $5.00 in "classroom money" (not U.S. currency). For example, if the highest number of words written during baseline was 109 and a student wrote 120 words during the teacher tokens phase, that student would earn $55.00 in classroom money ((120-109)*5). The classroom money was exchanged for "classroom store" items such as pencils, notepads, games, puzzles, stamps, books, candy, and sporting goods items (e.g., Vortex football, Frisbee).

Changing criterion with public posting. During the changing criterion with public posting (CCPP) phase, normal classroom procedures were in effect, as in previous phases, and the experimenter and data collectors continued collecting data on all three dependent variables -- written language output, written language quality, and on-task behavior -- as described in the self-monitoring condition. Students continued to complete story starters, as in previous phases, and self-monitored by counting and charting words as described in self-monitoring. Additionally, a target score was calculated for each student, by averaging the number of words written in all three self-monitoring phases and adjusting the average up or down dependent upon where the majority of scores fell in the three self-monitoring phases relative to the average (i.e., if most of the scores were clustered closely around the average score, then the average became the target score. However, if most of the scores clustered above or below that average score, the score was adjusted accordingly.). This goal was established so that each student could easily meet the initial target. For each student, at least six changes in
criterion were programmed; the first three changes were programmed in an upward (increasing) direction, the fourth change contained a reversal to a lower level, the fifth change established a target higher than the last highest target, and the final change contained a target that students selected for themselves. For the increasing targets, scores were increased in increments of 10% above the previous highest target. The target for the reversal was calculated at 10% below the initial target. The purpose for varying the length of time at any given criterion and the reversal of criterion was to demonstrate that the goal setting was responsible for the change in behavior.

Embedded within this changing criterion with public posting (CCPP) phase the experimenter also returned to previous story starters, conducted during self-monitoring, that yielded higher or lower scores (i.e., a reintroduced story starter may have been presented for a previous session in which some students scored higher than average, while others scored lower than average), to determine any correspondence between identical story starters issued weeks apart under different conditions.

During this CCPP phase, students earned $100.00 in classroom money if they met or exceeded the number of words indicated by their individual target scores (e.g., if a student had a target score of 76, they would earn a base amount of $100 for writing 76 or more words). To avoid an artificial ceiling that might occur if students were encouraged only to meet their target, additional money ($5.00 per word) could be earned for words written above the target score. For example, if a student’s target score was 70 and that student wrote 85 words, the student would earn $75 extra for that day (i.e., 15 words above the target score * $5.00 per word). Additionally, if a student’s target score was above 100, the student earned an additional $200 each day and if a student’s target score was above 200, the student earned an additional $500 each day. Finally, the
classroom teachers reviewed randomly-selected student stories each session, looking for use of adjectives. If those students had used adjectives in their stories, they received an additional $5.00 in classroom money.

Social Validity Measures

Students and teachers were asked to complete surveys at the end of the study, indicating whether they liked the self-monitoring procedures, whether they liked the self-evaluation procedures, and whether they would use self-monitoring or self-evaluation procedures in the future. Additionally, students and teachers were asked which condition they preferred: self-monitoring or self-evaluation. (See Appendix L for the student questionnaire and Appendix M for the teacher opinion questionnaire.)
CHAPTER 4
RESULTS

This chapter presents the results of the study. Interobserver agreement data for the dependent variables is presented first. Next, interobserver agreement for the independent variable is discussed. Data on student performance—written language performance and on-task behavior—across each condition are then presented graphically and discussed. Finally, social validity, as measured by responses to student and teacher questionnaires, is summarized.

Interobserver Agreement

As stated in Chapter 3, data on written language performance and on-task behavior were collected daily by the experimenter. To demonstrate believability of the data, other trained observers collected data following the same procedures as the experimenter throughout the study. Scored and unscored agreement measures were calculated to determine the most conservative reporting procedures.

Tables 2 through 6 summarize the agreement between the experimenter and the trained observers when recording the three dependent variables: written language output (total words and sentences written), written language quality (type token ratio and total adjectives written), and on-task behavior. For written language output and quality, trained observers collected interobserver agreement (IOA) data for 43% of Baseline 1 sessions. IOA data were collected for 50% of Self-Monitoring 1 sessions for Students 1 through 6 and 40% of the sessions for Student 7. During Baseline 2, IOA data were collected for 40% of the sessions for Students 1 through 4, 6, and 7; IOA data were
collected for 20% of the sessions for Student 5. For Student 5, IOA data during Self-Monitoring were collected for 29% of the sessions. For all other students, IOA data were collected for 43% of the sessions. For all students, IOA data were collected for 40% of Self-Evaluation sessions. For Students 1, 2, and 7, IOA data were collected for 40% of the Self-Monitoring sessions; for Students 3 through 6, data were collected for 60% of the sessions. Data during the Self-Evaluation phase were collected for 33% of the sessions. IOA data were not collected during Baseline. During the Teacher Token phase, data were collected for 50% of the sessions. IOA data for the Changing Criterion with Public Posting phase were collected for 18% of the sessions for all students except Student 6, for whom IOA data were collected for 12% of the sessions. Overall, IOA data for written language performance were collected for 31% of the sessions for Students 5 and 7, 33% of the sessions for Student 6, 34% of the sessions for Students 1 and 2, and 36% of the sessions for Students 3 and 4.

For on-task behavior, trained observers were present in the classroom to collect IOA data. As indicated in Chapter 3, on-task data were collected throughout the study by the experimenter for Students 4, 5, and 6. For Baseline, IOA data for on-task behavior were collected for 29% of the sessions. IOA data during Self-Monitoring were collected for 13% of the sessions. During Baseline, IOA data were collected for 40% of the sessions for Students 4 and 5; data were collected for 20% of the sessions for Student 6. For Student 4, IOA data during Self-Monitoring were collected for 14% of the sessions; for the other students, data were collected for 29% of the sessions. IOA data were collected for 60% of Self-Evaluation sessions and for 20% of the Self-Monitoring sessions. Data during the Self-Evaluation phase were collected for 33% of the sessions. During Baseline, IOA data were collected for 100% of the sessions. Data were not collected during the Teacher Token phase. IOA data for the Changing Criterion
with Public Posting phase were collected for 12% of the sessions for Student 4, 24% of the sessions for Student 5, and 18% of the sessions for Student 6. Overall, IOA data for on-task behavior were collected for 25% of the sessions for Student 4, 30% of the sessions for Student 5, and 26% of the sessions for Student 6.

**Total Words Written**

Table 2 summarizes the agreement between the experimenter and the trained observers in recording the total words written for each student. Mean IOA for the Baseline1 phase was 99.4%, with a range of 99.3 to 100%. For Self-Monitoring1 (S-M1), mean IOA was 99.6%, range 98 to 100%. The mean IOA for Baseline2 was 99.6%, range 98.5 to 100%. IOA data for the second self-monitoring phase (S-M2) averaged 99.8% range 99.3 to 100%. Self-Evaluation1 (S-E1) had a mean IOA of 99.5%, range 97.5 to 100%. The mean IOA for Self-Monitoring3 was 99.1%, range 97 to 100%. For all students, 100% IOA was established during the Self-Evaluation2 (S-E2) phase, resulting in a mean of 100%. IOA data were not collected during Baseline3. The mean for the Teacher Token (TT) phase was 99.7% agreement, range 99 to 100%. The mean for the final phase, Changing Criterion with Public Posting (CCPP), was 99.6%, range 98.3 to 100%. The grand mean IOA for total words written was 99.5%, range 98.7 to 100%.

**Total Sentences Written**

Table 3 shows the agreement between the experimenter and the trained observers when recording the total sentences written for each student. Mean IOA for the Baseline1 phase was 97.5%, range 89 to 100%. For Self-Monitoring1 (S-M1), mean IOA was 97.7%, range 91.5 to 100%. The mean IOA for Baseline2 was 97.6%, range 88 to 100%. IOA agreement for the second self-monitoring phase (S-M2) averaged 98.2%, range 94.3 to 100%. Self-Evaluation1 (S-E1) had a mean IOA of 99%, range 93 to
## Table 2.

Interobserver Agreement: Experimenter Data v. Second Observer Data Expressed as a Percentage for Total Words Written.

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**Grand Mean**

| Range         | 99.5-100 | 99.3-100 | 97.5-100 | 99.3-100 | 99.5-100 | 97-100 | 97-100 | 97-100 |

S-M = Self-monitoring condition
S-E = Self-evaluation condition
CCPP = Changing criterion with public posting condition
n/a = IOA data not collected for this phase
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Table 3
Interobserver Agreement: Experimenter Data v. Second Observer Data Expressed as a Percentage for Total Sentences Written.

S-M = Self-monitoring condition
S-E = Self-evaluation condition
CCPP = Changing criterion with public posting condition
n/a = IOA data not collected for this phase
The mean IOA for Self-Monitoring was 98.7%, range 95.3 to 100%. During the Self-Evaluation (S-E) phase, the mean was 99.3%, range 95 to 100% was established resulting in a mean of 99.3%. IOA data were not collected during Baseline 3. The mean for the Teacher Token (TT) phase was 99.3% agreement, range 95 to 100%.

The mean for the final phase, Changing Criterion with Public Posting (CCPP), was 98.6%, range 97.3 to 100%. The grand mean IOA for total sentences written was 98.4%, range 96.3 to 100%.

**Type Token Ratio**

Table 4 presents data summarizing the agreement between the experimenter and the trained observers in recording the type token ratio for each student. Mean IOA for the Baseline 1 phase was 97.3%, range 90 to 100%. For Self-Monitoring 1 (S-M1), mean IOA was 97%, range 92.5 to 100%. The mean IOA for Baseline 2 was 96.8%, range 91.3 to 100%. IOA data for the second self-monitoring phase (S-M2) averaged 97.6%, range 94 to 99.5%. Self-Evaluation 1 (S-E1) had a mean IOA of 98.6%, range 96.5 to 100%. The mean IOA for Self-Monitoring 3 was 97.3%, range 94 to 100%. During the Self-Evaluation 2 (S-E2) phase, the mean was 96.7%, range 85 to 100%. IOA data were not collected during Baseline 3. The mean for the Teacher Token (TT) phase was 98.1% agreement, range 93 to 100%. The mean for the final phase, Changing Criterion with Public Posting (CCPP), was 97.6%, range 95 to 100%. The grand mean IOA for type token ratio was 97.5%, range 93.8 to 99%.

**Total Adjectives Written**

Table 5 summarizes the agreement between the experimenter and the trained observers in recording the total adjectives written for each student. Mean IOA for the Baseline 1 phase was 99.2%, range 96.7 to 100%. For Self-Monitoring 1 (S-M1), mean IOA was 99.4%, range 96 to 100%. 100% IOA was established for all students during
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Table 4

Interobserver Agreement: Experimenter Data v. Second Observer Data Expressed as a Percentage for Type Token Ratio.

S-M = Self-monitoring condition
S-E = Self-evaluation condition
CCPP = Changing criterion with public posting condition
n/a = IOA data not collected for this phase
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</table>

| Mean      | 99.6  | 100   | 99.6  | 99.7  | 99.4  | 100   | 98.7  | 99.6 |
| Range     | 96-100| 100-100| 96.7-100| 97.3-100| 95-100| 100-100| 93-100| 97.9-100|

Table 5

Interobserver Agreement: Experimenter Data v. Second Observer Data Expressed as a Percentage for Total Adjectives Written.

S-M = Self-monitoring condition
S-E = Self-evaluation condition
CCPP = Changing criterion with public posting condition
n/a = IOA data not collected for this phase
the Baseline2 phase, resulting in a mean of 100%. IOA data for the second self-monitoring phase (S-M2) averaged 99.7%, range 97.7 to 100%. Self-Evaluation1 (S-E1), Self-Monitoring3, and Self-Evaluation2 (S-E2) all had interobserver agreement scores of 100%, resulting in a mean of 100% for each phase. IOA data were not collected during Baseline3. 100% IOA was established for all students during the Teacher Token (TT) phase, resulting in a mean of 100%. The mean for the final phase, Changing Criterion with Public Posting (CCPP), was 97.9%, range 93 to 100%. The grand mean IOA for total adjectives written was 99.6%, range 98.7 to 100%.

**On-Task Behavior**

Table 6 presents data summarizing the agreement between the experimenter and the trained observers in recording the on-task behavior for Students 4, 5, and 6. Mean IOA for the Baseline1 phase was 87.5%, range 85 to 90%. For Self-Monitoring1 (S-M1), mean IOA was 90%, range 85 to 95%. The mean IOA for Baseline2 was 94.2%, range 92.5 to 97.5%. IOA data for the second self-monitoring phase (S-M2) averaged 87.5%, range 80 to 95%. Self-Evaluation1 (S-E1) had a mean IOA of 87.8%, range 80 to 96.7%. The mean IOA for Self-Monitoring3 was 91.7%, range 90 to 95%. During the Self-Evaluation2 (S-E2) phase, the mean was 93.3%, range 85 to 100%. During Baseline3 the mean was 89.2%, range 87.5 to 92.5%. IOA data were not collected during the Teacher Token (TT) phase. The mean for the final phase, Changing Criterion with Public Posting (CCPP), was 89.9%, range 88.3 to 92.5%. The grand mean IOA for on-task behavior was 90.1%, range 87.3 to 91.7%.
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<td>95</td>
<td>85</td>
<td>90</td>
<td></td>
<td></td>
<td></td>
<td>90</td>
<td></td>
</tr>
<tr>
<td>Baseline₂</td>
<td>92.5</td>
<td>97.5</td>
<td>92.5</td>
<td>94.2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>S-M₂</td>
<td>80</td>
<td>95</td>
<td>87.5</td>
<td>87.5</td>
<td></td>
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</tr>
<tr>
<td>S-E₁</td>
<td>96.7</td>
<td>86.7</td>
<td>80</td>
<td>87.8</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>S-M₃</td>
<td>90</td>
<td>95</td>
<td>90</td>
<td>91.7</td>
<td></td>
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<tr>
<td>S-E₂</td>
<td>95</td>
<td>100</td>
<td>85</td>
<td>93.3</td>
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<td></td>
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</tr>
<tr>
<td>Baseline₃</td>
<td>92.5</td>
<td></td>
<td>87.5</td>
<td>87.5</td>
<td>89.2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TT</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td></td>
<td>n/a</td>
<td></td>
<td>n/a</td>
<td></td>
</tr>
<tr>
<td>CCPP</td>
<td>92.5</td>
<td>88.8</td>
<td>88.3</td>
<td>89.9</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Grand Mean</td>
<td>91.3</td>
<td>91.7</td>
<td>87.3</td>
<td>90.1</td>
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<td></td>
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<tr>
<td>Range</td>
<td>80-96.7</td>
<td>85-100</td>
<td>80-92.5</td>
<td>87.5-94.2</td>
<td></td>
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<td></td>
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</tr>
</tbody>
</table>

Table 6


S-M = Self-monitoring condition
S-E = Self-evaluation condition
CCPP = Changing criterion with public posting condition
n/a = IOA data not collected for this phase
Social Validity

After the study concluded, the seven target students and the two teachers were asked to respond to a questionnaire (see Appendices L and M). The teachers were asked to read and respond to the questions. Students were interviewed individually by the experimenter.

Students

Table 7 summarizes the students’ responses. All students preferred self-monitoring procedures when implemented during the changing criterion (CCPP) phase (when they had a target and earned classroom money) over self-monitoring without the targets and tokens. Three students indicated that they enjoyed self-monitoring in the absence of targets and tokens, and four indicated that they did not. However, six students stated that they thought self-monitoring helped them write more and write qualitatively better selections when they had targets and earned money. They further stated that they would like to continue using those procedures.

Three students indicated that they enjoyed self-evaluating their writing, but only two would like to continue using self-evaluation. When asked to choose between self-monitoring and self-evaluation, the students were split regarding their preferences. Four students thought that self-monitoring helped them more and preferred self-monitoring over self-evaluation; three preferred self-evaluation over self-monitoring.

Teachers

Table 8 summarizes the teachers’ responses. Both teachers liked having self-monitoring and self-evaluation implemented in their classroom, and both indicated that they preferred self-monitoring. They believed that it helped their students more. Further, both teachers indicated that they preferred self-monitoring with targets and tokens, and
<table>
<thead>
<tr>
<th>Questions</th>
<th>Responses and Total Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Self-Monitoring</strong></td>
<td></td>
</tr>
<tr>
<td>1. Did you enjoy self-monitoring your writing (without tokens)?</td>
<td>Yes - 3, No - 4</td>
</tr>
<tr>
<td>2. Do you think self-monitoring (without tokens) helped you write more?</td>
<td>Yes - 5, No - 2</td>
</tr>
<tr>
<td>3. Do you think self-monitoring (without tokens) helped you write better?</td>
<td>Yes - 4, No - 3</td>
</tr>
<tr>
<td>4. Would you like to continue using self-monitoring (without tokens)?</td>
<td>Yes - 1, No - 6</td>
</tr>
<tr>
<td>5. What did you like best about self-monitoring (without tokens)?</td>
<td>It told me how much I was writing, • Sort of. I know I need to write more next time.</td>
</tr>
<tr>
<td>6. What did you like least about self-monitoring?</td>
<td>Not without tokens, • Circled the numbers, • Counting the words, • When it had good stories, • Seeing how much I wrote, • The self-record sheet, • Writing numbers at the end of each line, • At first, I didn’t like writing. I couldn’t write that much, • Graphing and drawing lines, • Having to count and look at sentences. I didn’t like it when I didn’t get a lot, • It’s annoying. Writing numbers at the end of each line is a pain.</td>
</tr>
<tr>
<td><strong>Self-Evaluation</strong></td>
<td></td>
</tr>
<tr>
<td>1. Did you enjoy self-evaluating your writing?</td>
<td>Yes - 3, No - 4</td>
</tr>
<tr>
<td>2. Do you think self-evaluating helped you write more?</td>
<td>Yes - 3, No - 4</td>
</tr>
<tr>
<td>3. Do you think self-evaluating helped you write better?</td>
<td>Yes - 4, No - 3</td>
</tr>
<tr>
<td>• I like what we have now, with tokens.</td>
<td></td>
</tr>
</tbody>
</table>

Table 7

Summary of Responses to Student Opinion Questionnaire
5. What did you like best about self-evaluation?

- We didn’t have to get out our binders.
- Evaluating yourself.
- We didn’t have to count all the words
- Circling what you thought your story was: the best, or how much you think you wrote.
- Circling numbers
- I didn’t like it much.
- Not much.

6. What did you like least about self-evaluation?

- You had to fill out too much stuff.
- Choosing
- You had to read it to yourself. I already know what I feel like I should do.
- If I didn’t know for sure which number to pick.
- It was boring. It didn’t have a point.

Comparison

1. Which activity did you think helped you more?
   Why?
   Self-monitoring - 4   Self-evaluation - 2
   - Neither was helpful [did not choose]
   - You knew how much you wrote.
   - You get to rank yourself on how well you’re writing.
   - You could see progress with the graphs, instead of someone just telling you.
   - It told me if I had a good story or not and helped me write better, more descriptives, but not to write more.
   - I knew how many sentences I did and number of words.
   - If I got a little bit one day, then did better the next, I’d keep trying to get higher.

2. Which activity did you prefer?
   Why?
   Self-monitoring - 4   Self-evaluation - 3
   - It’s quicker.
   - It’s easier to circle the numbers and get to write it on a piece of paper, ’cause I like writing and circling.
   - I like getting a lot and seeing it.
   - It’s not as annoying.
CCPP
1. Did you enjoy having a target and earning classroom money for your writing?

2. Do you think self-monitoring helped you write more when you had a target and earned money?

3. Do you think self-monitoring helped you write better when you had a target and earned money?

4. Would you like to continue using self-monitoring using a target and earning classroom money?

5. What did you like best about self-monitoring when you had a target and earned money?

6. What did you like least about self-monitoring when you had a target and earned money?

Comparison
1. Which activity do you think helped you more?

Table 7 continued
2. Which activity did you prefer?
Why?

- It made me write faster, so I can get more money and it made me get a lot of words.
- I like it that way better. I like trying to write a lot.
- I didn't have to try for anything. I was getting about 170. When I started having to count words, I went back to 90 and 80. [preferred no targets].

Self-monitoring:
without targets and money - 0 with targets and money - 7
- If you wanna know your target, it helps.
- You get money if you go past it
- Earning money and spending it on stuff, like pencils.
- So every time I know how much money I got.
- It's funner.
- There was a point to it. You weren't just counting, which seemed like a waste of time.

Being given a target - 2 Choosing your own target - 5
- Mine was 200. My highest was 180s. If I want to beat it, I've got to write more words. It helps better.
- You get to pick a target that you think you can go past.
- I've only done it 2 days, though. Then I can pick what I know I can write and get more of a challenge than what they [the teachers] give me.
- I can't beat the one I gave myself.
- So I can keep on getting the same one and if I had a high one, I can keep it.
- When you pick it, I got more money.
- When the teachers chose, it was way too low.

Being given a target - 2 Choosing your own target - 5
The target that the teachers give you are too small. I had 108 before and used to write 160.
- It's lower. I can beat it and get more money.
- I can try to beat it 'cause I picked it high. I tried to beat it more when I picked it.
- Because I got to choose.
<table>
<thead>
<tr>
<th>Questions</th>
<th>Responses and Total Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Self-Monitoring</strong></td>
<td></td>
</tr>
<tr>
<td>1. Did you enjoy having self-monitoring implemented in your classroom (without tokens)?</td>
<td>Yes - 2</td>
</tr>
<tr>
<td>2. How difficult was self-monitoring to implement in your routine?</td>
<td>Very difficult 0</td>
</tr>
<tr>
<td></td>
<td>Somewhat difficult 0</td>
</tr>
<tr>
<td></td>
<td>Not difficult 2</td>
</tr>
<tr>
<td>3. Do you believe self-monitoring (without tokens) helped your students produce more writing?</td>
<td>Yes - 2</td>
</tr>
<tr>
<td></td>
<td>For some of the students.</td>
</tr>
<tr>
<td>4. Do you believe self-monitoring helped your students produce better writing?</td>
<td>Yes - 2</td>
</tr>
<tr>
<td></td>
<td>For some.</td>
</tr>
<tr>
<td>5. Did your students enjoy self-monitoring?</td>
<td>Yes - 2</td>
</tr>
<tr>
<td></td>
<td>Most did.</td>
</tr>
<tr>
<td>7. Please comment on the aspects of self-monitoring that you liked best.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>I liked having the students graph their results. This allowed for visual and kinesthetic reinforcement and feedback.</td>
</tr>
<tr>
<td></td>
<td>It got the students to think about their performance. It also helped the students compare their daily work with their own previous work, not the other students' work.</td>
</tr>
<tr>
<td>8. Please comment on the aspects of self-monitoring that you did not like.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>None.</td>
</tr>
<tr>
<td></td>
<td>Some students were not always honest.</td>
</tr>
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</table>

<table>
<thead>
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<th>Questions</th>
<th>Responses and Total Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Self-Evaluation</strong></td>
<td></td>
</tr>
<tr>
<td>1. Did you enjoy having self-evaluation implemented in your classroom?</td>
<td>Yes - 2</td>
</tr>
<tr>
<td>2. How difficult was self-evaluation to implement in your routine?</td>
<td>Very difficult - 0</td>
</tr>
<tr>
<td></td>
<td>Somewhat difficult - 0</td>
</tr>
<tr>
<td></td>
<td>Not difficult - 2</td>
</tr>
<tr>
<td>3. Do you believe self-evaluation helped your students produce more writing?</td>
<td>Yes - 1</td>
</tr>
<tr>
<td>4. Do you believe self-evaluation helped your students produce better writing?</td>
<td>Yes - 1</td>
</tr>
<tr>
<td></td>
<td>No - 1</td>
</tr>
</tbody>
</table>

Table 8
Summary of Responses to Teacher Opinion Questionnaire
5. Did your students enjoy self-evaluation?

6. Would you use self-evaluation in the future?

7. Please comment on the aspects of self-evaluation that you liked best.

8. Please comment on the aspects of self-evaluation that you did not like.

**Comparison**

1. Which intervention did you prefer? Why?

2. Which intervention did you believe helped your students more? Why?

**Changing Criteria**

1. Did you enjoy having self-monitoring implemented in your classroom when the students had targets and earned classroom money?

2. How difficult was self-monitoring with targets and classroom money to implement in your routine?

3. Do you believe self-monitoring with targets and classroom money helped your students produce more writing?

4. Do you believe self-monitoring with targets and classroom money helped your students produce better writing?

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**Table 8 continued**

<table>
<thead>
<tr>
<th>Question</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>5. Did your students enjoy self-evaluation?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Would you use self-evaluation in the future?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Please comment on the aspects of self-evaluation that you liked best.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Please comment on the aspects of self-evaluation that you did not like</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Comparison</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Which intervention did you prefer? Why?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Which intervention did you believe helped your students more? Why?</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Changing Criteria</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Did you enjoy having self-monitoring implemented in your classroom?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. How difficult was self-monitoring to implement in your routine?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Do you believe self-monitoring helped your students produce more?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Do you believe self-monitoring helped your students produce better?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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Yes - 0  No - 0

- Some did, many did not.
- Some did, some did not.

Yes - 2  No - 0

- Encouraged students to reflect on their own writing.
- When you ask yourself these questions they had on that sheet it got them to evaluate their abilities, which is good.
- Many students were not invested enough to honestly answer the self-evaluations fairly.
- It was too dependent on the likeability of the prompt.

Self-monitoring - 2  Self-evaluation - 0

- Self-monitoring helped the students visualize their progress - provided more comprehensive feedback.
- The students were doing more with the number of words and sentences they wrote.
- It was more fun - counting and graphing the number of words. Also, the students understand quantitative evaluations better than qualitative.
- Because they could see their graphs.

Yes - 2  No - 0

- Very difficult - 0  Somewhat difficult - 0  Not difficult - 2

Yes - 2  No - 0

Yes - 2  No - 0
5. Did your students enjoy self-monitoring with targets and classroom money?

6. Would you use self-monitoring with targets and classroom money in the future?

7. Please comment on the aspects of self-monitoring with targets and classroom money that you liked best.

8. Please comment on the aspects of self-monitoring with targets and classroom money that you liked least.

**Comparison**

1. Which intervention did you prefer? Why?

2. Which intervention did you believe helped your students more? Why?

3. Do you believe there was a difference between choosing the targets for the students and allowing them to choose their own targets?
   If you do believe there was a difference, please explain.

   Yes - 2  
   No - 0

   Yes - 2  
   No - 0

   - Using the classroom money strongly encouraged the students to write more.
   - Having the targets gave the students control over the amount of money they earned.
   - It gave the students rewards for doing good work.
   - N/A
   - None

   S-M without targets and money - 0  
   S-M with targets and money - 2

   - Money words better as an incentive.
   - The kids liked it better.

   S-M without targets and money - 0  
   S-M with targets and money - 2

   - Students produced more words with targets and money
   - It gave them a goal to work towards.

   Yes - 1  
   No - 1

   - No, because the students had honest targets and worked, I thought, equally hard.
   - Students are often very difficult on themselves, and give themselves very high targets, this makes it difficult for them to see progress. Some students also do not challenge themselves enough. I prefer to have the teacher pick the target, to provide appropriate challenge, yet at the same time make success attainable.
that incorporating writing targets and using tokens helped their students to write more effectively. Finally, both teachers believed that the procedures used in this study were not difficult to implement.

Procedural Integrity

To ensure that the experimental procedures were implemented as intended, interobserver agreement was conducted on the independent variable. Using a questionnaire (see Appendix H), the independent observers viewed 38% (23 of 61) of the sessions. 100% interobserver agreement was obtained for all sessions observed throughout the study (including baseline, teacher token, and CCPP phases), indicating that the self-monitoring and self-evaluation procedures were implemented correctly.

Student 1

Number of words written. Figure 1 presents a graphical representation of the total number of words written by Student 1. In baseline, his total number of words written averaged 109, range 83 to 137. His performance increased in the self-monitoring phase to an average of 152, range 120 to 175. Although some variability is evidenced in both phases, self-monitoring appears to have produced a substantial change in the number of words written by Student 1. With the exception of one data point that fell within the baseline range, all data points in self-monitoring are higher than those in baseline. However, upon a return to baseline, Student 1’s performance reversed, but it did not return to previous baseline levels. Specifically, in baseline, the number of words written averaged 127, range 111 to 152. Again, performance in this phase is quite variable. When self-monitoring was reintroduced, Student 1’s average increased slightly over the previous baseline phase to 134, range 108 to 172. His performance in self-monitoring approached replicating that of self-monitoring,
Figure 1.

Total Words Written for Student 1.
meaning that his average score improved over baseline, and was in the direction of self-monitoring; however, the level was not sufficiently high to claim complete replication.

In addition to serving as a replication of the first self-monitoring phase, the second self-monitoring phase served as a prediction phase for self-evaluation. Student 1’s number of words written during self-evaluation averaged 121, range 77 to 154. Upon a return to self-monitoring, a slight decrease in the average number of words written occurred, declining to 116, range 112 to 120. Self-monitoring produced the lowest average performance among the three self-monitoring phases. In the second self-evaluation phase, self-evaluation, Student 1 averaged 118 words written, range 111 to 123, a performance similar to the average in self-evaluation. Comparing self-evaluation alone to self-monitoring did not produce a convincing change in favor of self-evaluation. A return to baseline for two days (Baseline) yielded an average of 90.5, range 90 to 91, Student 1’s lowest performance across all phases. During the Teacher Token (TT) phase, Student 1’s performance increased substantially compared to Baseline, averaging 154 words, range 145 to 163, indicating a considerable improvement in performance.

The changing criterion with public posting (CCPP) phase encompassed six criterion changes, each having a different target for number of words written and implemented for varying time periods. During the first condition of the CCPP phase, Student 1’s target was 120; he exceeded his target for each session of this condition, averaging 146 words written, range 134 to 162. His target in the second condition was 132; he averaged 131, range 79 to 164, exceeding his target for 3 of 5 sessions with a fourth data point (session 49) narrowly missing the criterion. In the third condition, the target was increased to 145; Student 1’s average was 132, range 113 to 151. He exceeded his target for 1 of 2 sessions during the third condition. The fourth condition,
in which the target was intentionally reversed to 108, yielded an average of 179, range 173 to 185. Student 1 surpassed his target substantially for each session during this condition. In effect, the behavior did not reverse. During the fifth condition, Student 1’s target was increased to 160 — a goal 10% higher than his highest target; he averaged 161 words written, range 160 to 162. He met his target for both sessions. In the final condition, in which Student 1 chose 200 as his target, he averaged 156, range 123 to 175. Student 1 did not meet his target for any of the final sessions. Overall, during the CCPP phase, Student 1 averaged 147 words written, range 79 to 185. He met or exceeded his target for 11 of the 17 sessions (65% of the CCPP sessions) during the CCPP phase. A majority of data points (13 out of 19, or 68%) during the Teacher Token and Changing Criterion with Public Posting phases fell above 140 words written, whereas the majority of data points in previous phases (30 out of 42, or 71%), with the exception of self-monitoring, fell below 140 words written.

For four sessions during the CCPP phase, story starters that had been presented early in the study were reintroduced. Story starters from sessions 5, 10, 14, and 15 were repeated in sessions 55, 56, 57, and 58 respectively. In session 5, Student 1 was absent and in session 55, he wrote 173 words when the story starter was repeated. In session 10, he wrote 151 words (less than 1% below the average for that phase) and in session 56, when the story starter was repeated, he wrote 185 words (2.8% higher than average for that condition). Stated another way, when Student 1 had a second chance to write on the same story starter as earlier, he increased his production by 34 words (22.5%). Session 14 yielded 120 words (21% lower than the mean for that phase); repetition of the story starter in session 57 produced 160 words (less than 1% lower than the average for that condition), a 40-word (33%) increase. During session 15, Student 1 wrote 163 words (7.2% higher than the average for that phase); when the
story starter was repeated in session 58, he wrote 162 words (less than 1% higher than the average for that condition), virtually identical production levels across both samples. For Student 1, a compelling relationship between performances when story starters were repeated did not emerge, although for two of the four stories, gains of the magnitude ranging from 22% to 33% were evident.

**Number of sentences written.** Figure 2 presents a graphical representation of the total number of sentences written by Student 1. Throughout all phases, Student 1’s data were quite variable. During the initial baseline phase, Student 1 wrote an average of 16 sentences, range 14 to 21. The average increased slightly during self-monitoring, to 17.3 sentences, range 14 to 21. Upon a return to baseline, Student 1 wrote an average of 19.2 sentences, range 14 to 25. When the self-monitoring phase was replicated, Student 1’s performance remained relatively unchanged from baseline, averaging 19 sentences, range 11 to 26.

When the first self-evaluation phase was implemented, Student 1’s performance declined to an average of 15.8 sentences written, range 11 to 22. During self-monitoring, Student 1’s performance increased; he wrote an average of 20.3 sentences, ranging from 18 to 24. In the second self-evaluation phase, Student 1’s performance declined to a level similar to that of self-evaluation, averaging 15.3 sentences written, range 13 to 19.

During Baseline, Student 1’s average declined to a low of 11, range 9 to 13. His average increased during the Teacher Token phase to a high of 23, range 21 to 25, indicating a substantial increase in performance. During the six CCPP conditions, Student 1 averaged 19, 14.6, 16.5, 20, 14, and 17.7 respectively. Ranges during the same six conditions were 17 to 21, 9 to 18, 15 to 18, 19 to 21, 10 to 18, and 16 to 20 respectively. Overall, during the CCPP phase, Student 1 averaged 16.6 sentences.
Figure 2.

Total Sentences Written for Student 1.
written, range 9 to 21. Clear functional relationships in favor of any intervention were not evident, although the data for self-evaluation suggest a replicated decrease in performance relative to self-monitoring. Overlapping data points and variability temper a claim for a convincing replication.

**Number of different words written.** Figure 3 displays graphically the type-token ratio data, the level of vocabulary development, collected for Student 1. The type-token ratio (TTR) is a ratio of number of different words written divided by total number of words written and served as an indication of writing vocabulary. A ratio of .70 or higher indicates typical written vocabulary development. As scores fall further below the .70 ratio, the writer’s vocabulary can be characterized as becoming increasingly stilted and repetitive.

During baseline, Student 1 averaged a TTR of .59, range .53 to .62. When self-monitoring was introduced, Student 1’s average TTR remained relatively stable, at .57, range .52 to .63. Upon a return to baseline, Student 1 once again averaged a TTR of .59, range .53 to .74. During the self-monitoring phase, Student 1’s average TTR was .57, ranging from .51 to .63.

The average TTR increased slightly during self-evaluation, to .62, range .55 to .75. Similar results were obtained upon a return to self-monitoring, averaging .63 and ranging from .60 to .66. When self-evaluation was re-implemented, Student 1’s TTR averaged .59, range .57 to .63. A return to baseline (Baseline) yielded an average TTR of .63, range .52 to .75.

When reinforcers were introduced during the Teacher Token phase, and Student 1 began writing more, his TTR decreased to an average of .52, range .49 to .55. During the first condition of the CCPP phase, Student 1’s average TTR was .53, consistent with his average during the Teacher Token phase, range .51 to .57. The second
Figure 3.

Ratio of Number of Different Words to Total Words Written (Type Token Ratio)

- A
- B
- SM
- S-E
- CCP

Student 1

A = Absent
condition of the CCPP phase yielded an average TTR of .56, range .55 to .59. During the third condition, his average TTR was .58, range .58 to .58 (i.e., both TTRs were .58). In the fourth condition, the average TTR was .57, range .56 to .58. The average in the fifth condition decreased to .54, range .51 to .57. During the sixth condition, Student 1's average was .59, range .56 to .65. During the CCPP phase, the overall average TTR was .56, range .51 to .65. Throughout the study, Student 1 reached or exceeded the .7 TTR (expected as an indication of typical vocabulary development) on three occasions, during sessions 20 (TTR of .74), 31 (TTR of .75), and 41 (TTR of .75). During two of these three sessions, 31 and 41, the number of words that Student 1 wrote fell within the bottom 7% of all sessions. In other words, for 67% of the sessions in which Student 1 wrote at an expected minimum level of vocabulary development, the number of words written fell within the bottom 7% of his overall performance. Therefore, there may be a high negative relationship between a low number of words written and a higher variety of vocabulary. Said another way, the fewer words written, the higher the variety of words used. The opposite (the higher the number of words written, the lower the TTR) cannot be demonstrated by examining data collected from Student 1.

Number of adjectives. The total number of adjectives written in each story served as an indicator of quality. Figure 4 provides a graphical representation of the number of adjectives written per session for Student 1. In the first baseline phase, Student 1 wrote an average of 10.2 adjectives, range 6 to 19. When self-monitoring was introduced, Student 1's average increased to 13.5 adjectives written, ranging from 11 to 18. A decrease occurred in baseline₂, with an average of 8.8, range 4 to 15. When self-monitoring was re-implemented, Student 1 wrote an average of 8.6 adjectives, range 2 to 12, a performance similar to that in Baseline₂.
Figure 4.  

Total Adjectives Written for Student 1.
Upon introducing self-evaluation, Student 1's average number of adjectives increased to 13.6, his highest average performance thus far, range 11 to 16. During the self-monitoring phase, the average number of adjectives written returned to levels similar to those in self-monitoring, with an average of 9.3, ranging from 8 to 11. A further decrease occurred during self-evaluation, averaging 7 adjectives, range 6 to 8. Baseline yielded the lowest performance among all phases for Student 1, with an average of 5, range 5 (i.e., for both sessions, Student 1 wrote 5 adjectives). When the Teacher Tokens phase was introduced, Student 1’s performance increased markedly, to an average of 13.5, range 12 to 15. Average adjectives written for the six conditions of the CCPP phase were 8, 10.2, 10.5, 22, 11, and 16 respectively. Ranges for the six conditions were 5 to 10, 7 to 14, 7 to 14, 21 to 23, 10 to 12, and 15 to 17 respectively. Overall, during the CCPP phase Student 1 wrote an average of 12.4 adjectives, range 5 to 23.

**Student 2**

Number of words written. Figure 5 presents a graphical representation of the total number of words written by Student 2. In baseline, his total number of words written averaged 44, range 28 to 78. His performance increased slightly in the self-monitoring phase to an average of 62, range 36 to 81. Substantial overlap of data points and variability are evident for both phases. Upon a return to baseline, Student 2’s performance did not return to previous baseline levels. In baseline, the number of words written averaged 58, range 28 to 70. Again, performance in this phase is quite variable. When self-monitoring was reintroduced, Student 2’s performance decreased to an average of 46, range 23 to 82, similar to his performance in the initial baseline phase. His performance in self-monitoring did not replicate that of self-monitoring.
Figure 5.

Total Words Written for Student 2.
Student 2’s number of words written during self-evaluation averaged 35, range 0 to 62. For two out of the five (40%) sessions in this phase, Student 2 wrote nothing. Upon a return to self-monitoring, an increase in the average number of words written occurred, to 59, range 0 to 89. Student 2 wrote nothing for one of the five sessions (20%) in this phase. In the second self-evaluation phase, self-evaluation2, Student 2 averaged 17.3 words written, range 0 to 52, his lowest performance across the first seven phases. He wrote nothing for 66% (two out of three) of these sessions, which substantially lowered his average. Although considerable variability is evident from self-monitoring through self-evaluation, a closer look at these phases indicates a replicated decrease in the two self-evaluation phases. However, claims of a functional relationship are mitigated by the high levels of variability and overlap between these phases.

A return to baseline for two days (Baseline3) yielded an average of 45, range 0 to 90. Student 2 wrote nothing for the first session of this phase, and 90 words for the second session. During the Teacher Token (TT) phase, Student 2’s average performance increased compared to Baseline3, averaging 69 words, range 37 to 100. However, as with previous phases, there is substantial overlap and variability of data points between these two phases (Baseline3 and TT).

During the first condition of the CCPP phase, Student 2’s target was 50; he exceeded his target for each session of this condition, averaging 68 words written, range 55 to 80. His target in the second condition was 55; he averaged 72, range 43 to 113, exceeding his target for 3 of 4 sessions. In the third condition, the target was increased to 61; Student 2’s average was 83, range 74 to 98. He exceeded his target for all three sessions during the third condition. An increasing trend can be seen for Student 2 during the first three conditions of the CCPP phase. The fourth condition, in which the target was intentionally reversed to 45, yielded an average of 15, range 12 to 18, Student 2’s
lowest performance across all phases. Student 2 did not meet his target for any session during this condition. In effect, the behavior reversed. During the fifth condition, Student 2’s target was increased to 67 — a goal 10% higher than his highest target; he averaged 56 words written, range 54 to 57. As in the fourth condition, he did not beat his target for either of the two sessions, although he approached it. In the final condition, in which Student 2 chose 50 as his target, he averaged 29, range 11 to 42. Again, Student 2 did not meet his target for any of the final sessions and the trend was in the opposite direction. Overall, during the CCPP phase, Student 2 averaged 57 words written, range 11 to 113. He met or exceeded his target for 9 of the 17 sessions (53% of the CCPP sessions) during the CCPP phase. Data across all phases for Student 2 are quite variable and there is substantial overlap across phases. During the CCPP phase, however, less variability is evident, and for the first three phases, his average scores met or exceeded his goal; for the fourth condition, where a planned reversal was introduced, his performance dropped. Taking these data into account provides suggestive evidence of a functional relationship.

Similar to Student 1, story starters from sessions 5, 10, 14, and 15 were repeated in sessions 55, 56, 57, and 58 respectively. In session 5, Student 2 wrote 39 words (11% lower than the average for that phase) and in session 55, he wrote 12 words (20% lower than the average for that condition) when the story starter was repeated. Stated another way, when Student 2 had a second chance to write on the same story starter as earlier, he decreased his production by 27 words (69%). In session 10, he wrote 41 words (40% below the average for that phase) and in session 56, when the story starter was repeated, he wrote 18 words (20% higher than average for that condition), a decrease of 23 words (56%). Session 14 yielded 81 words (31% higher than the mean for that phase); repetition of the story starter in session 57 produced 54 words (4% lower than the average for that condition), a 27-word (33%) decrease.
During session 15, Student 2 wrote 68 words; when the story starter was repeated in session 58, he wrote 57 words, a decrease of 11 words (16%). For all four stories, decreases of the magnitude ranging from 16% to 69% were evident when the story starters were repeated.

**Number of sentences written.** Figure 6 presents a graphical representation of the total number of sentences written by Student 2. During the initial baseline phase, Student 2 wrote an average of 3.9 sentences, range 3 to 6. The average increased slightly during self-monitoring1, to 4.4 sentences, range 2 to 7. Upon a return to baseline, Student 2 wrote an average of 4 sentences, range 2 to 5. When the self-monitoring phase was replicated, Student 2’s performance remained virtually unchanged from baseline2, averaging 4 sentences, range 2 to 7.

When the first self-evaluation phase was implemented, Student 2’s performance declined to an average of 2 sentences written, range 0 to 4. During self-monitoring3, Student 2’s performance increased to previous self-monitoring levels; he wrote an average of 4 sentences, ranging from 0 to 7. In the second self-evaluation phase, Student 2’s performance declined to a level similar to that of self-evaluation1, averaging 1.3 sentences written, range 0 to 4.

During Baseline3, Student 2’s average increased to 3.5, range 0 to 7. His average increased during the Teacher Token phase to a high of 9, range 4 to 14, indicating a substantial increase in performance. During the six CCPP conditions, Student 2 averaged 7.3, 6.3, 6.3, 1.5, 8, and 2.7 sentences respectively. Ranges during the same six conditions were 4 to 12, 3 to 11, 4 to 9, 1 to 2, 8 to 8, and 2 to 3 respectively. Overall, during the CCPP phase, Student 2 averaged 5.5 sentences written, range 1 to 12. Clear functional relationships in favor of any intervention were
Figure 6.
Total Sentences Written for Student 2.
not evident, although the data for self-evaluation suggest a replicated decrease in performance relative to self-monitoring. Overlapping data points and variability mitigate against a convincing replication.

**Number of different words written.** Figure 7 displays graphically the type-token ratio data, the level of vocabulary development, collected for Student 2. As stated earlier, a ratio of .70 or below typically indicates poor written vocabulary development.

During baseline, Student 2 averaged a TTR of .77, range .65 to .89. When self-monitoring was introduced, Student 2’s average TTR decreased slightly to .72, range .65 to .83. Upon a return to baseline, Student 2’s average TTR increased to .76, range .65 to .84, a level similar to that in baseline. During the self-monitoring phase, Student 2’s average TTR remained at .76, ranging from .69 to .84.

The average TTR decreased dramatically during self-evaluation, to .45, range 0 to .78. Similar results were obtained upon a return to self-monitoring, averaging .46 and ranging from 0 to .71. When self-evaluation was re-implemented, Student 2’s TTR decreased to a low of .24, range 0 to .73. A return to baseline (Baseline) yielded an average TTR of .41, range 0 to .82.

When reinforcers were introduced during the Teacher Token phase, Student 2’s TTR increased to an average of .74, range .68 to .81. During the first condition of the CCPP phase, Student 2’s average TTR was .72, consistent with his average during the Teacher Token phase, range .65 to .76. The second condition of the CCPP phase once again yielded an average TTR of .72, range .62 to .77. During the third condition, his average TTR remained the same, .72, range .60 to .79. In the fourth condition, the average TTR increased to a high of .87, range .75 to 1.0. The average in the fifth
condition decreased to .77, range .77 to .78. During the sixth condition, Student 2’s average was .86, range .75 to 1.0. During the CCPP phase, the overall average TTR was .76, range .60 to 1.0.

Throughout the study, Student 2 reached or exceeded the .7 TTR (expected as an indication of typical vocabulary development) on all but 17 occasions. Stated another way, Student 2 met or exceeded a TTR of .7 for 72% of the sessions. During the two sessions in which Student 2’s TTR reached 1.0 (i.e., every word he wrote was different) he wrote 11 and 18 words, a performance that fell within the bottom 15% of all sessions. Similar to Student 1, there appears to be a high negative relationship between a low number of words written and a higher variety of vocabulary for Student 2. Said another way, the fewer words written, the higher the variety of words used. As opposed to Student 1, a negative relationship between a high number of words written and low TTRs may be demonstrated by examining data collected from Student 2.

Excepting the 6 sessions when Student 2 wrote nothing, there are 11 sessions during which Student 2’s TTR falls below .7. For 9 of these 11 sessions (82%), Student 2’s performance fell within the highest 34% of all sessions. Hence, the more words that Student 2 wrote, the more likely the vocabulary became increasingly stilted and repetitive.

**Number of adjectives.** Figure 8 provides a graphical representation of the total number of adjectives written per session for Student 2. In the first baseline phase, Student 2 wrote an average of 7.6 adjectives, range 3 to 14. When self-monitoring was introduced, Student 2’s average increased to 8.6 adjectives written, ranging from 4 to
Figure 8.

Total Adjectives Written for Student 2.
12. In baseline2, Student 2 wrote an average of 8.2 adjectives, range 4 to 11. When self-monitoring was re-implemented, the average decreased to 5.9 adjectives, range 0 to 14.

Upon introducing self-evaluation1, Student 2’s average number of adjectives decreased further to 4.4, range 0 to 10. During the self-monitoring3 phase, the average number of adjectives written returned to levels between those of the first two self-monitoring phases, with an average of 6.7, ranging from 0 to 11. During self-evaluation2, Student 2’s average plummeted to a low of 1.7 adjectives, range 0 to 5. Student 2’s performance for total adjectives written mimics his attainments for total words and sentences written, in that a replicated decrease in average performance occurred during the self-evaluation phases. Also similar are the overlapping data points and high variability that hinder claims of a functional relationship.

Performance during Baseline3 increased to an average of 7, range 0 to 14. When the Teacher Tokens phase was introduced, Student 2’s performance increased markedly to an average of 10, range 4 to 16, his highest performance thus far. Average adjectives written for the six conditions of the CCPP phase were 6.7, 10, 10, 3, 5.5, and 3.7 respectively. Ranges for the six conditions were 2 to 11, 6 to 13, 6 to 12, 3 to 3, 4 to 7, and 1 to 7 respectively. Overall, during the CCPP phase Student 2 wrote an average of 6.8 adjectives, range 1 to 13

Student 3

Number of words written. Figure 9 presents a graphical representation of the total number of words written by Student 3. In baseline1, his total number of words written averaged 54, range 33 to 81. His performance increased in the self-monitoring1 phase to an average of 68, range 38 to 105. Variability and overlapping data points are evidenced between phases. Upon a return to baseline, Student 3’s performance did not
Figure 9.

Total Words Written for Student 3.
return to previous baseline levels. In baseline2, the number of words written averaged 70, range 45 to 94. Again, performance in this phase is quite variable. When self-monitoring was reintroduced, Student 3’s average decreased to 45, range 36 to 69, a level below baseline1. His performance in self-monitoring2 did not replicate that of self-monitoring1.

Student 3’s number of words written during self-evaluation1 averaged 70, range 18 to 99. Upon a return to self-monitoring, a slight increase in the average number of words written occurred, to 78, range 57 to 102. Self-monitoring3 produced the highest average performance among the three self-monitoring phases. In the second self-evaluation phase, self-evaluation2, Student 3 averaged 116 words written, range 111 to 121, a performance that did not replicate that of self-evaluation1. Therefore, a functional relationship was not apparent between self-evaluation and number of words written.

Importantly, Student 3’s medicine was changed around session 37 (the end of the third self-monitoring phase), so results must be interpreted in light of this change. A return to baseline for two days (Baseline3) yielded an average of 108, range 96 to 119. During the Teacher Token (TT) phase, Student 3’s performance increased slightly, averaging 110 words, range 100 to 120.

During the first condition of the CCPP phase, Student 3’s target was 60; he exceeded his target for each session of this condition, averaging 122 words written, range 101 to 138. His target in the second condition was 66; he averaged 107, range 83 to 127, exceeding his target all four sessions. In the third condition, the target was increased to 100, which is higher than the 10% established criterion change, but was implemented based on Student 3’s performance in the first two conditions. His average for the third condition was 114, range 110 to 120. He exceeded his target for all three sessions during the third condition. The fourth condition, in which the target was
intentionally reversed to 54, yielded an average of 139, range 134 to 144. Student 3 surpassed his target substantially for each session during this condition. In effect, the behavior did not reverse. During the fifth condition, Student 3’s target was increased to 110 — a goal 10% higher than his highest target; he averaged 133 words written, range 113 to 152. As in the previous conditions, he beat his target for all of the sessions. In the final condition, in which Student 3 chose 159 as his target, he was absent for two of the three sessions. He wrote 113 words for the session he attended. Student 3 did not meet his target for this final session. Overall, during the CCPP phase, Student 3 averaged 120 words written, range 83 to 152. He met or exceeded his target for 13 of the 14 (93%) sessions that he was in attendance during the CCPP phase. As stated earlier, although Student 3’s performance increased substantially beginning with the self-evaluation 2 phase, these results must be interpreted cautiously because Student 3 experienced a change in medication for a diagnosed Attention Deficit Disorder, beginning around session 37.

For four sessions during the CCPP phase, story starters that had been presented early in the study were reintroduced. Story starters from sessions 5, 10, 14, and 15 were repeated in sessions 55, 56, 57, and 58 respectively. In session 5 Student 3 wrote 33 words (39% less than the average for that phase) and in session 55 he wrote 144 words (4% higher than the average for that condition) when the story starter was repeated. Stated another way, when Student 3 had a second chance to write on the same story starter as earlier, he increased his production by 111 words (336%). Again, these results must be interpreted in light of Student 3’s change in medicine, which may have affected his performance in later phases. In session 10 he wrote 38 words and in session 56, when the story starter was repeated, he wrote 134 words, an increase of 96 words (253%). Session 14 yielded 105 words (54% higher than the mean for that phase);
repetition of the story starter in session 57 produced 152 words (14% higher than the average for that condition), a 47-word (45%) increase. During session 15, Student 3 wrote 40 words (41% lower than the average for that phase); when the story starter was repeated in session 58, he wrote 113 words (15% lower than the average for that condition), for a difference of 73 words (183%). Student 3’s performance when story starters were repeated increased, although the effects of a change in his medication clouds the effects.

**Number of sentences written.** Figure 10 presents a graphical representation of the total number of sentences written by Student 3. Throughout all phases, Student 3’s data were quite variable. During the initial baseline phase, Student 3 wrote an average of 5.9 sentences, range 3 to 9. The average increased during self-monitoring1, to 7.9 sentences, range 4 to 14. Upon a return to baseline, Student 3 wrote an average of 7.6 sentences, range 5 to 11. When the self-monitoring phase was reintroduced, Student 3’s performance decreased from previous phases, averaging 5 sentences, range 3 to 8.

When the first self-evaluation phase was implemented, Student 3’s performance increased to an average of 9.6 sentences written, range 4 to 12. During self-monitoring3, Student 3’s performance increased further; he wrote an average of 12 sentences, ranging from 8 to 18. In the second self-evaluation phase, Student 3’s performance increased to a level above that of self-evaluation1, averaging 17 sentences written, range 13 to 19.

During Baseline3, Student 3’s average remained the same at 17, range 16 to 18. His average increased during the Teacher Token phase to a high of 17.5, range 15 to 20. During the six CCPP conditions, Student 3 averaged 14, 13.3, 15.3, 17.5, and 14 respectively; during the one session he attended for the sixth condition, he wrote 9 sentences. Ranges during the first five conditions (he was absent for two of the three
Figure 10.

Total Sentences Written for Student 3.
sessions during the sixth condition) were 12 to 17, 11 to 15, 14 to 16, 15 to 20, and 8 to 20 respectively. Overall, during the CCPP phase, Student 3 averaged 14.3 sentences written, range 8 to 20. Clear functional relationships in favor of any intervention were not evident. Overlapping data points, variability, and a change in medicine prohibit claims of functionality.

**Number of different words written.** Figure 11 displays graphically the type-token ratio data, the level of vocabulary development, collected for Student 3. During baseline, Student 3 averaged a TTR of .78, range .74 to .84. When self-monitoring was introduced, Student 3’s average TTR decreased slightly to .71, range .65 to .82. Upon a return to baseline, Student 3 once again averaged a TTR of .71, range .59 to .79. During the self-monitoring phase, Student 3’s average TTR was .74, ranging from .62 to .84.

The average TTR decreased during self-evaluation, to .65, range .55 to .83. Similar results were obtained upon a return to self-monitoring, averaging .65 and ranging from .63 to .71. When self-evaluation was re-implemented, Student 3’s average TTR dropped to .54, range .49 to .62. A return to baseline (Baseline) yielded an average TTR of .58, range .57 to .60.

When reinforcers were introduced during the Teacher Token phase, Student 3’s TTR remained relatively stable, at an average of .55, range .50 to .60. During the first condition of the CCPP phase, Student 3’s average TTR was .57, similar to his average during the Teacher Token phase, range .50 to .62. The second condition of the CCPP phase yielded an average TTR of .60, range .50 to .66. During the third condition, his average TTR was .63, range .61 to .66. In the fourth condition, the average TTR dropped to .52, range .50 to .55. The average in the fifth condition decreased to .50, range .48 to .52. During the sixth condition, Student 3’s TTR was .61 for the session
Figure 11.

Number of Different Words Written for Student 3.

Ratio of Number of Different Words to Total Words Written (Type Token Ratio)

0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1

Student 3

A = Absent
he attended. During the CCPP phase, the overall average TTR was .57, range .48 to .66. Throughout the study, Student 3 reached or exceeded the .7 TTR (expected as an indication of typical vocabulary development) on 22 (36%) occasions. In other words, for 73% of the sessions in which Student 3 wrote at an expected minimum level of vocabulary development, the number of words written fell within the bottom 31% of his overall performance. Significantly, all 22 of these .7 and higher TTRs occurred during the phases before Student 3’s medicine change occurred (i.e., before he began writing substantially more). Therefore, there appears to be a high negative relationship between a low number of words written and a higher variety of vocabulary for Student 3. Said another way, the fewer words written, the higher the variety of words used. The opposite (the higher the number of words written, the lower the TTR) can also be demonstrated by examining data collected from Student 3. Prior to session 37, when Student 3 began producing substantially more writing, his average TTRs were in the .6 to .7 range. After his writing quantity increased, Student 3 did not reach the .7 TTR range. Further, he reached TTRs of .6 or above for only 54% of the sessions following the increase in written language output. Therefore, a strong negative relationship may also exist between a high number of words written and a more stilted, repetitive vocabulary for Student 3.

**Number of adjectives.** The total number of adjectives written in each story served as an indicator of quality. Figure 12 provides a graphical representation of the total number of adjectives written per session for Student 3. In the first baseline phase, Student 3 wrote an average of 6.9 adjectives, range 5 to 10. When self-monitoring was introduced, Student 3’s average decreased to 4.9 adjectives written, ranging from 1 to 9. An increase to levels similar to baseline 1 occurred in baseline 2, with an average of 6, range 3 to 14. When self-monitoring was re-implemented, Student 3 wrote an average
Figure 12.

Total Adjectives Written for Student 3.
of 4 adjectives, range 1 to 6, a performance similar to that in self-monitoring$^1$. Although a pattern of increased adjectives written not favoring self-monitoring occurred during self-monitoring$^1$ and self-monitoring$^2$, too many data points overlap to allow a claim of a functional relationship.

Upon introducing self-evaluation$^1$, Student 3's average number of adjectives increased to 5.8, range 2 to 9. During the self-monitoring$^3$ phase, the average number of adjectives written returned to levels similar to those in baseline phases, with an average of 6.6, ranging from 2 to 10. A further increase occurred during self-evaluation$^2$, averaging 7 adjectives, range 2 to 13. Baseline$^3$ yielded the highest performance among the first eight phases for Student 3, with an average of 9, range 8 to 10. When the Teacher Tokens phase was introduced, Student 3's performance decreased markedly, to an average of 4, range 3 to 5. Average adjectives written for the first five conditions of the CCPP phase were 7.3, 9.7, 13.3, 12, and 9 respectively; he wrote 7 adjectives for the final session he was in attendance. Ranges for the five conditions were 6 to 9, 5 to 14, 11 to 16, 10 to 14, and 4 to 14 respectively. Overall, during the CCPP phase Student 3 wrote an average of 10 adjectives, range 4 to 16.

**On-Task Behavior.** As described in Chapter 3, the experimenter gathered on-task behavior data for three students as the students wrote during the 10-minute composition period. A whole-interval recording procedure was used in which the three students were observed (in random order each session) 20 times, for 5 seconds at a time, during the 10-minute period. Figure 13 displays the percent of the 10-minute writing period spent on-task for Student 3, one of the three students for whom on-task behavior was collected. During the first baseline phase, the average time that Student 3 spent on-task was 66%, range 40% to 90%. When self-monitoring was implemented, Student 3's on-task behavior averaged 66%, range 30% to 85%. Upon a return to baseline, in
Figure 13.

Percentage of Intervals On-Task for Student 3.
Baseline, he was on task an average of 64%, range 55% to 75%. When self-monitoring was reimplemented, in Self-Monitoring, Student 3’s on-task behavior averaged 48%, range 35% to 60%. A decreasing trend can be seen across the first four phases (Baseline, through Self-Monitoring).

When self-evaluation was implemented, Student 3’s on-task behavior increased to an average of 64%, range 15% to 85%. A return to self-monitoring, in Self-Monitoring, yielded an average of 74%, range 50% to 100%, a performance similar to that of Self-Monitoring. Upon a return to self-evaluation, Student 3 was on-task an average of 90% of the time, range 85% to 95%. During Baseline, Student 3 averaged 90% on-task, range 80% to 100%. The Teacher Token phase yielded an average of 98%, range 95% to 100%. Student 3 averaged 92%, 85%, 100%, and 98% during the first, second, third, and fourth conditions of the CCPP phase respectively. Ranges for the first four conditions were 80% to 100%, 75% to 95%, 100%, and 95% to 100% respectively. Data were not collected often enough during the fifth and sixth phases to report averages or ranges for those phases.

Beginning with session 37 (when his medicine change occurred), a substantial change can be seen in on-task behavior, with Student 3 being on-task for at least 75% of the intervals for each session. No compelling relationships can be claimed between the interventions and on-task behavior. Due to the possible effects of a change in medication, the substantial increase apparent after session 37 cannot clearly be attributed to the interventions in this study.

**Student 4**

**Number of words written.** Figure 14 presents a graphical representation of the total number of words written by Student 4. In baseline, her total number of words written averaged 49, range 39 to 57. Her performance increased in the self-monitoring
Figure 14.

Total Words Written for Student 4.
phase to an average of 60, range 47 to 80. Variability and overlapping data points were evidenced between phases. Upon a return to baseline, Student 4's performance did not return to previous baseline levels. In fact, her performance continued to increase. Beginning with baseline1, an increasing trend can be seen to continue through baseline2. In baseline2, the number of words written averaged 74, range 66 to 87. When self-monitoring was reintroduced, Student 4's average decreased to 66, range 58 to 75. Her performance in self-monitoring2 is similar to that of self-monitoring1, but overlapping data points between baseline and self-monitoring phases disallow claims of a convincing replication.

Student 4's number of words written during self-evaluation1 averaged 61, range 45 to 72. Upon a return to self-monitoring, a slight increase in the average number of words written occurred, to 63, range 47 to 83. In the second self-evaluation phase, self-evaluation2, Student 4 averaged 60 words written, range 52 to 68, a performance similar to that of self-evaluation1. Overlapping data points between self-monitoring and self-evaluation phases prohibit claims of a functional relationship between self-evaluation and number of words written.

A return to baseline for two days (Baseline3) yielded an average of 69, range 60 to 77. During the Teacher Token (TT) phase, Student 4's performance increased to the highest levels thus far, averaging 83 words, range 76 to 90. During the first condition of the CCPP phase, Student 4's target was 55. She exceeded her target for each session of this condition, averaging 90 words written, range 86 to 96. Her target in the second condition was 61; she averaged 101, range 83 to 120, exceeding her target all four sessions. In the third condition, the target was increased to 67. Her average for the third condition was 101, range 95 to 107. She exceeded her target for all three sessions during the third condition. The fourth condition, in which the target was intentionally
reversed to 49, yielded an average of 103, range 98 to 108. Student 4 surpassed her target substantially for each session during this condition. In effect, the behavior did not reverse. During the fifth condition, Student 4's target was increased to 74 -- a goal 10% higher than her highest target. Student 4 was absent for one of the two sessions in this condition. On the day she attended, she wrote 76 words. As in the previous conditions, she beat her target for the session. In the final condition, in which Student 4 chose 78 as her target, she wrote an average of 97 words, range 91 to 102. Overall, during the CCPP phase, Student 4 averaged 97 words written, range 76 to 120. She met or exceeded her target for all of the sessions during the CCPP phase. A functional relationship cannot be claimed, because data did not reverse in the fourth condition when Student 4's target was reversed. However, of note is the fact that she maintained a substantially high, fairly stable level of performance for four of the six CCPP conditions.

Similar to previous students, story starters from sessions 5, 10, 14, and 15 were repeated in later sessions. In session 5 Student 4 wrote 39 words (20% less than the average for that phase) and in session 55 she wrote 108 words (5% higher than the average for that condition) when the story starter was repeated. Hence, when Student 4 had a second chance to write on the same story starter as earlier, she increased her production by 69 words (177%). In session 10 she wrote 47 words and in session 56, when the story starter was repeated, she wrote 98 words, an increase of 51 words (109%). Session 14 yielded 80 words (33% higher than the mean for that phase); repetition of the story starter in session 57 produced 76 words, a 4-word (5%) decrease. During session 15, Student 4 wrote 55 words (8% lower than the average for that phase); she was absent for session 58. For Student 4, a compelling relationship between performances when story starters were repeated did not emerge. However, gains of the magnitude ranging from 109% to 177% were evident for two of the four stories.
Number of sentences written. Figure 15 presents a graphical representation of
the total number of sentences written by Student 4. During the initial baseline phase,
Student 4 wrote an average of 7 sentences, range 7 to 7 (i.e., every story written during
this phase contained 7 sentences). The average increased during self-monitoring1, to 8.4
sentences, range 5 to 12. Upon a return to baseline, Student 4 wrote an average of 10
sentences, range 8 to 12. When the self-monitoring phase was replicated, Student 4’s
performance decreased to a level similar to that of self-monitoring1, averaging 8.3
sentences, range 7 to 11.

When the first self-evaluation phase was implemented, Student 4’s performance
remained stable relative to the prior phase, averaging 8 sentences written, range 6 to 10.
During self-monitoring3, Student 4 wrote an average of 8.2 sentences, ranging from 6
to 11. In the second self-evaluation phase, Student 4’s performance increased to a level
above that of self-evaluation1, averaging 10.5 sentences written, range 9 to 12.

During Baseline3, Student 4’s average increased to 11.5, range 9 to 14. Her
average decreased during the Teacher Token phase to 10, range 9 to 11. For the first
four CCPP conditions, she averaged 12, 13, 11.7, and 15.5 respectively. During the
one session she attended for the fifth condition, she wrote 10 sentences. For the sixth
condition, she averaged 13 sentences written. Ranges during the first four conditions
were 10 to 13, 12 to 15, 10 to 13, and 15 to 16 respectively. She was absent for one of
the two sessions during the fifth condition. For the sixth condition, her range was 12 to
14. Overall, during the CCPP phase, Student 4 averaged 12.6 sentences written, range
10 to 16. Clear functional relationships in favor of any intervention were not evident,
due to overlapping data points and variability.
Figure 15.

Total Sentences Written for Student 4.
Number of different words written. Figure 16 displays graphically the type-token ratio data collected for Student 4. During baseline, Student 4 averaged a TTR of .7, range .64 to .77. When self-monitoring was introduced, Student 4’s average TTR decreased slightly to .67, range .56 to .70. Upon a return to baseline, Student 4’s average TTR declined once again to .60, range .54 to .65. A decreasing trend is evident through the first three phases. During the self-monitoring phase, Student 4’s average TTR was .62, ranging from .54 to .69.

The average TTR increased during self-evaluation, to .69, range .61 to .84. Upon a return to self-monitoring, Student 4 averaged a TTR of .66, range .54 to .85. When self-evaluation was re-implemented, Student 4’s average TTR was similar to that of self-evaluation, .68, range .64 to .73. A replicated increase in average performance occurred for self-evaluation when compared to self-monitoring, although data are quite variable and the effect is slight, limiting an ability to claim a functional relationship.

A return to baseline (Baseline3) yielded an average TTR of .70, range .67 to .73. When reinforcers were introduced during the Teacher Token phase, Student 4’s TTR decreased slightly, to an average of .68, range .65 to .72. During the first condition of the CCPP phase, Student 4’s average TTR was .62, range .59 to .67. The second condition of the CCPP phase yielded an average TTR of .57, range .54 to .62. During the third condition, her average TTR was .63, range .51 to .76. In the fourth condition, the average TTR dropped to .57, range .55 to .59. During the fifth condition, Student 4’s TTR was .60 for the session she attended. The average in the sixth condition was .59, range .50 to .68. During the CCPP phase, the overall average TTR was .59, range .50 to .76.

Throughout the study, Student 4 reached or exceeded the .7 TTR (expected as an indication of typical vocabulary development) on 15 (25%) occasions. For 80% of the
Figure 16. 

Ratio of Number of Different Words to Total Words Written (Type Token Ratio)

Student 4

A = Absent
sessions in which Student 4 wrote at an expected minimum level of vocabulary development, the number of words written fell within the bottom 33% of her overall performance. Significantly, all but one of these .7 and higher TTRs occurred during the phases before the CCPP phase, during which the number of words Student 4 wrote each session remained high. Therefore, there appears to be a high negative relationship between a low number of words written and a higher variety of vocabulary for Student 4. Said another way, the fewer words written, the higher the variety of words used, a conclusion similar to that for Student 1. As opposed to Student 1, the opposite (the higher the number of words written, the lower the TTR) can also be demonstrated by examining data collected from Student 4. Prior to the time when Student 4 began producing more writing (i.e., prior to the CCPP phase), her average TTRs were in the .6 to .7 range. After her writing quantity increased during CCPP, Student 4 reached the .7 TTR range on one occasion (session 53). Therefore, a strong negative relationship may also exist between a high number of words written and a more stilted, repetitive vocabulary for Student 4.

**Number of adjectives.** Figure 17 provides a graphical representation of the total number of adjectives written per session for Student 4. In the first baseline phase, Student 4 wrote an average of 5.4 adjectives, range 3 to 10. When self-monitoring was introduced, Student 4’s average increased substantially to 10.3 adjectives written, ranging from 5 to 14. In baseline2, Student 4 averaged 8.2, range 7 to 9 adjectives written. When self-monitoring was re-implemented, Student 4’s performance decreased to an average of 5.3 adjectives, range 2 to 8. Her performance in self-monitoring2 did not replicate that of self-monitoring1. Further, a decreasing trend occurred beginning in the first self-monitoring phase, through self-monitoring2.
Figure 17.

Total Adjectives Written for Student 4.
Upon introducing self-evaluation1, Student 4’s average number of adjectives increased to 6.2, range 4 to 7. During the self-monitoring3 phase, the average number of adjectives written increased slightly to an average of 6.8, ranging 4 to 13. A further increase occurred during self-evaluation2, averaging 12 adjectives, range 9 to 15, her highest average performance. Baseline3 yielded a substantial decline for Student 4, with an average of 6, range 5 to 7. When the Teacher Tokens phase was introduced, Student 4’s performance increased once more, to an average of 10.5, range 8 to 13. Average adjectives written for the first four conditions of the CCPP phase were 8.3, 8.8, 10.7, and 11.5 respectively. She wrote 9 adjectives for the session she was in attendance during the fifth condition and her average for the sixth condition was 11. Ranges for the first four conditions were 3 to 13, 6 to 14, 6 to 17, and 11 to 12 respectively. For the sixth condition, her range was 7 to 15. Overall, during the CCPP phase Student 4 wrote an average of 9.7 adjectives, range 3 to 17.

On-Task Behavior. Figure 18 displays the percent of the 10-minute writing period spent on-task for Student 4, the second of the three students for whom on-task behavior was collected. During the first baseline phase, the percentage of time that Student 4 spent on-task averaged 81%, range 70% to 95%. When self-monitoring was implemented, Student 4’s on-task behavior averaged 76%, range 65% to 85%. Upon a return to baseline, in Baseline2, she was on task for an average of 86% of the time, range 85% to 90%. When self-monitoring was reimplemented, in Self-Monitoring2, Student 4’s on-task behavior averaged 88%, range 70% to 100%.

When self-evaluation was implemented, Student 4’s on-task behavior averaged 89%, range 80% to 95%. A return to self-monitoring, in Self-Monitoring3, yielded an average of 80%, range 65% to 90% on-task. Self-evaluation3 yielded on-task behavior of 80% for each session. A return to baseline, in Baseline3, produced an average of
Figure 18.

Percentage of Intervals On-Task for Student 4.
85%, range 75% to 95%. For each of the two sessions in the Teacher Token phase, Student 4 reached levels of 75%. Across the first four CCPP phase, her on-task levels averaged 83%, 84%, 90%, and 80% respectively, ranges 80% to 85%, 80% to 90%, 90% to 90%, and 65% to 95%. The final two conditions produced only one on-task sessions each, 65% and 85% respectively. No compelling relationships can be claimed between the interventions and on-task behavior.

**Student 5**

Number of words written. Figure 19 presents a graphical representation of the total number of words written by Student 5. In baseline 1, her total number of words written averaged 120, range 98 to 137. Her performance increased in the self-monitoring 1 phase to an average of 138, range 109 to 179. Notably, 4 (50%) of the data points for self-monitoring were substantially higher than the data collected for baseline 1. Although variability and overlapping data points were evident between the two phases, the final three data points reached a stable level within the lower range of the data collected during Baseline 1. Upon a return to baseline, Student 5's performance fell below previous baseline levels. In baseline 2, the number of words written averaged 107, range 84 to 120. When self-monitoring was reintroduced, Student 5's performance remained at levels similar to baseline 2, with an average of 106, range 73 to 133. Her performance in self-monitoring 2 did not replicate that of self-monitoring 1. In fact, a decreasing trend occurred from self-monitoring 1 through baseline 2 and self-monitoring 2.

Student 5's number of words written during self-evaluation 1 averaged 118, range 109 to 130. Upon a return to self-monitoring, an increase in the average number of words written occurred, to 128, range 115 to 149. Similar to Self-Monitoring 1, the first data point in Self-Monitoring 3 was higher than all data points in the previous phase.
Figure 19.

Total Words Written for Student 5.
followed by a drop to previous levels. Notably, the first data point in Self-Monitoring falls within the highest 18% of all data points for Student 5’s total number of words written. In the second self-evaluation phase, Self-Evaluation2, Student 5’s performance dropped to levels similar to self-evaluation1, averaging 118 words written, range 95 to 138. However, variability and overlapping data points across self-monitoring and self-evaluation phases mitigate against a functional relationship for the effects of self-evaluation on the number of words written.

A return to baseline for two days (Baseline3) yielded an increased average of 134, range 122 to 146. During the Teacher Token (TT) phase, Student 5’s performance increased to the highest level thus far, averaging 141 words, range 131 to 150.

During the first condition of the CCPP phase, Student 5’s target was 110; she exceeded her target for each session of this condition, averaging 139 words written, range 133 to 147. Her target in the second condition was 121; she averaged 134 range 106 to 153, exceeding her target three of the four sessions she attended. In the third condition, the target was increased to 133. Her average for the third condition was 143, range 130 to 155. She exceeded her target for one of the two sessions during the third condition, with the second data point being just shy of the target. During the fourth condition the target was intentionally reversed to 100. Student 5 was absent for one of these two sessions. She wrote 119 words for the session she attended, exceeding her target by 19 words. Student 5 surpassed her target for this condition. Effectively, the behavior did not reverse. During the fifth condition, Student 5’s target was increased to 146 -- a goal 10% higher than her highest target. She did not beat her target for either of the two sessions in this condition, achieving an average of 112, range 103 to 121. In the final condition, in which Student 5 chose 133 as her target, she wrote an average of 120 words, range 117 to 125. Student 5 did not meet her target for any session in this
final condition. Overall, during the CCPP phase, Student 5 averaged 129 words written, range 103 to 155. She met or exceeded her target for 8 (47%) of the sessions during the CCPP phase. Her performance throughout the CCPP phase was less variable than in previous phases.

Consistent with Students 1 through 4, story starters from sessions 5, 10, 14, and 15 were repeated in sessions 55, 56, 57, and 58 respectively. In session 5, Student 5 wrote 130 words (8% higher than the average for that phase), and in session 55, she wrote 119 words when the story starter was repeated. When Student 5 had a second opportunity to write on the same story starter as earlier, she decreased her production by 11 words (8%). In session 10 she wrote 149 words (8% above the average for that phase) and in session 56, when the story starter was repeated, she was absent. Session 14 yielded 109 words (21% lower than the mean for that phase); repetition of the story starter in session 57 produced 121 words (8% higher than the average for that condition), a 12-word (11%) increase. During session 15, Student 5 wrote 111 words (20% lower than the average for that phase); she wrote 103 words for session 58 (8% lower than the average for that condition). She wrote 7 fewer words (6% less) when the story starter was repeated. Considering Student 5's data for sessions in which story starters were repeated, a compelling relationship between performances when story starters were repeated did not emerge.

Number of sentences written. Figure 20 presents a graphical representation of the total number of sentences written by Student 5. During the initial baseline phase, Student 5 wrote an average of 11.3 sentences, range 9 to 15. The average increased during self-monitoring, to 15.5 sentences, range 12 to 21. Upon a return to baseline, Student 5 wrote an average of 11.2 sentences, range 9 to 15, replicating her performance in baseline. When the self-monitoring phase was replicated, Student 5's
Student 5

Figure 20.

Total Sentences Written for Student 5.
performance increased slightly, averaging 12.7 sentences, range 7 to 19. Although an increase in average performance was reproduced from the first self-monitoring phase to the second, Student 5's performance is quite variable, with data points overlapping those of previous phases. Therefore, a clear replication of self-monitoring1 cannot be claimed.

When the first self-evaluation phase was implemented, Student 5's performance increased slightly, averaging 13.6 sentences written, range 9 to 18. During Self-Monitoring3, Student 5's performance increased again, to her highest performance thus far; she wrote an average of 17 sentences, ranging from 15 to 20. In the second self-evaluation phase, Student 5's performance decreased once more to a level slightly above that of self-evaluation1, averaging 14.7 sentences written, range 13 to 17.

During Baseline3, Student 5's average increased to 17.5, range 15 to 20. Her performance remained virtually unchanged during the Teacher Token phase, with an average of 17.5, range 14 to 21. For the first three CCPP conditions, she averaged 13.7, 13.8, and 13 sentences respectively. During the one session she attended for the fourth condition, she wrote 11 sentences. For the fifth and sixth conditions she averaged 12 and 10.7 sentences respectively. Ranges during the first three conditions were 11 to 14, 10 to 17, and 9 to 17 respectively. She was absent for one of the two sessions during the fourth condition. For the fifth and sixth conditions, her ranges were 7 to 17 and 10 to 11 respectively. Overall, during the CCPP phase, Student 5 averaged 12.6 sentences written, range 7 to 17. Although a replicated increase over previous baseline levels occurred during Self-Monitoring1 and Self-Monitoring2, clear functional relationships in favor of any intervention cannot be claimed, due to overlapping data points and variability.
Number of different words written. Figure 21 displays graphically the type-token ratio data collected for Student 5. During baseline, Student 5 averaged a TTR of .52, range .50 to .59. When self-monitoring was introduced, Student 5's average TTR remained unchanged at .52, range .48 to .59. Upon a return to baseline, Student 5's average TTR increased slightly to .54, range .48 to .61. During the self-monitoring phase, Student 5's average TTR increased once more to .58, ranging from .52 to .64.

The average TTR decreased during self-evaluation, to .56, range .53 to .59. Upon a return to self-monitoring, Student 5 averaged a TTR of .58, range .46 to .71. When self-evaluation was re-implemented, Student 5's average TTR was the same as that of self-evaluation, .56, range .53 to .63. A return to baseline (Baseline3) yielded an average TTR of .60, range .59 to .60.

When reinforcers were introduced during the Teacher Token phase, Student 5's TTR decreased to an average of .53, range .49 to .57. During the first condition of the CCPP phase, Student 5's average TTR was .54, range .52 to .56. The second condition of the CCPP phase yielded an average TTR of .47, range .37 to .56. During the third condition, her average TTR was .53, range .53 to .54. During the fourth condition, Student 5's TTR was .55 for the session she attended. In the fifth condition, the average TTR dropped to .48, range .45 to .52. The average in the sixth condition was .53, range .48 to .59. During the CCPP phase, the overall average TTR was .51, range .37 to .59.

Throughout the study, Student 5 reached or exceeded a .7 TTR on 1 (2%) occasion. She wrote 115 words for that session, which is neither high nor low given her overall performance. On 7 (11%) occasions Student 5 reached a TTR within the .6 range. The number of words written during those sessions in which she reached .6 or
Figure 21.

Ratio of Number of Different Words to Total Words Written (Type Token Ratio)

0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1

Number of Different Words Written for Student 5.
above ranged from 84 to 146. Notably, all of these .6 and higher TTRs occurred during
the phases before the CCPP phase. However, there does not appear to be a relationship
between number of words written and variety of vocabulary for Student 5.

Number of adjectives. Figure 22 provides a graphical representation of the total
number of adjectives written per session for Student 5. In the first baseline phase,
Student 5 wrote an average of 10.2 adjectives, range 6 to 14. When self-monitoring was
introduced, Student 5's average increased to 14.6 adjectives written, ranging from 7 to
33. Data during the first two sessions of Self-Monitoring1 are Student 5's highest
achievements for number of adjectives written throughout the study. In baseline2,
Student 5's average dropped to 9.2, range 6 to 16 adjectives written. When self-
monitoring was re-implemented, Student 5's performance remained relatively
unchanged at an average of 9.3 adjectives, range 6 to 15. Her average performance in
self-monitoring2 did not replicate that of self-monitoring1.

Upon introducing self-evaluation1, Student 5's average number of adjectives
changed slightly to 9.4, range 7 to 13. During the self-monitoring3 phase, the average
number of adjectives written remained at an average of 9.4, ranging from 6 to 14. A
slight increase occurred during self-evaluation2, averaging 10 adjectives, range 7 to 14.
Baseline3 yielded a further increase in performance for Student 5, with an average of
12.5, range 9 to 16. When the Teacher Tokens phase was introduced, Student 5's
performance remained at an average of 12.5, range 10 to 15. Average adjectives written
for the first three conditions of the CCPP phase were 14, 8.3, and 11 respectively. She
wrote 13 adjectives for the session she was in attendance during the fourth condition.
Her averages for the fifth and sixth conditions were 6.5 and 14 respectively. Ranges for
the first three conditions were 11 to 17, 5 to 12, and 9 to 13 respectively. For the fifth
and sixth conditions, her ranges were 6 to 7 and 7 to 23 respectively. Overall, during the
Figure 22.

Total Adjectives Written for Student 5.
CCPP phase Student 5 wrote an average of 11 adjectives, range 5 to 23. Variability and overlapping data points across phases evidence no clear relationship between the interventions and number of adjectives written for Student 5.

**On-Task Behavior.** Figure 23 displays the percent of the 10-minute writing period spent on-task for Student 5, the third student for whom on-task behavior was collected. During the first baseline phase, the percentage of time that Student 5 spent on-task averaged 71%, range 65% to 80%. When self-monitoring was implemented, Student 5’s on-task behavior averaged 66%, range 35% to 90%. Notably, during the first two sessions of this phase, in which Student 5 wrote the highest number of words for the entire study, she was on-task for 35% and 75% of the intervals respectively. The 35% of intervals that Student 5 spent on-task for the first session of self-monitoring, is the lowest percent on-task that she evidenced throughout the study, yet it was during that session that she wrote one of her longest stories (within the top 2 [3%] of all sessions). In other words, there may not be a relationship between amount of time spent on-task and number of words written for Student 5. Upon a return to baseline, in Baseline₂, she was on task for an average of 71% of the time, range 55% to 85%. When self-monitoring was reimplemented, in Self-Monitoring₂, Student 5’s on-task behavior averaged 68%, range 65% to 75%, a range that is much less variable than her performances in the first three phases. A replicated decrease in average performance during the first two self-monitoring phases is evident, but as with instances of similar responses for other students, the overlap and variability of data points from phase to phase tempers claims of a functional relationship.

When self-evaluation was implemented, Student 5’s on-task behavior averaged 74%, range 70% to 85%. A return to self-monitoring, in Self-Monitoring₃, yielded an average of 70%, range 65% to 80% on-task. Self-evaluation₂ yielded on-task behavior averaging 68%, range 65% to 70%. A return to baseline, in Baseline₃, produced an
Figure 23.

Percentage of Intervals On-Task for Student 5.
average of 75%, range 70% to 80%. For the two sessions in the Teacher Token phase, Student 5 reached an average level of 75%, range 70% to 80%. Across the first three CCPP conditions, her on-task levels averaged 80%, 70%, and 68% respectively, with ranges from 60% to 90%. She was absent for one of the two sessions during the fourth condition, achieving a score of 85% on-task for the session she attended. Student 5 was on-task for 65% of the one session during the fifth condition when on-task data were collected. Her average performance during the final (sixth) CCPP condition was 65%, range 60% to 70%. As with Students 3 and 4, no compelling relationships can be claimed between the interventions and on-task behavior for Student 5. As stated earlier, although a replicated decrease in performance occurred during the first two self-monitoring phases, the data are too variable and overlap too much to claim a functional relationship.

**Student 6**

**Number of words written.** Figure 24 presents a graphical representation of the total number of words written by Student 6. In baseline1, her total number of words written averaged 41, range 25 to 55. Her performance decreased in the self-monitoring1 phase to an average of 35, range 21 to 63. Variability and overlapping data points were evident between the two phases. Upon a return to baseline, Student 6’s performance fell well below previous baseline levels. In baseline2, the number of words written averaged 13, range 9 to 20. A decreasing trend is evident across the first three phases. When self-monitoring was reintroduced, Student 6’s performance increased slightly to an average of 17, range 5 to 26. Her performance in self-monitoring2 did not replicate that of self-monitoring1.

Student 6’s number of words written during self-evaluation1 averaged 23, range 12 to 33. Upon a return to self-monitoring, an increase in the average number of words
Figure 24.

*Total Words Written for Student 6.*
written occurred, to 34, range 11 to 56, a performance similar to that of self-
monitoring. In the second self-evaluation phase, self-evaluation, Student 6's
performance dropped to levels similar to self-evaluation, averaging 20 words written,
range 18 to 22. Data during self-evaluation phases overlap considerably with self-
monitoring data, so that a functional relationship between self-evaluation and number of
words written cannot be claimed. Student 6 was absent for one of the two Baseline sessions; she wrote 11 words for the session she attended. She also attended one of the two Teacher Token sessions, writing 15 words for that session.

During the first condition of the CCPP phase, Student 6's target was 25; she met
or exceeded her target for each session of this condition, averaging 26 words written,
range 25 to 29. Her target in the second condition was 28; she averaged 45, range 32 to
56, her highest performance thus far. She exceeded her target for all three of the
sessions she attended. In the third condition, the target was increased to 31. Her
performance continued to increase; for the third condition her average was 54, range 28
to 83. She exceeded her target for two of the three sessions during the third condition,
narrowly missing the target for the first session. During the fourth condition the target
was intentionally reversed to 22. Student 6 averaged 33 words for this condition, a
decrease in performance that indicates a reversal in behavior. She exceeded her target for
both sessions during the fourth condition. During the fifth condition, Student 6's target
was increased to 34 -- a goal 10% higher than her highest target. She beat her target for
both sessions in this condition, achieving an average of 67, range 45 to 88. Her score of
88 in session 58 was the highest number of words she wrote throughout the study. In
the final condition, in which Student 6 chose 78 as her target, she wrote an average of
63 words, range 54 to 71. Student 6 did not meet her target for any session in this final
condition. Overall, during the CCPP phase, Student 6 averaged 48 words written, range
25 to 88. During the CCPP phase, she met or exceeded her target for 12 (71%) of the sessions during the CCPP phase. Although variable, her performance during the CCPP phase was higher than during previous phases. Further, the reversal in her performance during the fourth condition, when the target was intentionally reduced, may suggest a functional relationship.

Consistent with the other students, story starters from sessions 5, 10, 14, and 15 were repeated in sessions 55, 56, 57, and 58 respectively. In session 5 Student 6 wrote 38 words and in session 55 she wrote 36 words when the story starter was repeated, decreasing her production by 2 words (5%). In session 10 she wrote 56 words (60% above the average for that phase) and in session 56, when the story starter was repeated, she wrote 29 words (12% lower than the average for that condition), a difference of 27 words (48% decrease). Session 14 yielded 21 words (40% lower than the mean for that phase); repetition of the story starter in session 57 produced 45 words (33% lower than the average for that condition), a 24-word (114%) increase. During session 15, Student 5 wrote 32 words (9% lower than the average for that phase); she wrote 88 words for session 58 (31% higher than the average for that condition). She wrote 56 more words (175% more) when the story starter was repeated. For Student 6, a compelling relationship between performances when story starters were repeated did not emerge, although for two of the four stories, increases of the magnitude ranging from 114% to 175% were evident, while for the other two stories, decreases from 5% to 48% occurred.

**Number of sentences written.** Figure 25 presents a graphical representation of the total number of sentences written by Student 6. During the initial baseline phase, Student 6 wrote an average of 4.4 sentences, range 1 to 6. The average increased slightly during self-monitoring, to 4.9 sentences, range 3 to 7. Upon a return to
Figure 25.

Total Sentences Written for Student 6.
baseline, Student 6 wrote an average of 1.8 sentences, range 1 to 2, falling below her performance in baseline. When the self-monitoring phase was replicated, Student 6's performance increased slightly over the previous baseline phase, averaging 2.4 sentences, range 1 to 3. Student 6's performance in self-monitoring2 did not replicate that of self-monitoring1.

When the first self-evaluation phase was implemented, Student 6's performance increased, averaging 3.8 sentences written, range 2 to 7. During self-monitoring3, Student 6's performance increased again, to her highest performance thus far; she wrote an average of 5.8 sentences, ranging from 1 to 12. In the second self-evaluation phase, Student 6's performance decreased to an average of 2.5 sentences written, range 2 to 3.

For the sessions Student 6 attended in Baseline3 and Teacher Tokens, she wrote 2 and 1 sentences respectively. For the six CCPP conditions, she averaged 3.3, 5.3, 6, 4.5, 6, and 5.7 respectively. Ranges during the six conditions were 3 to 4, 5 to 6, 2 to 9, 3 to 6, 4 to 8, and 5 to 7 respectively. Overall, during the CCPP phase, Student 6 averaged 5.1 sentences written, range 2 to 9. Clear functional relationships in favor of any intervention were not evident.

Number of different words written. Figure 26 is a graphic display of the type-token ratio data collected for Student 6. During baseline, Student 6 averaged a TTR of .61, range .56 to .75. When self-monitoring was introduced, Student 6's average TTR increased to .76, range .66 to .88. Upon a return to baseline, Student 6's average TTR remained relatively unchanged at .77, range .66 to 1.0. During the self-monitoring2 phase, Student 6's average TTR increased once more to .87, ranging from .73 to 1.0. An increasing trend is evident across the first four phases. Notably, during the phases
Figure 26.

Number of Different Words Written for Student 6

Session

Ratio of Number of Different Words to Total

0 10 20 30 40 50 60 70 80 90 100 110

Student 6

A = Absent

C = Copp
across which Student 6’s TTR increased, the trend for number of words she wrote decreased. Stated another way, the fewer words Student 6 wrote, the fewer repetitive words she used.

The average TTR decreased during self-evaluation, to .83, range .77 to 1.0. Upon a return to self-monitoring, Student 6 averaged a TTR of .75, range .62 to .90. When self-evaluation was re-implemented, Student 6’s average TTR increased slightly to .79, range .77 to .81. A return to baseline (Baseline 3) yielded a TTR of .90 for the session Student 6 attended.

When reinforcers were introduced during the Teacher Token phase, Student 6’s TTR was .93 for the session she attended. During the first condition of the CCPP phase, Student 6’s average TTR was .65, range .48 to .76. The second condition of the CCPP phase yielded an average TTR of .71, range .53 to .87. During the third condition, her average TTR was .69, range .63 to .78. Student 6’s average TTR during the fourth condition was .65, range .63 to .68. In the fifth condition, Student 6’s performance remained virtually unchanged, at an average of .65, range .62 to .68. The average in the sixth condition was .64, range .54 to .70. During the CCPP phase, the overall average TTR was .66, range .48 to .87.

Throughout the study, Student 6 reached or exceeded the .7 TTR (expected as an indication of typical vocabulary development) on 35 (57%) occasions. For all but three of those 35 sessions she wrote less than 35 words in the 10-minute writing period. For the three sessions in which she achieved a TTR of 1.0 (i.e., every word that she wrote was different), she wrote 10, 5, and 12 words (sessions 20, 24, and 31 respectively). During the sessions in which Student 6 wrote 50 or more words, her TTRs were in the .5 to .6 range. Therefore, there appears to be a negative relationship between the number of words written and TTR for Student 6. Said another way, the more words Student 6
wrote, the lower her TTRs and the fewer the words she wrote, the higher the number of
different words she wrote (i.e., her written vocabulary was less stilted and repetitive
when she wrote less).

**Number of adjectives.** Figure 27 provides a graphical representation of the total
number of adjectives written per session for Student 6. In the first baseline phase,
Student 6 wrote an average of 3.4 adjectives, range 2 to 5. When self-monitoring was
introduced, Student 6's average decreased to 2 adjectives written, ranging from 0 to 5.
In baseline2, Student 6's average dropped to 0.2, range 0 to 1 adjectives written. When
self-monitoring was re-implemented, Student 6's average increased slightly to 0.6
adjectives, range 0 to 2. Her performance in self-monitoring2 did not replicate that of
self-monitoring1.

Upon introducing self-evaluation1, Student 6's average number of adjectives
increased slightly to 1.4, range 0 to 5. During the self-monitoring3 phase, the average
number of adjectives increased further to 2.8, ranging from 1 to 5. A decrease occurred
during self-evaluation2, averaging .5 adjectives, range 0 to 1. During both Baseline3
and Teacher Tokens, Student 6 wrote 0 adjectives for the sessions that she attended.
Average adjectives written for the six conditions of the CCPP phase were 3, 3.7, 6.3,
3.5, 3.5, and 5.3 respectively. Ranges for the six conditions were 2 to 4, 2 to 6, 5 to 8,
1 to 6, 2 to 5, and 2 to 8 respectively. Overall, during the CCPP phase Student 6 wrote
an average of 4.3 adjectives, range 1 to 8. No clear relationship between the
interventions and number of adjectives written emerged for Student 6. Of note,
however, is that during the CCPP phase Student 6's use of adjectives remained high
when compared to other phases; further, as with number of words written, it was during
the CCPP phase that Student 6 reach her peak number of adjectives written.
Figure 27.

Total Adjectives Written for Student 6.
Student 7

**Number of words written.** Figure 28 presents a graphical representation of the total number of words written by Student 7. In baseline1, his total number of words written averaged 103, range 76 to 156. His performance decreased in the self-monitoring1 phase to an average of 72, range 52 to 116. Upon a return to baseline, Student 7’s performance did not return to previous baseline levels. In baseline2, the number of words written averaged 62, range 44 to 93. When self-monitoring was reintroduced, Student 7’s average increased slightly over the previous baseline phase to 69, range 49 to 126. His performance in self-monitoring2 was similar to that of self-monitoring1, but a decreasing trend can be seen from baseline1 through baseline2; additionally, data were quite variable and overlap across phases.

Student 7’s number of words written during self-evaluation1 averaged 66, range 50 to 88. Upon a return to self-monitoring, an increase in the average number of words written occurred, to 100, range 76 to 127. Self-Monitoring3 produced the highest average performance among the three self-monitoring phases. In the second self-evaluation phase, self-evaluation2, Student 7 averaged 120 words written, range 99 to 132, a performance that did not replicate that of the first self-evaluation phase. A return to baseline for two days (Baseline3) yielded an average of 128, range 116 to 140, Student 7’s highest performance across all phases. An increasing trend occurred beginning in Self-Evaluation1 and continuing into the first session of the Teacher Token phase. During the Teacher Token (TT) phase, Student 7’s performance decreased compared to Baseline3, averaging 118 words, range 86 to 149.

During the first condition of the CCPP phase, Student 7’s target was 70; he exceeded his target for each session of this condition, averaging 125 words written, range 96 to 150. His target in the second condition was 77; he averaged 120, range 113
Figure 28.

Total Words Written for Student 7.
to 128, exceeding his target for each session. In the third condition, the target was increased to 100, which is greater than the 10% established criterion change, but was implemented based on his performance in the first two conditions. For the third condition, Student 7’s average was 119, range 111 to 126. He exceeded his target for all of the sessions during the third condition. The fourth condition, in which the target was intentionally reversed to 63, yielded an average of 112, range 109 to 115. Student 7 surpassed his target substantially for each session during this condition, showing no reversal in the behavior. During the fifth condition, Student 7’s target was increased to 110 — a goal 10% higher than his highest target; he averaged 74 words written, range 60 to 87. Student 7 did not reach his target for either of the two sessions during the fifth condition. In the final condition, in which Student 7 chose 102 as his target, he averaged 94, range 85 to 102. Student 7 met his target for one of the three final sessions. Overall, during the CCPP phase, Student 7 averaged 109 words written, range 60 to 150. He met or exceeded his target for 12 of the 17 sessions (71% of the sessions) during the CCPP phase. An unexplained increasing trend began in self-monitoring and Student 7’s performance remained relatively high from then through the first four CCPP conditions. Notably, however, the data during the CCPP phase is more stable than for the other phases in the study.

Story starters from sessions 5, 10, 14, and 15 were repeated in sessions 55, 56, 57, and 58 respectively. In session 5 Student 7 wrote 95 words (8% lower than the average for that phase) and in session 55 he wrote 109 words (3% lower than the average for that condition) when the story starter was repeated. When Student 7 had a second opportunity to write on the same story starter as earlier, he increased his production by 14 words (15%). In session 10 he was absent and in session 56 he wrote 115 words. Session 14 yielded 116 words (61% higher than the mean for that phase);
repetition of the story starter in session 57 produced 60 words (19% lower than the average for that condition), a 56-word (48%) decrease. During session 15, Student 7 wrote 52 words; when the story starter was repeated in session 58, he wrote 87 words, a difference of 35 words (67% less). For Student 7, a compelling relationship between performances when story starters were repeated did not emerge, although for two of the four stories, decreases of the magnitude ranging from 48% to 67% were evident.

**Number of sentences written.** Figure 29 presents a graphical representation of the total number of sentences written by Student 7. During the initial baseline phase, Student 7 wrote an average of 2.5 sentences, range 1 to 6. The average increased during self-monitoring1, to 5.2 sentences, range 1 to 9. Upon a return to baseline, Student 7’s average decreased to an average of 3.8 sentences, range 2 to 7. When the self-monitoring phase was replicated, Student 7 averaged 5.3 sentences, range 4 to 7. His performance during self-monitoring2 is similar to that in self-monitoring1. Further, his average performance during Baseline2 decreased compared to Self-Monitoring1, but did not reverse to the same levels as Baseline1. Although a reversal in the behavior is suggested by examining average performance across the first four phases, claims of a functional relationship are tempered by overlapping data from baseline to self-monitoring phases. However, disregarding the single outliers that occurred during each baseline phase (in sessions 5 and 17), the overlap between phases is slight, indicating a more persuasive relationship.

When the first self-evaluation phase was implemented, Student 7’s performance averaged 5.5 sentences written, range 4 to 7. During Self-Monitoring3, Student 7’s performance increased; he wrote an average of 9 sentences, ranging from 5 to 15. In the second self-evaluation phase, Student 7’s performance continued to increase, averaging 9.7 sentences written, range 9 to 11.
Figure 29.

Total Sentences Written for Student 7.
During Baseline3, Student 7's average increased to a high of 11, range 9 to 13. His average decreased during the Teacher Token phase to 9, range 7 to 11. During the six CCPP conditions, Student 7 averaged 7.7, 6, 9, 5, 2.5, and 3.3 respectively. Ranges during the same six conditions were 4 to 11, 4 to 7, 8 to 10, 4 to 6, 2 to 3, and 1 to 6 respectively. Overall, during the CCPP phase, Student 7 averaged 5.8 sentences written, range 1 to 11. A decreasing trend is evident beginning in Baseline3 and continuing through the second CCPP condition. This downward trend is interrupted by an increase in performance during the third CCPP condition, but is resumed in the fourth condition and continues through the end of the study. Clear functional relationships in favor of any intervention were not evident; overlapping data points preclude claims of a convincing replication.

Number of different words written. Figure 30 displays the type-token ratio data collected for Student 7. During baseline1, Student 7 averaged a TTR of .60, range .47 to .68. When self-monitoring was introduced, Student 7's average TTR increased to .73, range .62 to .91. Upon a return to baseline, Student 7 averaged a TTR of .72, range .68 to .83. During the self-monitoring2 phase, Student 7's average TTR was .65, ranging from .59 to .72.

The average TTR increased slightly during self-evaluation1 to .70, range .66 to .74. Similar results were obtained upon a return to self-monitoring, averaging .69 and ranging from .62 to .73. When self-evaluation was re-implemented, Student 7's TTR averaged .61, range .54 to .66. A return to baseline (Baseline3) yielded an average TTR of .60, range .50 to .71.

During the Teacher Token phase, his TTR decreased to an average of .51, range .42 to .61. During the first condition of the CCPP phase, Student 7's average TTR was .58, range .55 to .61. The second condition of the CCPP phase also yielded an average
TTR of .58, range .53 to .63. During the third condition, his average TTR increased to .67, range .62 to .70. In the fourth condition, the average TTR was .69, range .68 to .70. The average in the fifth condition decreased slightly to .65, range .58 to .72. During the sixth condition, Student 7’s average was .66, range .58 to .76. During the CCPP phase, the overall average TTR was .63, range .53 to .76.

Throughout the study, Student 7 reached or exceeded the .7 TTR level or above on 16 occasions (25%). The number of words that Student 7 wrote on these occasions ranges from 24 to 116. There does not appear to be a relationship between number of words written and variety of vocabulary for Student 7.

**Number of adjectives.** Figure 31 provides a graphical representation of the total number of adjectives written per session for Student 7. In the first baseline phase, Student 7 wrote an average of 10.5 adjectives, range 7 to 15. When self-monitoring was introduced, Student 7’s average decreased to 6 adjectives written, ranging from 1 to 8. A slight increase occurred in baseline2, with an average of 6.4, range 3 to 9. When self-monitoring was re-implemented, Student 7 wrote an average of 6.1 adjectives, range 2 to 14, a performance similar to that of the previous two phases.

Upon introducing self-evaluation1, Student 7’s average number of adjectives increased to 7.3, range 3 to 10. During the self-monitoring3 phase, the average number of adjectives written increased to an average of 11.7, ranging from 4 to 19. A further increase occurred during self-evaluation2, averaging 15.7 adjectives, range 5 to 25. Baseline3 yielded a lower performance with an average of 12.5, range 10 to 15. When the Teacher Tokens phase was introduced, Student 7’s performance decreased markedly, to an average of 4.5, range 4 to 5. Average adjectives written for the six conditions of the CCPP phase were 12.7, 7.7, 15, 19.5, 9, and 12.7 respectively. Ranges for the six conditions were 10 to 15, 5 to 10, 8 to 19, 19 to 20, 4 to 14, and 8 to
21 respectively. Overall, during the CCPP phase Student 7 wrote an average of 12.6 adjectives, range 4 to 21. No clear relationships were evident between the interventions and the number of adjectives written for Student 7.
Figure 31.

Total Adjectives Written for Student 7.
CHAPTER 5
DISCUSSION

This chapter discusses the findings of the study, which examined the effects of self-monitoring and self-evaluation on the written language performance and on-task behavior of elementary students with learning disabilities. First, the results of the study in relation to the research questions and the relevant body of extant literature will be addressed. Next, limitations to the study will be presented, followed by the implications for classroom practice. Finally, suggestions for future research will be provided.

What Effects Will Self-Monitoring Written Language Performance Have On The Number Of Words, Number Of Sentences, Number Of Different Words, And Number Of Adjectives Produced By Students During A 10-Minute Writing Period?

Number of words. The results of this study did not support those of the Harris et al. (1994, Exp. 2) study, but did produce outcomes similar to Wolfe's (1997) study. Harris found that self-monitoring produced a positive effect on the length and quality of students' stories. Wolfe found that self-monitoring did not have a substantial effect on number of words written by elementary students with learning disabilities. Similarly, data in the Wolfe study were variable and overlapped across phases. One student in Wolfe's study experienced an initial increase in number of words written when self-monitoring was introduced, but this effect was not replicated. A second student in the Wolfe study evidenced an increasing trend in the second self-monitoring phase, in contrast to the first self-monitoring phase. Likewise, in the current study, although Student 1 experienced an initial increase in words written, these results were not
replicated in other self-monitoring phases. Also, Student 5 achieved an increase in written language performance, but only for the first two sessions of the initial self-monitoring intervention.

Paradoxically, for Students 6 and 7, decreases in performance occurred when self-monitoring was introduced initially. Student 6 had been diagnosed with obsessive compulsive disorder. Beginning with session 11, she spent her writing time scribbling through and rewriting words until they "looked right" to her. (See Appendix N for students' writing samples.) It is possible that the increased focus on writing during self-monitoring increased Student 6's anxiety about the appearance of her written work. As evidenced by his statements in the exit interview, Student 7 found the self-monitoring procedures "annoying." The decrease in his performance during self-monitoring could be due to his dislike of the methods.

Although she experienced a decrease in written output when self-monitoring was first introduced, Student 6 evidenced an average increase in words produced during the first and third self-monitoring phases. None of the students in Wolfe's study experienced decreases upon the introduction of self-monitoring. Similar to Student 6 in the current study, one of the students in Wolfe's study showed an increase in average number of words written during the second self-monitoring phase.

Because self-monitoring or self-evaluation did not produce substantial and consistent effects for written language performance, beginning with session 41 a return to baseline was implemented. Following Baseline, with the addition of reinforcers to self-monitoring procedures during the Teacher Token phase, substantial increases in written language performance were apparent for three students (Students 1, 4, and 6). Adding target scores for words written and token reinforcement for exceeding these targets during the Changing Criterion (CCPP) phase (which also used self-monitoring procedures) resulted in substantial increases in written language performance over
Baseline, for three students (Students 1, 4, and 6). Four students (Students 3, 4, 6, and 7) met or exceeded their targets for more than 75% of the sessions during the CCPP phase. Although substantial results cannot be claimed for Students 2, 3, 5, and 7, data for these students during the CCPP phase were less variable than during other phases, indicating that the addition of targets and tokens produced a steadier, more predictable performance for these students. Also notable is that Students 1, 4, and 6 achieved their highest performances for number of words written during the CCPP phase than for any other phase in the study.

The data obtained from the CCPP phase in this study confirm the findings of Wolfe (1997). Specifically, when students self-monitor, in combination with having writing goals and being provided reinforcement for meeting or exceeding those goals, they write more than during self-monitoring alone phases. Following an ABAB reversal design of baseline followed by self-monitoring, Wolfe introduced a CCPP phase, setting targets for number of words written by students and providing token reinforcement for students who met or exceeded their goals. For all four students in the Wolfe study, CCPP produced positive results. Three students met or exceeded their targets for 86% of the first three CCPP sessions. The fourth student met or exceeded the targets for 38% of the sessions, but data for this student were more stable during the CCPP phase than for any of the previous phases in the study. Also similar to the results of the present study is that three of the students in Wolfe’s study achieved their highest performances for number of words written during the CCPP phase.

O’Leary and Dubey (1979) summarized research on the combination of criteria-setting and reinforcement and concluded that when children received reinforcement for achieving at predetermined criterion levels, they performed at much higher levels than when criteria were used in the absence of reinforcement. Further, they resolved that similar levels of performance occurred when children set their own criteria and when
criteria were externally imposed (e.g., set by a teacher). The authors concluded that "self-determination of performance criteria could alter behavior if the procedure: (1) served an instructional or attentional function..., (2) functioned as a discriminating cue providing information regarding the amount of work necessary to earn a reward, or (3) prompted the child to make evaluations of his/her behavior in relation to the goals he/she has set..." (p. 452).

**Number of sentences.** Overall, slight increases occurred for Students 2 and 4 for number of sentences written. However, a functional relationship cannot be claimed, as results were not compelling. Baseline logic involving prediction, verification, and replication was not satisfied. Targets and reinforcement for number of sentences were not implemented in this study. However, Ballard and Glynn (1975) found that when students were reinforced for number of sentences written, the number of sentences students wrote increased. Providing reinforcement for number of sentences written is a possible area for future research.

**Number of different words (type token ratio).** Results for number of different words written were not substantial enough to claim a functional relationship. Of potential importance, however, is the fact that, for Students 3, 4, and 6, type token ratios (TTR) decreased slightly during the CCPP phase as written language output increased. This trend indicates that as these students wrote more, they used less variety in their word choice. In other words, the more these students wrote, the lower the quality of their writing. This point is significant in that teachers should be aware that increasing written language output may not necessarily result in a corresponding increase in quality.

As discussed in Chapter 3, an acceptable level of written vocabulary use is indicated by a ratio of 0.7 or higher. Only two students, Students 2 and 6, achieved fairly consistent TTRs at or above that level. However, both of these students wrote few
words on a daily basis as compared to the other students in the study. Student 2's performance for number of words written ranged from approximately 1/4 to 1 1/2 pages in his composition book and his TTR averaged .24 to .87, with all but 6 sessions (during which he wrote 0 words and thus had a TTR of 0) in the .6 range and above. Student 6's number of words written ranged from approximately 2 sentences to 1 1/4 pages written and her TTR averaged .61 to .87. The conclusion that might be reached from these data is that students who are hesitant writers may appear to have a well-developed written vocabulary when they do write; however, when writing output increases and reaches a consistent target level of production, teachers should be prepared to instruct students to use more variety in their writing.

**Number of adjectives.** As with previous measures, results for adjective use were not compelling. Increases in adjectives written during the CCPP phase for Students 1, 3, 4, 6, and 7 may be due to the random reinforcement of adjective use during the CCPP phase as described in Chapter 3. Again, outcomes of the Ballard and Glynn (1975) study may be instructive with respect to the number of adjectives written. These researchers found that when students were reinforced for number of descriptive words written, the students used more descriptives. Results of the Ballard and Glynn study have implications for future research in combining self-monitoring with reinforcement for various aspects of written language (e.g., number of adjectives written).

**Summary.** Self-monitoring alone did not produce material increases for number of words written. Results for other areas measured (i.e., number of sentences, different words, and adjectives written) were also not clearly compelling. However, there are potentially meaningful findings for self-monitoring when combined with targets for number of words written in combination with a reinforcement system for exceeding those targets (i.e., the effects obtained during the CCPP phase). For students with learning disabilities, the use of external reinforcement may be necessary to provide
motivation for writing. Once the writer is successful over a period of time, reinforcement might be thinned or used to reinforce other written-language related behaviors such as extended vocabulary development or use of descriptives (Ballard & Glynn, 1975). In summarizing several studies, O'Leary and Dubey (1979) concluded that combining self-assessment with reinforcements and subsequently thinning the reinforcements (but continuing the self-assessment procedures) produced maintained effects, theoretically because the token programs increased motivation, or increased the likelihood that the continued self-assessment procedures prompted covert self-reinforcing statements. For students who have not experienced success in writing, who are hesitant writers, and/or who have an identified disability in the area of written language, external reinforcement may be a necessary step to increase motivation. This is, of course, an area deserving of further study.

An alternative to teacher-administered reinforcement for written language performance is self-administration of reinforcement (Harris et al., 1994; Ballard & Glynn, 1975). The results of the Ballard and Glynn (1975) study (as discussed in Chapter 2) indicate that a combination of self-assessment and self-recording (i.e., self-monitoring) in the absence of reinforcement did not produce gains in written language performance. However, when students began self-reinforcement for various aspects of their writing (e.g., number of sentences, different action words, and different descriptive words), a functional relationship was established. Writing responses increased substantially and subjective assessments for writing quality were higher when students self-reinforced. Another important point made by Ballard and Glynn was that teachers were freed from managing specific reinforcement contingencies, since the children carried out the procedures.

In conclusion, self-monitoring interventions, when used to increase the written language performance of students with learning disabilities, may need to be combined
with reinforcement, at least initially, to maintain high levels of output. For students who
do not produce significant amounts of writing, reinforcement may initially need to be
contingent upon written language output. If students are able to reach a target level of
output, reinforcement contingencies may be modified to focus on writing quality (e.g.,
vocabulary use).

**What effects will self-monitoring written language performance have on the percentage
of intervals of student on-task behavior during a 10-minute writing period?**

As discussed in Chapter 3, on-task data were collected for three students:
Students 3, 4, and 5. In the studies conducted by Harris et al. (1994, Exp. 2) and Wolfe
(1997), students self-monitored their own on-task behavior. These researchers found
that when students self-monitored their own on-task behavior, the amount of time they
spent on-task increased. In the current study, the experimenter collected on-task data
without the students’ awareness; students self-monitored their written language
performance only. The results are not compelling for on-task behavior. This finding is
in contrast to Harris (1986b), Harris et al. (1994), and Reid and Harris (1993), who
found that on-task behavior increased to a meaningful degree during self-monitoring of
performance (SMP) conditions. In the present study, Student 3 experienced an increase
at the end of S-M, and continued at those levels (approximately 75-100%) through the
end of the study. This jump in on-task behavior, however, occurred simultaneously
with an increase in medication for attention difficulties, thus the change cannot be clearly
attributed to self-monitoring.

**Summary.** In conclusion, self-monitoring academic behaviors did not have a
clear effect on on-task behaviors, even during the CCPP phase, when the number of
words written increased or became more stable for the students. Harris et al. (1994) and
Wolfe (1997) required that students self-monitor their own on-task behavior, as
opposed to the current study, in which students were not aware that on-task data were
being collected. One conclusion that might be reached is that students should be taught
to self-monitor whatever behaviors are targeted for change (Ballard & Glynn, 1975).
Therefore, if the goal is to help students increase their on-task behavior using self-
monitoring, they should be taught how to self-monitor their own on-task behavior (the
target behavior).

What effects will self-evaluation alone have on the number of words, number of
sentences, number of different words, and number of adjectives produced by students
during a 10-minute writing period?

**Number of words.** Self-evaluation alone had no substantial effect on the number
of words written by students. (Again, the increase during S-E₂ for Student 3 occurred
simultaneously with a change in medicine, so the improvement cannot be attributed
solely to self-evaluation.) The results of this study are similar to those of the DiGangi
and Maag (1992) insofar as self-evaluation alone had no notable effect on rates of
appropriate and inappropriate behaviors of junior high school boys.

**Number of sentences.** As with self-monitoring, compelling results for number of
sentences written cannot be claimed for self-evaluation. In fact, Students 1 and 2
experienced decreases in their average performance levels for number of sentences
written during both self-evaluation phases.

**Number of different words (TTR).** Results of self-evaluation interventions on
the number of different words written by students are not compelling. However, there is
one notable point regarding Student 3's TTR for S-E₂. Possibly because of an increase
in medication in the session prior to the second self-evaluation phase, Student 3 began
writing more during S-E₂. Simultaneously, he experienced a decrease in TTR compared
to previous phases, indicating that the more he wrote, the more he used the same words
repeatedly.
**Number of adjectives.** Similar to the trend for self-monitoring, Student 1’s performance increased substantially when self-evaluation was first introduced, indicating that self-evaluation initially produced positive results for this student for number of adjectives written. However, his performance in the second self-evaluation phase (S-E₂) was far below his performance in S-E₁, so the initial results obtained for self-evaluation were not replicated. Inexplicably, average performance levels for Students 4 and 7 increased during S-E₂. In general, however, self-evaluation cannot be said to produce a consequential effect on number of adjectives written.

**Summary.** Results for self-evaluation are not compelling regarding effects on written language output or quality. As with self-monitoring, students were not reinforced nor given feedback during self-evaluation. Unlike the CCPP phase, though, in which self-monitoring was paired with structured reinforcement, self-evaluation procedures were not incorporated into an intervention package including reinforcement. DiGangi and Maag (1992) found that when they paired self-evaluation with other self-management components (e.g., self-monitoring and self-instruction) the power of the treatments increased. This is a possible area for further future research.

**What effects will self-evaluation alone have on the percentage of intervals of student on-task behavior during a 10-minute writing period?**

There are no compelling results for on-task behavior associated with the introduction of self-evaluation. Student 3’s on-task behavior increased from S-M₂ to S-E₁. However, these changes occurred at the same time that his medication increase began, so the results cannot be clearly attributed to self-evaluation alone. Student 4’s data indicate a decreasing trend in on-task behavior during the first self-evaluation phase.
Will the students view the self-monitoring activities positively?

Overall, students viewed self-monitoring activities positively, especially when paired with reinforcement for meeting or exceeding a target. These results are not comparable to Wolfe (1997), as Wolfe did not specifically ask students their opinions of self-monitoring alone compared to self-monitoring combined with targets and tokens. In the current study, when asked what they liked best about self-monitoring, Students 1 and 5 indicated that they liked circling the numbers on their graphs; Students 2 and 4 liked counting their words, and Student 6 liked seeing how much she wrote. Student 7, however, found self-monitoring procedures annoying; he stated that “writing numbers at the end of each line is a pain.” Even during the CCPP phase, Student 7 believed that self-monitoring did not help his writing, nor did he want to continue using self-monitoring when he had targets and earned classroom money. However, when given a choice between self-monitoring with and without tokens and money, he chose earning money for beating his targets, stating that “there was a point to it. You weren’t just counting, which seemed like a waste of time.” Aspects of self-monitoring that students did not like included completing their self-recording sheets (Students 1 and 5), writing the numbers at the end of each line (Students 2 and 7), graphing and drawing lines between numbers on the graphs (Student 4), and a dislike of counting their words when they couldn’t write much (Students 3 and 6).

Although they were positive about self-monitoring, all of the students indicated that they would not want to continue self-monitoring in the absence of targets and tokens. Students indicated that they liked earning money and beating their target scores. They liked the challenge of having a goal. Student 1 stated that “...if you want to beat it [the target], you gotta work harder.” Students 4 and 5 indicated that having a target made them write faster, and Student 6 stated that she liked “trying to write a lot.”
There were aspects of the CCPP procedures that students did not like. Student 1 stated that "the more words I write, the longer it takes to write the numbers [at the end of each line]." Students 2, 5, and 6 did not like not beating their targets. Student 3 stated that he was unhappy when his target was lowered (during the reversal in the fourth condition change of the CCPP phase).

Anecdotally, Student 5 was quite verbal in class about her decreased target during the fourth condition change; her teachers later told me that she, and several of the other students, said they were really disappointed that their targets had been lowered. The students expressed a belief that the teachers had lost faith in their ability to write much. Data for Students 2, and 5, who were either visibly or audibly disappointed during the two sessions in which their targets were lowered, decreased during the fourth CCPP condition and did not recover to prior CCPP levels for the remainder of the sessions. The purpose for decreasing students’ targets was to ascertain whether the targets were responsible for changes in performance during the CCPP phase. Theoretically, if the targets were responsible for the changes, student performance would decline when the targets were lowered. However, given the structure of the token system that was in place during the CCPP phase, some students realized that they could earn more classroom money when the targets were lowered, so they wrote at least as much as, or more than, what they had written in previous conditions.

Will the students view the self-evaluation activities positively?

Students’ opinions of self-evaluation were less favorable than for self-monitoring. Only three students indicated that they enjoyed self-evaluation and thought that it helped them write more. Two students would like to continue using self-evaluation: Student 2 stated that he liked evaluating himself, and Student 1 liked the simpler procedures (he wasn’t required to do as much work, and he didn’t have to get out his folder, where the self-monitoring record sheets and graphs were kept). Other
aspects of self-evaluation that students liked were: a) not having to count all their words (Student 3), b) circling what they thought about their stories (Student 4), and c) circling the numbers on the self-evaluation forms (Student 5).

Things that students did not like about self-evaluation included having to choose (Students 3 and 6), and being bored with the procedure (Student 7 stated that “it didn’t have a point.”). Student 5 did not like having to read the statements to herself (“I already know what I feel like I should do.”).

Which method will students prefer: self-monitoring or self-evaluation?

Student preferences for self-monitoring versus self-evaluation were mixed. Four students believed that self-monitoring helped them more than self-evaluation and preferred self-monitoring over self-evaluation. Student 1 stated that “You know how much [sic] words you wrote.” Student 3 liked being able to see his progress with graphs, “instead of someone just telling you.” Student 5 liked writing and circling [the numbers on the graphs].” Student 6 stated “I like getting a lot and seeing it.” Three students preferred self-evaluation over self-monitoring, making statements such as: “It’s quicker” (Student 2), “It’s easier to circle. You don’t always have to count” (Student 4) and “It’s not as annoying” (Student 7).

What are the classroom teachers’ opinions of self-monitoring?

As discussed in Chapter 3, due to the size of the classroom (16 students) there were two classroom teachers. The teachers completed a Teacher Opinion Questionnaire individually (see Appendix M). Both indicated they enjoyed having self-monitoring implemented in their classroom, and that it was not difficult to implement. They believed self-monitoring helped some of their students write more and better, and that the students enjoyed the technique. Further, they indicated that they would use self-monitoring in the future. One teacher stated that self-monitoring “…got the students to think about their performance. It also helped the students compare their daily work with
their own previous work, not the other students' work.” The other teacher commented that he “...liked having the student graph their results. This allowed for visual and kinesthetic reinforcement and feedback.” The only aspect of self-monitoring that one teacher did not like was that “some students were not always honest.” (This occurred more toward the beginning of self-monitoring, but teachers periodically checked student work and gave feedback regarding accuracy of counting, so that students’ inaccuracies decreased rapidly.)

Both teachers liked the procedures used during the CCPP phase, in which self-monitoring was combined with targets and tokens. They believed the procedures were easy to implement and resulted in most students producing more and better writing. They indicated that students enjoyed self-monitoring with targets and tokens and that they would use targets and tokens paired with self-monitoring in the future. One teacher commented that “It gave the students rewards for doing good work.” The other teacher stated that “Using the classroom money strongly encouraged the students to write more. Having the targets gave the students control over the amount of money they earned.” Neither teacher commented about aspects of self-monitoring with targets and tokens that they disliked.

When asked to compare self-monitoring with and without targets and tokens, both teachers indicated that they preferred using targets and tokens, because “the kids liked it better” and “money works better as an incentive.”

What are the classroom teachers’ opinions of self-evaluation?

Both teachers liked self-evaluation and believed that it was easy to implement. However, one teacher indicated that self-evaluation helped students write more and better, while the second teacher believed that self-evaluation was not helpful. They both indicated that some students liked self-evaluation, but some did not. One teacher commented that “when you ask yourself those questions that they [the students] had on
that sheet it got them to evaluate their abilities, which is good.” The same teacher stated, however, that “It was too dependent on the likeability of the [story starter] prompt.” (See Appendix O for a list of story starters used throughout the study.) The second teacher stated that self-evaluation “Encouraged students to reflect on their own writing,” but that “Many students were not invested enough to honestly answer the self-evaluations fairly.” Even so, both teachers would use self-evaluation in the future.

**Which method will classroom teachers prefer: self-monitoring or self-evaluation?**

Both teachers preferred self-monitoring. One teacher stated that “the students were doing more with the number of words and sentences they wrote,” while the other teacher stated that “self-monitoring helped the students visualize their progress and provided more comprehensive feedback.” They both believed that self-monitoring helped their students more. Their comments were: “they could see their graphs” and “It was more fun - counting and graphing the number of words. Also, the students understand quantitative evaluations better than qualitative.”

**Limitations**

**Participants and Setting**

Because the study was conducted in a private school for children with learning disabilities, external validity was limited by the sample of students as well as the type of setting in which it was conducted. The students were fifth and sixth graders who were at this school because there was a match between their need and the services offered at the school. Also, their parents preferred this placement because of class sizes and teacher/student ratios. Further, the demographic characteristics of the students (i.e., all were Caucasian) limit external validity. Therefore, caution should be exercised in generalizing the results to other students with learning disabilities. However, the sample
is representative of a range of abilities characteristic of children with learning disabilities, and the students selected for this study were identified as being in need of written language intervention.

Another limitation involves the setting itself. The classroom was unique in that it was self-contained and housed in a private school. Again, caution should be used in generalizing the results of the study to other settings, especially those in public schools where two teachers in the classroom are not the norm.

A further limitation involves the structure of the classroom management system. The token reinforcement system that was used during the changing criterion (CCPP) phase had been in place throughout the school day before the study began, but was removed from the writing period prior to collecting baseline data (the token economy system remained in place for all other periods of the school day). A token economy may not always be feasible for teachers to structure and implement. At the same time, the strength of the token economy and the consistency with which it was applied throughout the school day provided an ideal environment in which to conduct this study.

Medication

At least two of the target students were taking medication for attention difficulties. Student 2 was undergoing changes in medicine throughout the study, which may have affected his performance. Beginning around session 37, there was a change in Student 3’s medication, which may at least partially account for the increase in his written language performance and on-task behavior at this point in time.

Experimental Design

The reversal design was used in this study under the assumption that, upon withdrawal of the intervention during Baseline, student performance would return to prior baseline levels (i.e., that the intervention is reversible). However, the expected transposition did not occur in this study, indicating that the intervention may not be

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reversible. In other words, self-monitoring may have the effect of creating a behavioral momentum (Mace et al., 1988, as cited in Davis & Reichle, 1996); once students begin self-monitoring, the increase in awareness of their performance (if such an increase occurred initially) may not allow for a return to pre-intervention performance levels. Mace et al. indicate that behavioral momentum relies on increasing response levels (which occurred for some students in this study, upon implementation of self-monitoring) and the resistance of that response level to change (which may be why initial increases in student written language performance did not return to prior baseline levels). Future studies assessing the effects of self-monitoring might employ other experimental designs not requiring a reversal (such as multiple baseline designs, as used in Harris et al., 1994, Exp. 2, or sequential withdrawal as used in Sainato et al. (1990).

Difficulty of the Task

Self-monitoring works best for tasks that students already have in their repertoire (Reid, 1996). Creative writing can be one of the most difficult tasks for students with learning disabilities to accomplish (Graham & Harris, 1992; Smith et al., 1997). The teachers' hope during this study was that students' writing fluency would increase (for students to write increasing more words within a given amount of time). Some students who are able to generate creative stories easily may find success with this task. Others, such as Students 2 and 6, who are unable to generate creative stories quickly, may not be so likely to benefit from self-monitoring in the absence of writing strategies.

The difference in findings from the Harris et al. study to the present study (and to the Wolfe, 1997 study) may be partially attributed to Harris et al. having introduced a writing strategy for generating and organizing content prior to implementation of their study, based on the theory that students need to have strategies in place for completing academic work before self-monitoring is introduced. Therefore, in addition to a focus on writing fluency, which the studies have in common, the students in the Harris et al.

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study had been provided a strategy for approaching creative writing production. Theoretically, this skill may have resulted in the students in the Harris et al. study being better able to focus more on writing than thinking of what to write or how to present their thoughts in writing. Their skills were more automatic, perhaps allowing them to focus on other aspects of the assignments. The additional obstacle of having to overcome the generative process may have resulted in depressed performance for the students in this study compared to those in the Harris et al. study. (Note that the prewriting prompts used at the beginning of each session in the current study were not considered a writing strategy; they were not designed to teach writing skills. Instead, they served as a consistent reminder across phases for students to focus on the same aspects of writing throughout the study. See Appendix P for the four prompts.)

Lack of Generality Data

This study was conducted during a time when writing fluency was programmed as part of the normal classroom procedures. Ideally, additional data on written language performance would have been collected under different circumstances (e.g., during another writing period, or in another classroom) to assess whether any effects obtained for self-monitoring or self-evaluation generalized to other settings. However, individual writing was not consistently implemented or collected at other times during the school day. Students often did written work in groups at times other than writing fluency, and individual work was not completed often enough for data to be collected consistently across phases.

Implications

There are at least three groups for whom implications of this study may be relevant. They are discussed in this section, in the order of implications for students, faculty teaching at the preservice level, and general and special education classroom practices respectively.
For students

As indicated by previous studies, self-monitoring and self-evaluation procedures are designed to give students more control over their own learning and behavior, to create a much-desired level of independence, and to be useful in future environments (Blick & Test, 1987; Brown & Frank, 1990; Watson, 1996). As emphasized by O’Leary and Dubey (1979), children might be taught how to change their own behavior for several reasons: a) being independent is a value and expectation held by the larger culture; b) adults in a child’s life may not always be able to provide external control [nor is this always desirable]; c) when children are in control of their behavior, teachers can spend time teaching other skills; d) when adults are unavailable, a child who is self-controlled is able to learn and behave effectively; and e) more durable behavior changes are likely to occur for children who control their behavior than if those same children learn to rely on external influences.

There are several implications for students involved in the present study, as well as students like them. First, teacher feedback and reinforcement may be an important component to include when using self-monitoring and perhaps self-evaluation techniques. To illustrate, Student 5, for whom teacher attention was reportedly a substantial source of reinforcement, became visibly excited and hurried to the teacher once her words were counted, exclaiming over the large number of words she had written, and that she had never before written so much. However, because teacher feedback and reinforcement for performance were intentionally withheld, Student 5 walked away visibly disappointed. Further, and importantly, she did not repeat similar levels of achievement for the remainder of the study.

For some students who may need more feedback and reinforcement from their teachers self-monitoring or self-evaluation may be contraindicated. Other students may require or may be ready for more independence and may find self-monitoring or self-
evaluation alone enough. One implication seems to stand out, however. This study replicated Wolfe's (1997) study insofar as during CCPP all students improved during the initial three criterion changes. Perhaps beginning self-monitoring in combination with targets and reinforcement would be wise.

A second implication for these students involves motivation for the task, including the story starters used. A notable effect occurred for Student 2 in the present study. During the first self-evaluation phase, Student 2 alternately wrote one day, then wrote nothing the next day. He wrote zero words for 40\% of S-E₁ and 67\% of S-E₂. During the exit interview (in which social validity data were collected) the experimenter asked Student 2 what occurred during those sessions. Student 2 stated that he did not like the story starters for those sessions, so he could think of nothing to write. His response is supported by anecdotal records collected by the experimenter throughout the study, which indicate that, on the days when Student 2 wrote nothing, he would say to a teacher or classmate that there was nothing he could think of to write. Apparently, the story starter topic affected Student 2's performance only during self-evaluation phases.

Written language is a difficult content area. Based on the outcomes of this study, combined with those of Wolfe and Harris, self-monitoring may not be the most effective or efficient technique to produce changes in written language.

For Faculty Teaching at the Preservice Level

Teachers should be able to implement effective practices to improve student performance. Self-monitoring is one intervention that has been studied extensively and found to be effective across tasks, learners, and settings (Blick & Test, 1987; Brown & Frank, 1990; Carr & Punzo, 1993; Dunlap & Dunlap, 1989; Hallahan, Marshall, & Lloyd, 1981; Harris, 1986a, 1986b; Harris et al., 1994; Lloyd et al., 1989; McLaughlin, 1984; Wolfe, 1997). Harris et al. (1994), however, caution that teachers should learn the circumstances under which self-monitoring should be used. They note
that the procedures should be "parsimonious, minimally obtrusive or laborious, appropriate to the target behavior, enjoyable for the student, and relevant to the student's needs and goals" (p. 138). The data from this study suggest that self-monitoring alone or in combination with targets and reinforcers can help to improve written language performance for some students. Self-evaluation may have the same potential, but it should be used cautiously and with the proviso that further research needs to be conducted to assess its effectiveness. Given the past effectiveness of self-monitoring, and the future potential for self-evaluation, university personnel may well be advised to consider teaching students how and when to use these strategies.

For General and Special Education Classroom Practice

An important point for practitioners to realize is that self-monitoring is not a teaching strategy in and of itself (Harris et al., 1994). Instead, self-monitoring is useful for increasing productivity or accuracy of behaviors that already exist in a student's repertoire (Dunlap & Dunlap, 1989; Hallahan et al., 1979; Reid, 1996) or decreasing the occurrence of undesirable behaviors (Kern et al., 1994). Broden, Hall, and Mitts (1971) found that self-monitoring was successful in decreasing the talking-out behavior of an eighth-grade boy.

Self-monitoring procedures are not recommended for use during acquisition stages of learning (Kimball, 1994). King-Sears and Cummings (1996) recommend selecting behaviors that already exist in the student's repertoire when targeting behaviors for self-management. Students should already be performing the targeted task prior to being taught self-monitoring procedures. For instance, the writing strategies that Harris et al. (1994) and Martin and Manno (1995) taught prior to implementing self-monitoring are examples. However, in the Harris et al. study, the classroom teacher noticed that students did not always employ the writing strategy that they had been taught. In such instances, teachers might want to implement self-monitoring concurrent with ongoing
instruction in the writing strategy. Further, Harris et al. and King-Sears and Cummings (1996) suggest that when considering self-monitoring interventions, practitioners should consider the interrelationships between task, learner, and desired outcomes. Self-monitoring can easily be designed as an individualized instructional technique for students (Broden, Hall, & Mitts, 1971) King-Sears and Cummings recommend that educators choose a "mild," manageable behavior initially, and be prepared to alter self-management techniques if necessary (using charted data to guide decisions). Not all students may benefit from self-monitoring, especially if the targeted task is too difficult, or is not within the student's current repertoire. The results of the current study support this point. Those students who were the most hesitant writers, Students 2 and 6, did not experience consistent marked increases in their written language production using self-monitoring or self-evaluation. Further, the decreases that occurred for Students 6 and 7 when self-monitoring was first introduced might have signaled a need for a different written language intervention for those two students.

General and special education teachers should also be aware that increasing written language output does not necessarily result in a corresponding increase in quality. The two measures, output and quality, may need to be taught separately for some students. Once writing fluency is achieved to a target level, some students may need to focus on developing a larger writing vocabulary. Students who are hesitant writers may appear to have a well-developed written vocabulary when they do write; however, when writing output increases and reaches a consistent target level of production, teachers should be prepared to teach students to use more variety in their writing. In other words, teachers should be prepared to use self-monitoring as a technique for programming generality of responses during written language (Stokes & Baer, 1977). Said another way, once students learn to increase the number of words
they write using self-monitoring, teachers can guide students to use self-monitoring techniques to increase other indicators of improved writing, such as number of different words written.

Finally, although self-evaluation alone produced few compelling results in this study, the procedure may be valuable for some students. For example, Students 2, 4, and 7 preferred self-evaluation over self-monitoring. In such instances, providing self-management choices for students may increase the likelihood that students will use this procedure, hence building behavioral momentum. However, teachers should use self-evaluation procedures with an awareness of its limitations until further studies can demonstrate its effectiveness.

Suggestions for Future Research

The results of this study provided varied evidence of the effectiveness of self-monitoring for written language performance. At the same time, several issues have arisen which call for further research to be conducted in this area.

The perceived value of writing held by the students involved in this study may have influenced the outcomes. Reid (1996) contends that there is no purpose for implementing self-regulatory procedures for behaviors that have little or no value for those involved. He goes on to point out that because the value of some target behaviors varies from individual to individual, we might also expect variation in the outcome of self-monitoring interventions. In conducting future studies with self-monitoring, researchers might be well-served to survey their subjects regarding the perceived importance of the target behavior, and to compare the outcomes of self-monitoring with the “likeability” of the target behavior. Effectively, social validity research could be conducted for the target behaviors as well as for the interventions. Reid (1996) suggests a need for further study to “investigate the relationship (if one exists) between subject characteristics and target variables” (p. 327). His statement is based largely upon the
results obtained by Maag et al. (1993), who discovered differential effects of self-monitoring on the performance of fourth and sixth graders. Specifically, the most effective technique for fourth graders was self-monitoring productivity, which resulted in increases in both number of problems attempted and accuracy. For sixth graders, self-monitoring of accuracy was most for producing increases in accuracy, while self-monitoring productivity resulted in increases in the number of problems attempted. Although the Maag et al. study did not set out to assess the differences between grade levels, it may have incidentally produced a consequential factor that is a worthwhile consideration for replicating in future studies.

Replication is an important avenue to pursue with self-monitoring and self-evaluation. Several studies could be conducted based on replicating the current study. First, self-monitoring and self-evaluation could be used subsequent to the introduction of a writing strategy, as was done in the Harris et al. (1994, Exp. 2) study. Results of the current study may have been depressed when compared with the Harris et al. study, because students in this study were not provided a writing strategy to help them generate and encode ideas onto paper. Future studies should include ongoing instruction or prompting in the use of the writing strategy concurrent with self-monitoring or self-evaluation, on an as-needed basis, so that students maintain accurate, consistent use of the desired strategy. Making sure students consistently use the instructional strategy when combined with self-monitoring or self-evaluation would provide an added control over confounding variables that may affect outcomes associated with self-monitoring or self-evaluation procedures.

Another replication that could be conducted involves the use of reinforcers in conjunction with both self-monitoring and self-evaluation. Several studies could be conducted in this manner, assessing a plethora of variables such as output (e.g., number of words written) or quality (e.g., number of adjectives, type token ratio) as
they relate to written language. Reinforcements for number of words written, for example, could be administered on a continuous schedule (i.e., for every session) at first and gradually thinned (e.g., on a fixed ratio schedule, such as every other session, then every third session, etc.) as students reach and maintain a targeted number of words within a given writing period (e.g., 10 minutes). The goal of such a study would be to assess the effects of behavioral momentum that could potentially be achieved with initial reinforcement, and the maintenance of the desired level of output (i.e., number of words written) once reinforcement is thinned. Another avenue that could be taken regarding reinforcement is to have students conduct self-reinforcement, placing them in further control, and removing the teacher's need to maintain records and distribute reinforcers (DiGangi, Maag, & Rutherford, 1991, O'Leary & Dubey, 1979).

As discussed earlier in this chapter, one of the limitations of this study involved the reversal design that was implemented. Future studies might employ research designs such as multiple baseline (Cooper, Heron, & Heward, 1987) in conjunction with withdrawal designs, such as sequential-withdrawal, partial-withdrawal, or partial-sequential withdrawal designs (Rusch & Kazdin, 1981). Rusch and Kazdin indicate that withdrawal designs are most appropriate for studies investigating behavioral maintenance. Self-monitoring and self-evaluation fit within this framework. Instructional strategies used in conjunction with self-monitoring and/or self-evaluation (such as that used by Sainato et al, 1990) could be withdrawn either partially or segmented into components and withdrawn sequentially to assess instructional components that should be continued in combination with self-monitoring or self-evaluation. As discussed previously, reinforcement could be removed gradually using a sequential withdrawal design while assessing maintenance of a desired level of responding.
Finally, further research needs to be conducted to assess the effects of self-monitoring and self-evaluation across learners, settings and behaviors. Learner characteristics might include students with and without disabilities, including those from various SES and cultural groups. Self-monitoring studies have been conducted across a wide variety of settings and behaviors (Ballard & Glynn, 1975; Blick & Test, 1987; Broden, Hall, & Mitts, 1971; Brown & Frank, 1990; Carr & Punzo, 1993; DiGangi & Maag, 1992; Dunlap & Dunlap, 1989; Hallahan et al., 1979; Harris, 1986b; Harris et al., 1994; Johnson, 1988; Kern et al., 1994; Kimball, 1994; Marshall & Heward, 1979; McDougall & Brady, 1988; McLaughlin, 1984; Ober, 1973; Reid & Harris, 1993; Watson, 1996; Wolfe, 1997). However, researchers might vary these to include previously uncombined variables; some examples include preacademic skills in home settings with preschool children, or organizational skills management in general education classrooms with both regular and special education students. Thus, researchers may be able to determine under what conditions students might apply skills relevant to self-monitoring and self-evaluation in other, natural environments.

Summary

This study was conducted to determine the effects of self-monitoring (alone and in combination with changing criterion with public posting) and self-evaluation on the written language performance and on-task behavior of elementary students with learning disabilities. The subjects were seven elementary students, three girls and four boys, enrolled in a private school for elementary and secondary students with learning disabilities. The study took place in a self-contained room containing sixteen fifth- and sixth-grade students and two teachers.

Throughout the study, students wrote for 10 minutes each session. Self-monitoring procedures for written language performance included having the students count and graph the number of words written, and count and record the number of
sentences written. Self-evaluation involved the students evaluating the quantity and quality of their writing as compared to the last session. The changing criterion with public posting condition involved the experimenter setting goals for each student for the number of words written, then posting these totals in the classroom each day. During the final three sessions of the study, students self-selected their targets for number of words written.

During all sessions, the experimenter collected data on written language performance, including number of words, sentences, different words, and adjectives written. For three students, the experimenter also collected on-task data each session.

Although results for self-monitoring alone are not compelling, the results show an initial positive relationship between self-monitoring alone and number of words written for two students. However, these results were not replicated at similar levels across self-monitoring phases in either case. During the changing criterion with public posting phase, a positive relationship was shown between self-monitoring when combined with targets and reinforcers and number of words written for four students. Results for self-evaluation were not compelling regarding effects on written language output or quality. There were also no compelling results for on-task behavior associated with either self-monitoring or self-evaluation. These results are in contrast to many previous studies and to a claim by Reid (1996), who reviewed self-monitoring research conducted with students with learning disabilities, that “self-monitoring must now be considered a mature intervention” (p. 328). Studies of self-monitoring with target behaviors other than written language composition may be considered mature. However, further self-monitoring studies need to be conducted in the area of written language before the designation “mature” can be bestowed with greater confidence.

The results of the current study imply that self-monitoring may be an effective procedure for some students when combined with goals for written language
performance and reinforcement for meeting or exceeding those goals. However, further research should be conducted to determine under what conditions and for what students these effects could be replicated.
LIST OF REFERENCES


APPENDIX A

Overview of Self-Monitoring of Attention Studies
## Overview of Self-Monitoring of Attention Studies

<table>
<thead>
<tr>
<th>Author</th>
<th>Year</th>
<th>Independent Variable(s)</th>
<th>Dependent Variable(s)</th>
<th>Outcome / Comments</th>
</tr>
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<tbody>
<tr>
<td>Blick &amp; Test</td>
<td>1987</td>
<td>Cued SMA, with fading to Uncued SMA</td>
<td>On-task behavior</td>
<td>Increases in on-task behavior when SMA was cued and uncued in both training and non-training settings. On-task behavior was maintained even as audible cues were faded.</td>
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<td>On-task behavior and Number of correct spelling practices</td>
<td>On-task behavior and number of correct practices increased for both SMA &amp; SMP conditions. SMP slightly better for correct practices. No difference between SMA and SMP for on-task behavior.</td>
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<td>Harris, Graham, Reid, McElroy, &amp; Hamby</td>
<td>1994</td>
<td>SMA, SMP</td>
<td>On-task behavior and Number of correct spelling practices</td>
<td>On-task behavior and number of correct spelling practices increased during both SMA and SMP. SMP slightly better for correct practices for two students; no differences for other students. No difference between SMA and SMP for on-task behavior.</td>
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<td>Lloyd, Bateman, Landrum, &amp; Hallahan</td>
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<td>SMA, SMP</td>
<td>On-task behavior and Correct movements per minute during arithmetic practice</td>
<td>On-task behavior and number of correct movements both increased during both SMA and SMP conditions. There were no differences between SMA and SMP for either DV.</td>
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<td>Reid &amp; Harris</td>
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<td>SMA</td>
<td>SMP</td>
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<td>On-task behavior increased during SMA and SMP; there were no differences between conditions for on-task behavior. Number of correct spelling practices increased during SMP. Achievement was negatively affected during SMA. Maintenance was better during SMP.</td>
<td>Number of correct spelling practices increased during SMP.</td>
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APPENDIX B

Overview of Self-Monitoring of Productivity Studies
## Overview of Self-Monitoring of Productivity Studies

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<td>1986</td>
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<td>On-task behavior and number of correct spelling practices increased during both SMA and SMP. SMP slightly better for correct practices for two students; no differences for other students. No difference between SMA and SMP for on-task behavior.</td>
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<td>On-task behavior and number of correct movements both increased during both SMA and SMP conditions. There were no differences between SMA and SMP for either DV.</td>
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<td>On-task behavior increased during SMA and SMP; there were no differences between conditions for on-task behavior. Number of correct spelling practices increased during SMP. Achievement was negatively affected during SMA. Maintenance was better during SMP.</td>
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- On-task behavior
- Number of correct spelling practices
- Number of words written correctly on weekly tests
APPENDIX C

Classroom Schematic
APPENDIX D

Experimenter Recording Sheet for Written Language Performance
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<th># Adj.</th>
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APPENDIX E

Student Recording Sheet for Written Language Performance
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APPENDIX F

Sample Student Graph for Number of Words Written
Sample Student Graph for Number of Words Written

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APPENDIX G

Experimenter Recording Sheet for On-Task Behavior
Experimenter Recording Sheet for On-Task Behavior

Date: ________________________________

Session: ______________________________

Condition: Baseline, S-M, Baseline, S-M, S-Eval, S-M, S-Eval

Observer: ______________________________

IOA? Y N

IOA Observer: __________________________

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APPENDIX H

Procedural Interobserver Agreement Recording Form
Procedural Interobserver Agreement Recording Form

Date of observation: ______________
Recorder: __________________________
Time: ____________________ Session: ____________

1. Did the teacher introduce the story starter prior to the writing session?  ___Yes ___No

2. Did the teacher set the timer for 10 minutes?  ___Yes ___No

3. Did the teacher provide writing prompts (i.e., write as much as you can, write as many descriptive words as you can, etc.)  ___Yes ___No

3. Did the students have written language recording forms?  ___Yes ___No ___ N/A

4. Did the students record written language on the forms?  ___Yes ___No ___ N/A

5. Did the students have graphs for written language?  ___Yes ___No ___ N/A

6. Did the students graph written language data on graphs?  ___Yes ___No ___ N/A

7. Did the students record self-evaluation data on the self-evaluation form?  ___Yes ___No ___ N/A

8. Did the students self-evaluate inaudibly?  ___Yes ___No ___ N/A
APPENDIX I

Training Script for Self-Monitoring Written Language Performance
Training Script for Self-Monitoring Written Language Performance

Introduction

I. Introduction

A. "You are working on becoming better writers, and you are improving quickly. You may not realize how much improvement you are making. You turn your composition notebooks in, but you may not know if you are improving. I am going to teach you a way of recording your own writing improvement so that you can actually see and understand it."

B. "The writing program will stay the same: I will tell you a short story that has a cliff hanger at the end. Then you will write for 10 minutes quietly at your seats and finish the story. You will write the entire time, trying to write as much as you can, using as many different words as you can, and using as many different adjectives as you can. When I tell you time is up, you will put your pencil down."

C. "You will each have a personal folder containing two sheets of paper." (Pass out folders to students.) "The two pieces of paper include a recording sheet, like this" (Hold up a copy of the written language recording sheet.), "and a graph, like this." (Hold up a sample graph.) "We're going to practice using these forms with sample stories."

Teacher Modeling and Role Play

II. Introducing Recording Sheets and Teacher Modeling

A. Put sample stories on overhead. "Look up here at Story 1. Pretend you just wrote this story. First, you will count each word you wrote. You will count the words in the first line and write the number at the end of the line. For example, 'Penguins are black and white.' --5." (Demonstrate on the overhead.) "You will count every word written, even words that you think might be misspelled.
However, don’t count numbers, unless they’re written as words, and don’t count words you can’t read. If you see numbers or words you can’t read, put an X through them. Also, don’t count words that you have written more than two times in a row.” (Show examples on overhead.)

B. “Then, beginning with the number you wrote at the end of the last line, you count the second line and write the total number at the end of the line, and continue this procedure throughout the passage. Once each line is counted, you will have the total number of written words in the passage. Once you count the total words, you will circle it” (Demonstrate, using sample Story 1).

C. “After you finish counting the words, you will record the total number on the recording form. First you will need to write the date in the box marked ‘Date’.” (Demonstrate.) Then you will write the total number of words you wrote in your story - the number circled - in the box marked ‘Total words written’ on your recording sheet.” (Demonstrate.) “Now you write in the date and total words written on your form.” (Check for accuracy.)

D. “After you have recorded the date and total number of words written, you are ready to graph your data. Each of you will have a graph in your folders. Pull them out now. Each person’s graph will be different from the others, but the graphs you have now are for practice, so they’re all the same. You see that a space for the date is on the bottom of the graph and the number of written words is in columns. You will write in today’s date at the bottom and circle the number of words written for that day. For example, let’s say today is February 25, 1998. I’ll write the date on the first blank, all in numbers so it fits: 2-25-98 (demonstrate). Let’s say I wrote 21 words, like in Story 1. I look up to find the number twenty-one in that column and I circle the 21. Right now, I’d like for
you to write the date on your graph and circle the number 21 above the date”
(Circulate, checking for accuracy. Provide verbal praise for accuracy.)

E. “Once you finish counting and recording the number of words, you will count the
number of sentences that are in your story. To do that, you will put a square
around the ending punctuation in each sentence. Do not put a square around
commas. If you don’t get to finish a sentence before the timer goes off, count
that as one sentence. (Demonstrate, using Story 1. Demonstrate putting squares
around ending punctuation, and counting the last, partial sentence as one
sentence.) Once you have put a square around all the ending punctuation marks,
you will count the squares and write that number on your recording sheet in the
column, “Number Sentences Written.” (Demonstrate.)

F. Repeat A through E as often as necessary until the teacher has modeled at least two
stories.

Practice

III. Practice and Feedback.

A. (Pass out Practice sheets.) “Now you get to try it on your own. Count the words
in Story 1 on the practice sheet. Remember to count the words in each line and
write it at the end. Put an X through words you can’t read, numbers, and any
words that you repeated more than once in a row.” (Walk around the room
assisting where necessary and reinforcing efforts with verbal praise)

B. “Now circle your total words.” (Again, walk around and assist and reinforce.)

C. “Now record the date and your total on your Student Recording Sheet for Written
Language Performance.” (Walk around the room assisting where necessary and
reinforcing efforts with verbal praise.)

D. “Next it’s time to graph. What do you do first on the graph?” [Write in date.]
   “Yes, you need to write the date in the first blank. Then you find the number you
have on your recording sheet in the column above the date. Circle that number, making sure that you circle the number in the column where you wrote today’s date.” (Walk around the room assisting where necessary and reinforcing efforts with verbal praise)

E. “The last thing we do is count sentences. How do we mark sentences?” [Square the ending punctuation.] “You’re right! Go ahead and draw a square around the punctuation for each sentence and count how many sentences are in the story.” (Walk around the room assisting where necessary and reinforcing efforts with verbal praise)

F. “After we count our sentences, what do we do with that number?” [Write it in the last column on the recording form.] “Great! Go ahead and write in the number on your form.” (Walk around the room assisting where necessary and reinforcing accuracy.)

G. Repeat A through F using sample stories until students have mastered counting, recording, and graphing.

H. “Now we’re going to try it for real. Put your name at the top of the practice stories, at the top of the practice recording sheets, and at the top of the practice graphs. Pass in your practice stories, recording sheets, and graphs. In your folders are your real recording forms and graphs. Take out your composition books and count, record, and graph the words and sentences in the story you wrote today. (Walk around room, giving verbal praise for accuracy and providing feedback when necessary.)

“Okay, good job! We’ll use this form again after we write tomorrow.”
APPENDIX J

Student Self-Evaluation of Written Language Form
Student Self-Evaluation of Written Language Form

Name: ________________________ Date: ________________

How Was My Writing Today?
(Circle one for each question.)

How MUCH did I write today?

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<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
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<tr>
<td>Not much.</td>
<td>Some.</td>
<td>About the same.</td>
<td>More than last time.</td>
<td>Lots!</td>
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<tr>
<td>I could have written more and I will next time.</td>
<td>But I can still improve. I'll write even more next time.</td>
<td>I'm doing okay, but I plan to write even more next time.</td>
<td>I'm doing great! I'm writing more words!</td>
<td>I worked really hard today! I'm writing more than I ever have!</td>
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How WELL did I write today?

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<td>3</td>
<td>4</td>
<td>5</td>
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<tr>
<td>Not so good.</td>
<td>Not bad.</td>
<td>About the same.</td>
<td>Better than usual.</td>
<td>Awesome!</td>
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<td>I didn't write a very interesting story today. I can do better, and I will write a really good story next time, because I know I can.</td>
<td>But I can improve, and I will write a great story next time. I can do it.</td>
<td>I plan to write a better story next time, because I know I'm a good writer.</td>
<td>I really am improving! My stories are getting more interesting and fun to read.</td>
<td>I'm a fantastic writer! I can write super stories!</td>
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APPENDIX K

Training Script for Self-Evaluation
Training Script for Self-Evaluation

Introduction

I. Introduction to Self-evaluation Form

A. “Your teachers and parents tell you how you’re doing pretty often, don’t they? But do you ever tell yourself how you’re doing? Well, you’re going to learn how to do just that. It’s called self-evaluation. You’re going to learn how to tell yourself if you need to improve or you’re doing okay, how to tell yourself that you’re getting better, and even how to tell yourself that you’re an awesome writer! We’re going to use this Self-evaluation form.” (Give every student a copy.)

B. “When you’re finished writing your story ending you will read your story and circle one of the items under each question on this self-evaluation form. When you finish, you’ll have two numbers circled and you will have said two things to yourself.”

Teacher Modeling and Role Play

II. Teacher Modeling and Group Practice

A. “With this exercise, you’re deciding for yourself how well you’re doing with your fluency writing. You will be the only one judging your work. This form is designed so that you learn how to give yourself feedback, like giving yourself a pep talk or a pat on the back. You have to decide two things: first, how much you wrote compared to the last time you did a fluency exercise, and second, how well you wrote compared to last time.”

B. “Let’s go through some examples. Remember, as we do these, there are no right or wrong answers. You get to make your own judgment. You just need to make sure that you’re honest to yourself. Now, say you read your story today and you
think that you wrote about as much as you did yesterday. Look at your sheet and find the first question: ‘How much did I write today?’ Put your finger on that question. (Walk around and check for accuracy in pointing.) Remember, you wrote about as much as you did yesterday. Under the first question, ‘How much did I write today?’ you would circle the number ‘3’ and you would say to yourself, ‘I’m doing okay, but I plan to write even more next time.’ (Demonstrate.) Put your finger on the number 3. (Walk around and check for accuracy in pointing.) Now everyone say it with me. Read along on your paper: ‘I’m doing okay, but I plan to write even more next time.’”

C. “Now, let’s say that your story today is about as good as the one you wrote yesterday. It’s about as interesting and fun to read as the one you wrote yesterday. Look at your sheet and find the second question: ‘How well did I write today?’ Put your finger on that question. (Walk around and check for accuracy in pointing.) Remember, you wrote about as well as you did yesterday. Under the second question, ‘How well did I write today?’ you would circle the number ‘3’ and say to yourself, ‘I plan to write an even better story next time, because I know I’m a good writer.’ (Demonstrate.) Everyone say it with me: ‘I plan to write an even better story next time, because I know I’m a good writer.’” (Have students repeat this phrase out loud, as a class first, then individually. Provide encouragement.)

D. “Let’s try another example. Say that you know that you wrote a lot less than last time. You would circle the number ‘1’ under the question, ‘How much did I write today?’ and you would tell yourself, like it says on the paper, ‘I could have written more and I will next time.’ Everyone say it with me. (Repeat the phrase. Call on individual students and ask them to tell what number they would circle if they wrote a lot less than last time, and ask them to repeat the phrase.) Now,
let's say that you read your story and you know that you wrote a story that's not so good compared to last time. Maybe your story doesn't use many descriptive words, or it's really boring. You would probably circle the number '1' under the question, 'How well did I write today?' (Demonstrate, say the phrase, ask the class to repeat, and call on individual students.)

E. “Now, let’s say that you wrote a few sentences today, not as much as last time, but more than a couple of sentences. You probably would circle the number ‘2’ under the question ‘How much did I write today?’ and you would say to yourself, ‘But I can still improve. I’ll write even more next time.’ (Demonstrate, say the phrase, ask the class to repeat, and call on individual students.) The same goes for the question, ‘How well did I write today?’ If you wrote a story that’s not bad, but not as good as last time, then you would circle the number ‘2’ and say to yourself, ‘But I can improve, and I will write a great story next time. I can do it.’” (Demonstrate, say the phrase, ask the class to repeat, and call on individual students.)

F. “What do you think you should do if your story this time is longer than last time? (Solicit input from the group and provide reinforcement for correct answers.)
Right! You would circle the number ‘4’ under the question, ‘How much did I write today?’ and say to yourself, ‘I’m doing great! I’m writing more words!’ Okay, and if your story today is more interesting, more fun to read than usual, what would you do? (Solicit input from the group, providing reinforcement.)
Exactly! You would circle the number ‘4’ under the question, ‘How well did I write today?’ and say to yourself, ‘I really am improving! My stories are getting more interesting and fun to read.’”

G. “Okay, let’s say that you read your story and you realize that you’ve written more than you have ever written before. What do you do? (Solicit input from the
group, providing reinforcement.) Right! You would circle the number '5' under the question, ‘How much did I write today?’ and say to yourself, ‘I worked really hard today! I’m writing more than I ever have!’ And if the story you wrote today is absolutely awesome, what do you do? (Solicit input from the group, providing reinforcement.) Right on! You would circle the number ‘5’ under the question, ‘How well did I write today?’ and say to yourself, ‘I’m a fantastic writer! I can write super stories!”

H. “Let’s review. (Provide scenarios and show what you would circle for each. Allow students to answer and provide feedback.) For each example, ask the question, ‘What would I say to myself then?’ (Make sure that students indicate both circling a number and saying the phrase to themselves. Allow students to answer and provide feedback.)

(Continue to conduct trials until 90% criterion is reached.)

I. “Keep in mind that you are judging your own stories based on how much and how well you know that YOU write. The goal is to make improvements in your own writing, not to assess your writing compared to someone else. So if I usually write about two sentences and today I wrote four, I would probably circle the number ‘4’ under the question, ‘How much did I write today?’ and say to myself, ‘I’m doing great! I’m writing more words!’ But if John (substitute a student’s name here) usually writes about a page and today he writes a page and a half, he might also circle the number ‘4’ and say, ‘I’m doing great! I’m writing more words!’ So even if I don’t write as much as John, I will still be telling myself that I’m doing great, because I’m writing more.”
Practice

I. Out Loud, With Feedback

A. "Now you're going to practice using the Self-evaluation forms and telling yourselves how well you've done. Just for now, you're going to say things to yourself, but out loud, softly, while your teachers walk around and listen. Remember, you may not always circle the same numbers for each question. So, if you wrote more than last time, you would circle the number '4' under the first question, but maybe, even though you wrote more, your story isn't so interesting, so you circle the number '1' under the second question. And don't forget...say the phrases under the number you circle." (Do several trials, one at a time, for example, using each of the following scenarios:

- You wrote more than yesterday and think you wrote a story that's just okay.
- You wrote less than yesterday, but you think your story is more interesting than usual.
- You wrote about the same amount as yesterday but your story is really, really interesting.
- You wrote more words than last time and you think it's one of your best stories.

B. (For each scenario, present the scenario to the class, ask them to place a finger next to the number they would circle, and give themselves reinforcement in a low voice. Walk around the room, providing reinforcement and feedback.)

II. To Themselves

A. "The whole purpose of doing this is so that you can improve your own writing. It really doesn't matter what other students in the class are doing, because
everyone is a different writer. Everyone writes different things, in different ways, so you should focus on making yourself a better writer. For that reason, when you circle a number on the self-evaluation sheet, and tell yourself how you’re doing, you’ll say it just to yourself, in your head. You don’t want other people to hear; you just want to tell yourself. We’re going to practice doing it that way now.”

B. (Introduce the following scenarios one at a time:

- You wrote a lot less than yesterday and think your story is about as interesting as yesterday’s.
- You wrote lots more than yesterday, and you think your story is more interesting than yesterday’s.
- You wrote about the same as yesterday, but your story is pretty boring.
- You wrote more words than you ever have before and you think it’s a really good story, but not one of your most interesting.

C. (After introducing each scenario, ask students to place a finger next to the numbers they would circle, and give themselves reinforcement in their heads, to themselves. Walk around the room, providing encouragement, reinforcement and feedback. Provide reinforcement for those students who cannot be heard self-reinforcing.)

D. “After we write today, we’re going to use this form. Every day, you’ll get a new self-evaluation form out of your folder, read your story, decide how much you wrote compared to last time, circle the right number, and say the phrase to yourself. Then you’ll decide how well you wrote, circle the number, and say the phrase to yourself. We (your teachers) will check your folders to make sure you’re circling a number for each question, but we won’t be deciding whether
you made the right decision. It’s up to you to be honest with yourself so that you can improve.” (After students complete their recording forms for written language, have them fill out the Self-evaluation form. Reinforce students for self-reinforcing so that they could not be heard.)
APPENDIX L

Student Opinion Questionnaire
Student Opinion Questionnaire

Self-Monitoring
1. Did you enjoy self-monitoring your writing?
   _____ Yes
   _____ No

2. Do you think self-monitoring helped you write more?
   _____ Yes
   _____ No

3. Do you think self-monitoring helped you write better?
   _____ Yes
   _____ No

4. Would you like to continue using self-monitoring?
   _____ Yes
   _____ No

5. What did you like best about self-monitoring?

6. What did you like least about self-monitoring?

Self-Evaluation
1. Did you enjoy self-evaluating your writing?
   _____ Yes
   _____ No

2. Do you think self-evaluating helped you write more?
   _____ Yes
   _____ No

3. Do you think self-evaluating helped you write better?
   _____ Yes
   _____ No

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4. Would you like to continue using self-evaluation?
   _____ Yes
   _____ No

5. What did you like best about self-evaluation?

6. What did you like least about self-evaluation?

**Comparison**
1. Which activity did you think helped you more?
   _____ Self-monitoring
   _____ Self-evaluation
   Why?

2. Which activity did you prefer?
   _____ Self-monitoring
   _____ Self-evaluation
   Why?

**CCPP**
1. Did you enjoy having a target and earning classroom money for your writing?
   _____ Yes
   _____ No

2. Do you think self-monitoring helped you write more when you had a target and earned money?
   _____ Yes
   _____ No

3. Do you think self-monitoring helped you write better when you had a target and earned money?
   _____ Yes
   _____ No

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4. Would you like to continue using self-monitoring using a target and earning classroom money?
   _____ Yes
   _____ No

5. What did you like best about self-monitoring when you had a target and earned money?

6. What did you like least about self-monitoring when you had a target and earned money?

**Comparison**

1. Which activity did you think helped you more?
   _____ Self-monitoring without a target and classroom money
   _____ Self-monitoring with a target and classroom money
   Why?

2. Which activity did you prefer?
   _____ Self-monitoring without a target and classroom money
   _____ Self-monitoring with a target and classroom money
   Why?

3. Which did you think helped you more?
   _____ Being given a target
   _____ Choosing your own target
   Why?

4. Which did you prefer?
   _____ Being given a target
   _____ Choosing your own target
   Why?

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Story Starters

1. Do you think you wrote more if you liked the story starter (if you rated it high)?

2. Do you think you wrote less if you didn’t like the story starter (if you rated it low)?

3. Do you think you wrote better if you liked the story starter?

4. Do you think you wrote not as well if you didn’t like the story starter?

5. What were your favorite kinds of story starters?
APPENDIX M

Teacher Opinion Questionnaire
Teacher Opinion Questionnaire

Please mark an “X” on the line for each question to identify the best answer.

**Self-Monitoring**

1. Did you enjoy having self-monitoring implemented in your classroom?
   - Yes
   - No

2. How difficult was self-monitoring to implement in your routine?
   - Very difficult
   - Somewhat difficult
   - Not difficult

3. Do you believe self-monitoring helped your students produce more writing?
   - Yes
   - No

4. Do you believe self-monitoring helped your students produce better writing?
   - Yes
   - No

5. Did your students enjoy self-monitoring?
   - Yes
   - No

6. Would you use self-monitoring in the future?
   - Yes
   - No

7. Please comment on the aspects of self-monitoring that you liked best.

8. Please comment on the aspects of self-monitoring that you did not like.

**Self-Evaluation**

1. Did you enjoy having self-evaluation implemented in your classroom?
   - Yes
   - No

2. How difficult was self-evaluation to implement in your routine?
   - Very difficult
   - Somewhat difficult
   - Not difficult
3. Do you believe self-evaluation helped your students produce more writing?
   _____ Yes
   _____ No

4. Do you believe self-evaluation helped your students produce better writing?
   _____ Yes
   _____ No

4. Did your students enjoy self-evaluation?
   _____ Yes
   _____ No

6. Would you use self-evaluation in the future?
   _____ Yes
   _____ No

7. Please comment on the aspects of self-evaluation that you liked best.

8. Please comment on the aspects of self-evaluation that you did not like.

Comparison
1. Which intervention did you prefer?
   _____ Self-monitoring
   _____ Self-evaluation
   Why?

2. Which intervention do you believe helped your students more?
   _____ Self-monitoring
   _____ Self-evaluation
   Why?

Changing Criteria
1. Did you enjoy having self-monitoring implemented in your classroom when the students had targets and earned classroom money?
   _____ Yes
   _____ No

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2. How difficult was self-monitoring with targets and classroom money to implement in your routine?

   _____ Very difficult
   _____ Somewhat difficult
   _____ Not difficult

3. Do you believe self-monitoring with targets and classroom money helped your students produce more writing?

   _____ Yes
   _____ No

4. Do you believe self-monitoring with targets and classroom money helped your students produce better writing?

   _____ Yes
   _____ No

5. Did your students enjoy self-monitoring with targets and classroom money?

   _____ Yes
   _____ No

6. Would you use self-monitoring with targets and classroom money in the future?

   _____ Yes
   _____ No

7. Please comment on the aspects of self-monitoring with targets and classroom money that you liked best.

8. Please comment on the aspects of self-monitoring with targets and classroom money that you did not like.

**Comparison**

1. Which intervention did you prefer?

   _____ Self-monitoring without targets and classroom money
   _____ Self-monitoring with targets and classroom money

   Why?

2. Which intervention do you believe helped your students more?

   _____ Self-monitoring without targets and classroom money
   _____ Self-monitoring with targets and classroom money

   Why?
3. Do you believe there was a difference between choosing the targets for the students and allowing them to choose their own targets? _____ Yes _____ No

If you do believe there was a difference, please explain.
I saw a fox. It was the size of a house. I was sick green. Blue, purple, orange, yellow, all of the colors I included know I made it up. It had big ears, pretty nose, hairy chin, and a little mouth that he was about to eat me with. He did. He swallowed me whole. I was trying to grab onto something. I was sliding down. The whole, suddenly I grabbed on to his hand. Apple, I was hungry so I took an apple. It didn't taste like an apple, I climbed out of
This month, once per day, I did the menu.

He apologized. He said I was a cat. We became friends.
I just came home in the
night. The mind supplies aParagraph to
catch the piece away from
so I went out with the
prisioner I was in Alaska. I
really didn't like to go
to Alaska, but I was to
be there until I was
in a hurry. I could track
a chipmunk four miles
away to me. The next
time we got a shot and
went to watch a dance
then we had to pack it
up and he ran into this
wood. He had the tumor
on the right side. Then I
tried to help him with
that. And then I knew it
wasn't right, it was ugly
but it kept going and
young and old. I
put it out. I
put it with the broken stick
and now fell down. I ran
to get with the fast.
I yelled at my dad. They took me
He saw miles of woods. So he built himself a cottage. He caught some salmon and had it for dinner. The next day he saw a bear and shot it dead.
Hey, it's a Lambo. I got in a car, yeah. I got on a count of its station and its pedal and steering wheel are on the right side of the car, unlike American cars. Anyway, I got it started. I felt so triumphant since now I could chase that roadrunner in.
a car that has a V-12 engine, and
I pressed down on
that pedal till it hit the floor, and
hard, I heard screaming as I smelled
burning rubber. I eased off the
Rockey the Gray has been airborn a caput of times. But Rockey has jumped off of something. But Rockey has been through all of it. Everything in life. Life at Max. Learn life. Like flying things off a birds feeder. Thats how to hi up. Hi kid in the face like that. 
Student 3, Writing Sample B: End of the study

You can hardly feel it in the hundredfold minds per square yard but you have to land on a aircraft carrier with a headdress if you keep you are just alive. Look I fell it what do you say but if you weight in to the shape of man way would sink so you call the aircraft carrier to come down and the plane. But
there is one.
The hurricane is high.
So in the middle of
If getting on the
other ship carrying
because you are
left to make it
Eldo you fail
that off replac
alike this plane
and you want
to make it because
still on the aircraft carrier
He walks into the woods. The hunter lead the way into the dark black woods. We were walking we heard a strange lightly noise. We keep on walking. We heard the noise again, it sounded like a animal noise.
I am in a battery. Batteries everywhere. I thought I would be in the jungle because there are batteries here. I am walking through the jungle. I see a different kind of battery. Then I hear something in the jungle. I looked around. I heard the slinky noise again. It sounded like drums. Then I started to walk faster and faster. Then I squat the bunny carry a drum and playing the drum. I started to run after the battery bunny. Then he saw me coming to do the druing started to hop real fast.
It was snowing so hard that we could not see the ground. Then we took a break and went outside and the school were out there. Then we had a snowball fight and we were going to go home because it was snowing too hard and we went sledding then we all got up stuff and went home. Then I ate dinner and when I went out side it was dark and I could not.
go sledding. But I did anyway. Way. Then I went down the hill and broke my leg. Then two months.
The plant is called tiny teriyes, I looked at myself and I was a cartoon. So I was walking and I saw twety and Sylvester. So I asked them how do you get back to Earth? And they said this is Earth. But I was in a shed when I came. No you weren't. This is a dream. "What? Ya, heaven in the shed is your dream too!" So I went went.
Twisted and Jewish,
And they were taking to Bugs Bunny. I was confused because was I really dreaming or not? Was I really in the mother world? I had to know. But how was am I going to find out. I didn't know what to do. So I asked Bugs Bunny.
We're at we don't know.
I know we stud
not if came in
the shed after
are we going to.
The foot was slip. We take and step. The Japanese take house come and make food for just. And we went to we're not fake there was a soccer game. It is fun the everybody like it. People got to wear only thing they wanted. People got to do what they wanted.
he caught a dog
later he caught a pig.
It was made of gold
when it hit the jar.
It was the case
of the floor to dare
in the yard and
came on till the gold
he did it more and
more and more and
more. Later
he was stuck and
he caught a yard in
the dog and he had
a clay on the slack
of the dough. He
baked it in the dark
he did a budge house
and he budge for
a long time later
he took all of
the gold slack
well I saw him
come by I was
to go I thought I
could make out
little prick getting
up a little down his
back he sprinted
off after he heard
a sound it
was like a dogs
but not mine and
that they couldind
counter call in one
then a new shade
was chased of
a little creature
the little creature
bellowed the lules
sound "o kes not
being class it
made the skin
creep over my
For long I was
angered to see
it miss my
pet, my "all
brown" Dinger.
He jumped up
and down and
barked, so we
walked home
he been_yapin.
All the way to-
He relented
ager, he had
seen the
Session 1  
You’re at your brother’s cabin on a lake in New Hampshire, in the woods. You heard noises outside. When you went out, you couldn’t believe what you saw...

Session 2  
Two years ago, there was a boy named Alex - a college student. He took all his money, gave it to charity, burned his clothes, took his supplies and a 22-caliber rifle and went to northern Alaska to live and explore. It was rugged country, with lots of animals. A hunter taught him the mountains. He has his shotgun, clothes, and a 5-lb. bag of rice. What happens?

Session 3  
The Buckeye football team is playing Michigan. There are two minutes left in the game. OSU is down by 8. OSU has the ball on their 5 yard line - there are 95 yards to go. It’s the first down. What happens?

Session 4  
You are Rocky the Squirrel. What is it like to be Rocky. Describe a day in the life...

Session 5  
Mark Twain wrote about life on the Mississippi River. While riding on a boat one day, fishing, he caught something. What did he catch?

Session 6  
When I closed the blinds at 1:33 this afternoon, it was really snowing hard. What happened next?

Session 7  
You’re on a plane ride. While flying through the air, listening to your favorite band with your headset. The plane starts shaking. The pilot is saying that everything is okay, but suddenly the plane pitches and starts falling. Then it levels off. The pilot says that the plane is crashing. It crashes, but you’re okay. You walk out - alone - into the middle of the Amazon Rain Forest. What happens?

Session 8  
Pretend you have a pet. You wake up one day. Something is different. You have an itch on your back and you’re scratching it with your teeth. You discover that you’ve switched bodies with your pet. What happens?

Session 9  
You have a crazy uncle. He’s nuts - like an old, mad scientist. You went into his basement and found rows of test tubes with clear liquid. You picked one up and smelled it. It smelled sweet, so you drank it. All of a sudden, you feel a weird sensation. You can hear better, see better - your senses are heightened. What happens?

Session 10  
You come out of a scary movie in the city one night. You were with a friend, but you and your friend part company. It’s a dark, misty night. You’re walking home. You make a turn, and you hear someone following you. You turn a corner and the footsteps keep coming, so you turn another corner, but they’re still coming. You’re getting scared. It looks like a guy in a trench coat. You run into an alley and jump into a dumpster...
11 You’re in a Star Wars movie, with Leah, Luke, Han Solo, and Chewbacca. You’ve been running from the Storm Troupers and you ran into a trash compactor to hide. The walls are beginning to smash together...

12 Topic was not recorded for this session.

13 During the Civil War, it’s the battle at Gettysburg - Pickett’s charge. Pretend you are a soldier being shot at by Union cannons.

14 Your friend has a jungle in his back yard. You go over there and you discover a shed as it gets dark. There is a faint shimmer from the shed. You enter and suddenly you are on a different planet...

15 You’re going out to eat - anywhere you want to go. You get to take your favorite star with you (actor, actress, movie star, singer). What happens?

16 You’re on a class field trip, on the bus. All of a sudden, the bus gets a flat tire, and the driver discovers that there is no jack. What happens?

17 Topic was not recorded for this session.

18 You’re watching a scary movie and suddenly you find yourself in the movie...

19 You come to school one day, and your teachers go outside. They come back in with candy - like Pez. You eat it, and in 10 seconds you’re all a half inch high. Your teachers scoop you up in fish nets and throw you into the fish tank (there are no man-eating fish in it). What happens?

20 You go to visit your crazy uncle over the break. You’re going through his garage and hear a strange noise. It’s your uncle, driving a tractor-like machine with a huge drill bit on it. You jump into the cab and your uncle starts to drill a hole in the ground. He drilled into the center of the Earth and you find out that it’s hollow. Inside there is land, mountains. You’re on a beach, on a new continent. You see dinosaurs...

21 A Native American visitor - a medicine woman - comes to our classroom. He has magical powers. It gets dark and begins thundering outside. The medicine woman offers to let you be whatever animal you want to be for a day, but if you get eaten while an animal, you won’t come back...

22 If you could go anywhere in the world during Spring break, where would you go? What would you do?

23 One day you walk into COSI. You’re the only one there. You walk into the dinosaur exhibit. The door locks behind you. All of a sudden, one of the dinosaurs comes alive - a pterodactyl...

24 You’re going hiking. You can carry 30 pounds in your backpack - food, water, supplies. You can travel about 100 miles in 5 days. You’re trying to get to your teacher’s wedding on time. You packed a suit, tie, shoes, all your dress clothes, in your backpack. Explain how your trip goes.
You decide to go camping one summer, so you pack all your gear, your food, water, and clothes. You go deep into the woods, hiking for hours, until exhausted, you find a clearing. You start setting up camp. You're setting up your tent. All of a sudden, you hear a noise in the trees. You look up and something huge, something you can't identify, running toward you. You start running...

Close your eyes and use your imagination. You grew up in an ancient kingdom, where women had the same rights as men. You're a knight. Your job is to protect the kingdom. You get to slay dragons and swamp slugs. One day, there is an alarm, but you don't know what's going on. You're sent to a deserted field with a person in it. It's a wizard, wearing black. He says, "I have a test for you." Suddenly your best friend is below you. You are a dragon and you have an overwhelming desire to kill your friend. Your friend yells that he has to kill you...

It's WW2 and you're a fighter pilot. You're in a dog fight. You just spotted enemy planes, but suddenly your flight instrument panel goes dead...

You go to the Mischief Cafe and order a chocolate shake. When you finish it, you go outside. A man is walking by with a dog. The dog wags his tail, and the man says, "Thanks," to you. You think it's strange, but you keep on walking. You see a guy waxing his car and he says, "Hey, who are you? Why did you say that?" You discover that every time you think something, people can hear what you thought...

You're at home and there's a knock on your door. It's the CIA. Your parents aren't home. The CIA guys tell you that there's lots of crime and hunger in the world, and they're looking for a new superhero. You're the perfect candidate. They give you pills - one for each day. What kind of superhero are you? What do you do? (If you're evil, you will self-destruct.)

You're riding down a country road with your friends. You start making fun of one of them. They stop the car, push you out, and leave. You're far from any house or store. Should you hitchhike, jump in the woods, or what will you do if a car comes? How will you get home safely?

You're in Alaska, hiking with your best friend. You're climbing a mountain and a storm blows up. You dig a snow shelter into the ground - like a snow cave. You each have one day's worth of food. As you settle in for the storm, you hear howling outside. It's a pack of wolves...

Pretend that you are an underwater diver, a biologist. You're searching for new creatures along the Great Barrier Reef. Suddenly, you see something you've never seen before, so you go to check it out. It's swimming at you...

One day, you're snorkeling and you see some fish that blow bubbles like bubble gum. Are they nice? Do they talk? Will they attack?...
34 Bob and Marsha (two baby chickens) are in a car, driving, when something happens to the car - it stops running. They pop open the hood to see what’s wrong. It doesn’t run because the radiator is busted. Bob, a handy mechanic, fixes it. They jump into the car and drive away. Suddenly they’re not in the same place. It’s a mystical place. Describe what happens to them.

35 You, a friend, and your dog are in a jeep, driving through the desert. The jeep breaks down. You have very little food and water. You realize that you have to use the water to either fix the radiator, or to drink. What will you do?

36 Topic was not recorded for this session.

37 Topic was not recorded for this session.

38 You’re on an African Safari. You stop and get out of your jeep (or Hummer). You’re hunting tigers. You hear a furious roar, but not from a lion - from something you’ve never heard before. It’s a killer mouse - but it’s a small mouse - the size of a real mouse. It starts chasing you...

39 You find yourself on a long highway, on a gray day, walking. You don’t remember anything. There are lights coming toward you. It’s a black cadillac and an old man is driving it. You get in. Suddenly, you’re in front of your house, but you didn’t give the old man directions. There’s no one around. There’s no wind. Everything’s different. You can’t remember what the old guy looked like. What happens next?

40 You’re on the Titanic, fishing. You hit a big catch. You’re reeling it in, really excited, when the boat hits an iceburg. What do you do?

41 It’s Spring break. You’re playing catch, and you see a really big bird fly overhead. It’s a dragon. You run inside and turn on the TV. The news announcer is reporting dragon sightings. Apparently, a wizard (sorcerer, magician) opened a passage to this land. He’s trying to take over the world with his creatures. That night, you’re dreaming. A fuzzy creature come to you and gives you magic powers. You have to save the world...

42 You’re sleeping, but something wakes you up. You hear a noise downstairs. The only people in the house are kids - your parents are out for the night. Someone is in the house with you. What do you do?

43 You’re in charge of monitoring asteroids and you have to let the Dept. of Defense/War know if asteroids are going to hit Earth. You plot their courses. One day, you see a large asteroid coming toward Earth. Who will you alert? How will you stop it? Earth’s existence is in your hands...

44 You’re in a canoe on the Colorado River, in the Grand Canyon. The water is really clear. You keep going, and the water starts getting faster and is brown and muddy. It’s starting to rise and rise... What are you going to do? There are rock walls on both sides of you. You have to canoe down the river. You have paddles and a life jacket, and your friend is with you...
You’re hiking. On the second day, it’s pouring. You’re wet, cold, and hungry. You come to a stream, but it’s now a raging river, so you can’t jump from stone to stone. There’s no bridge, and no car. You need to cross, so what do you do?

Pretend you are one of a group of birds, Painted Buntings, that are migrating north from South America. You fly over large bodies of water and occasionally stop in gardens or fields. The flight is dangerous. There are other birds you encounter, like hawks, eagles, and osprey. Describe your migration as a Painted Bunting. You’re in Peru and need to get to Florida...

We’re going to Greenlawn Cemetery to watch birds. You see the rarest bird in North America. You describe it to us, but we don’t believe you. You have to convince us of what you saw...

WW2. We bombed Japan. But what would the U.S. be like today if the Japanese had won WW2?...

You’re a U.S. Air Force pilot. There is a hurricane in the ocean. You’re flying over the ocean, and you’re running out of gas. You’re trying to land your plane on an Air Craft Carrier. What happens?

You’re at home watching TV. The President of the United States comes on. The U.S. is in a serious state of emergency. A comet will hit Earth in one year. It’s the size of Texas. All life will be destroyed in four months. There will be no sunlight. You have one year to plan, prepare, make peace. There are 800,000 people in the U.S. who will be chosen to live in caves in the Rocky Mountains. Supplies are there, enough for two years. You’ll get a phone call if you’ve been chosen. If you’re chosen, what will life be like? If you don’t get called, what would you do for your last year of life?

You’re on a safari, hunting the elusive Pillsbury Dough Boy. You have rubber bullets in your gun, and you try to knock him out. Whenever you hit him in the tummy with a rubber bullet, he giggles. He has a gun, too, that shoots dough balls at you. The dough balls hit you in the eye and temporarily blind you. Then you have to wipe the dough out of your eyes and find him again. Tell about your safari...

You are Wiley Coyote, chasing the Road Runner. You receive an ACME box. What is the new contraption that will help you catch the elusive Road Runner?

It’s your first day of class at school. There is a new class, with a new type of students. You walk by the new room, and it’s full of cartoon characters. The teacher is the Grinch. What is school going to be like this year?

Close your eyes. If things were perfect in this classroom, what would the classroom look like, feel like? Would it be safe, comfortable? Describe what you believe would be the ideal classroom...
Mark Twain wrote about life on the Mississippi River. While riding on a boat one day, fishing, he caught something. What did he catch?

You come out of a scary movie in the city one night. You were with a friend, but you and your friend part company. It’s a dark, misty night. You’re walking home. You make a turn, and you hear someone following you. You turn a corner and the footsteps keep coming, so you turn another corner, but they’re still coming. You’re getting scared. It looks like a guy in a trench coat. You run into an alley and jump into a dumpster.

Your friend has a jungle in his back yard. You go over there and you discover a shed as it gets dark. There is a faint shimmer from the shed. You enter and suddenly you are on a different planet.

You’re going out to eat - anywhere you want to go. You get to take your favorite star with you (actor, actress, movie star, singer). What happens?

It is your job to find and capture the Energizer Bunny and bring it back to your boss. Every time you almost catch it, it somehow gets away. Describe what happens...

Next Thursday is Field Day. The school principal gives you $5000 and tells you to plan the Field Day. What do you do? You have to plan food, activities, everything. Who would you bring in? Comedians? zoo animals?...

Pretend for one day you get to skip school and go to a golf tournament. You get to carry Tiger Woods’ clubs. You also give him advice. Explain your day. What do you think will happen? Will he win?
APPENDIX P

Daily Writing Prompts
When You Write...

- Write neatly.
- Write as much as you can.
- Use complete sentences.
- Use as many descriptive words as you can.