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

A Thesis
Presented in Partial Fulfillment of the Requirements for
the Degree Master of Arts in the
Graduate School of The Ohio State University

By
Laura Harkness Wolfe, B.A.

****

The Ohio State University
1997

Master’s Examination Committee:
Dr. Timothy E. Heron, Adviser
Dr. John O. Cooper

Approved by

Adviser
School of Physical Activity
and Educational Services
College of Education
ABSTRACT

This study examined the effects of self-monitoring on student on-task behavior and written language performance. The subjects were four male learning disabled elementary school students. This study took place in a resource room containing twelve male students with learning disabilities in an urban elementary school. Self-monitoring procedures for on-task behavior included listening to a tone recorded at 60-second intervals and responding to the question, "Am I on-task?" Responses were recorded by the students. The procedures for self-monitoring of written language performance involved the students writing for a 10-minute session, counting and graphing the number of words they had written. The changing criterion with public posting condition involved the experimenter setting a goal for each student for the number of words written in the 10-minute session, then posting whether students met their goals. During baseline conditions, the experimenter collected data on student on-task behavior and written language performance. During the self-monitoring conditions, the students monitored their on-task behavior and written language performance simultaneously.

While the results show a functional relationship between self-monitoring and on-task behavior, the data for the relationship between self-monitoring and written language performance were less compelling. The increase in written language performance during the self-monitoring alone conditions was only slight however, it was greater upon introduction of the changing criterion with public posting condition.

The results suggest that self-monitoring is a powerful procedure for changing on-task behavior; however, further research needs to be conducted to determine the conditions that would produce the same effects for written language performance. Several implications for students, teachers, and parent training were discussed.
ACKNOWLEDGMENTS

I wish to express my sincere appreciation and gratitude to Dr. Timothy Heron for his support, inspiration, and guidance throughout my coursework and the writing of this thesis. I would like to thank Dr. John Cooper for serving as the second reader. I would also like to thank Yvonne Goddard for her support throughout the study. To my parents and family go many thanks for their enthusiasm and encouragement. To my husband, Tyler, I give special thanks for his assistance and loving support throughout the study.
VITA

July 3, 1967................................................. Born - Gainesville, Florida

1989.......................................................... B.S. In Psychology and
Sociology, Miami University,
Oxford, Ohio

1992.......................................................... Certification in Psychology,
Sociology, Specific Learning
Disabilities, and Reading,
Capital University, Columbus,
Ohio

1992-1994.................................................. Teacher for Specific Learning
Disabled, Briggs High
School, Columbus, Ohio

1994-Present.............................................. Teacher for Specific Learning
Disabled, Binns Elementary,
Columbus, Ohio

FIELDS OF STUDY

Major Field: Education
# TABLE OF CONTENTS

ABSTRACT .................................................................................................................... ii

ACKNOWLEDGEMENTS ............................................................................................... iii

VITA ................................................................................................................................ iv

LIST OF FIGURES ......................................................................................................... vii

LIST OF TABLES ........................................................................................................ viii

CHAPTER

1. INTRODUCTION ........................................................................................................ 9
   Purpose of the Study .................................................................................................. 11
   Research Questions .................................................................................................. 12
   Literature Review ..................................................................................................... 13
      Self-monitoring Defined ....................................................................................... 13
      Advantages of Self-monitoring ........................................................................... 14
      On-task Behavior ................................................................................................. 17
      Academic Performance ......................................................................................... 22
      Generality ............................................................................................................. 24
      Social Validity ....................................................................................................... 27

2. METHOD .................................................................................................................... 31
   Subjects ..................................................................................................................... 31
   Setting ....................................................................................................................... 32
   Experimenter ............................................................................................................ 34
   Dependent Variables ............................................................................................... 34
   Interobserver Agreement Procedures ...................................................................... 35
   Materials .................................................................................................................. 36
   Experimental Design ............................................................................................... 36
   Procedures ............................................................................................................... 39
Social Validity ........................................................................................................... 41

3. RESULTS .............................................................................................................. 42
   Interobserver Agreement .................................................................................. 42
   Student 1 ........................................................................................................... 48
   Student 2 ........................................................................................................... 53
   Student 3 ........................................................................................................... 57
   Student 4 ........................................................................................................... 61
   Generality ......................................................................................................... 65
   Social Validity .................................................................................................. 66

4. DISCUSSION ....................................................................................................... 68
   Research Questions .......................................................................................... 68
   Limitations ........................................................................................................ 73
   Implications ...................................................................................................... 74
   Suggestions for Future Research ................................................................. 76
   Summary .......................................................................................................... 78

LIST OF REFERENCES ............................................................................................. 80

APPENDICES .......................................................................................................... 87

A. Classroom schematic ...................................................................................... 88
B. Student recording sheet for on-task behavior .............................................. 89
C. Student recording sheet for written language performance ................... 90
D. Procedural interobserver agreement form ..................................................... 91
E. Training script for self-monitoring on-task behavior ................................... 92
F. Training script for self-monitoring written language performance ........... 95
G. Student opinion questionnaire ...................................................................... 97
H. Teacher opinion questionnaire .................................................................... 98
I. Mainstream teacher questionnaire ............................................................... 99
## LIST OF FIGURES

<table>
<thead>
<tr>
<th>FIGURES</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Percentage on-task behavior for Student 1</td>
<td>49</td>
</tr>
<tr>
<td>2. Written language performance for Student 1</td>
<td>51</td>
</tr>
<tr>
<td>3. Percentage on-task behavior for Student 2</td>
<td>54</td>
</tr>
<tr>
<td>4. Written language performance for Student 2</td>
<td>56</td>
</tr>
<tr>
<td>5. Percentage on-task behavior for Student 3</td>
<td>58</td>
</tr>
<tr>
<td>6. Written language performance for Student 3</td>
<td>60</td>
</tr>
<tr>
<td>7. Percentage on-task behavior for Student 4</td>
<td>62</td>
</tr>
<tr>
<td>8. Written language performance for Student 4</td>
<td>64</td>
</tr>
</tbody>
</table>
## LIST OF TABLES

<table>
<thead>
<tr>
<th>TABLE</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Description of Subjects</td>
<td>33</td>
</tr>
<tr>
<td>2. Interobserver Agreement: Experimenter Data and Second Observer Data for On-task Behavior</td>
<td>43</td>
</tr>
<tr>
<td>3. Interobserver Agreement: Experimenter Data and Second Observer Data for Written Language Performance</td>
<td>44</td>
</tr>
<tr>
<td>4. Interobserver Agreement: Experimenter Data and Student Data for On-task Behavior</td>
<td>46</td>
</tr>
<tr>
<td>5. Interobserver Agreement: Experimenter Data and Student Data for Written Language Performance</td>
<td>47</td>
</tr>
</tbody>
</table>
CHAPTER 1

INTRODUCTION

In everyday life, people monitor their own behavior frequently. For example, some may use a “to do” list to monitor necessary and accomplished tasks; a checkbook register allows them to monitor spending behavior; and a training log documents efforts toward a goal. Self-monitoring is widely accepted as a valuable skill for children with learning disabilities because it sets the occasion for students to be accountable for their behavior while giving visual, concrete feedback on their improved efforts. Because self-monitoring is transportable, it is ideal for students with learning disabilities; they can take it with them to a mainstream classroom, and use it in their personal lives.

In inclusive classrooms, the teacher’s role becomes more complex. The students come to this type of classroom with a wide variety of needs, and the teacher must meet the needs of each student. This task can seem insurmountable. Traditional methods of behavior change are not sufficient in this arrangement due to the individuality. Even in traditional or contained classrooms, conventional behavior change techniques may become stale and worn out. There is significant need in today’s classrooms for alternative methods for students to change their own behavior.
One way to meet needs is providing students with more of the responsibility. There are several field-tested strategies where the students assume more responsibility. Self-monitoring is one such procedure.

Self-monitoring can be used to either increase or decrease behavior. It has been used to change many behaviors from reducing overeating (Lipinski, Black, Nelson & Ciminerro, 1975), to increasing many academic behaviors. There have been several studies focused on increasing on-task behavior (Blick & Test, 1987; Cotterman, 1993; Hallahan & Saponia, 1983; Harris, 1986; Lloyd, Bateman, Landrum & Hallahan, 1989; Reid & Harris, 1993). Another large area of research using self-monitoring focuses on increasing academic performance. Several studies have been conducted to determine whether self-monitoring has an effect on the rate of academic performance (DiGangi, Maag & Rutherford, 1991; Hallahan, Lloyd, Kneedler, & Marshall, 1982; Reid & Harris, 1993). The most common subject area for self-monitoring of academic performance is arithmetic.

Several studies have now been conducted comparing self-monitoring of on-task behavior and self-monitoring of academic performance on on-task behavior and academic performance (Harris, 1986; Harris, Graham, Reid, McElroy, & Hamby, 1994; Lloyd et al., 1989; Maag, Reid, & DiGangi, 1993; Reid & Harris, 1993). There is consensus that self-monitoring increase on-task behavior and academic performance. Regardless of subject matter, self-monitoring sets the occasion for an improved student performance. While most of the studies used arithmetic as a measure of academic performance (Lloyd et al., 1994; Maag et al., 1993), the studies that Harris has conducted focus on written
language, including, correct spelling practices. (Harris, 1986b; Harris et al., 1994).

In the Harris et al., Exp. 2 (1994) study, the research questions examined the effects of self-monitoring on-task behavior vs. self-monitoring academic performance on on-task behavior and productivity. The academic performance measure was derived from the number of words in stories. The subjects were learning disabled students who ranged in age from 10 to 12 years old. The setting was a self-contained classroom. The procedures included students monitoring their own on-task behavior and productivity. They also employed a measure of the quality of the students' writing. The results showed that both self-monitoring activities increased on-task behavior, number of words, and quality ratings, a quantitative score for the quality of the writing. There did not appear to be a difference between the self-monitoring activities for any measure (Harris et al., 1994, Exp. 2).

In sum, when self-monitoring is used systematically in a classroom setting, it can be a powerful technique for changing behavior. Today's classrooms require methods for changing behavior that allow the student to assume more responsibility. Self-monitoring meets these needs, and it has been proven to be effective, transportable and cost efficient.

Purpose of the Study

Much research has been conducted using self-monitoring techniques. Consensus has been reached that self-monitoring of on-task behavior and academic performance increase on-task behavior and academic performance. While a great deal of research has been conducted using an arithmetic measure for academic performance, there is much less evidence reported in the literature using a written language measure. There have been
only three studies in the past twenty years, conducted approximately every ten years, examining the effects of self-monitoring on written language. Students, in general, have difficulty becoming competent writers, but when a student is learning disabled, this task becomes exponentially more difficult. Many students will resign themselves to the fact that they cannot write and thus cease any effort. Self-monitoring may not only motivate the students to write more (Harris et al., 1994), but it may also provide immediate, concrete feedback. The present study is a systematic replication of the Harris et al. (1994), experiment 2 study as it involves using self-monitoring to increase on-task behavior and written language performance. As in the Harris et al. study, the present study examines the effects of self-monitoring on both on-task behavior and number of words written by elementary school students with learning disabilities.

Research Questions

1. What effect will self-monitoring on-task behavior have on student on-task behavior?
2. What effect will self-monitoring academic performance have on written language performance?
3. What effect does self-monitoring instruction have on students’ on-task behavior in other classrooms?
4. What effect does self-monitoring instruction have on students’ written language performance in other classrooms?
5. Will the students view the self-monitoring activities positively?
6. Will the teacher view the self-monitoring activities positively?
7. Will the mainstream teachers view the self-monitoring activities favorably?
LITERATURE REVIEW

Self-monitoring Defined

Although self-monitoring has been defined in a variety of ways, it is generally thought to consist of two elements: self-observation and self-recording. The first element involves the subject discriminating whether the target behavior has occurred. In the second, the subject must record or chart these occurrences and nonoccurrences (DiGangi et al., 1991; Harris et al., 1994; Harris, 1986; Mace & Kratchowill, 1988; Nelson, 1977). Other researchers suggested the term self-evaluation, comparing one’s own behavior to a standard (Thorensen & Mahoney, 1974). Many other studies refer to self-recording, where subjects also discriminate occurrences and nonoccurrences of a target behavior, (Lloyd et al., 1989). For example, in the Lloyd et al., study, the subjects recorded their own productivity and attention to task. Other terms used in relation to self-monitoring are self-evaluation, self-control, and self-management.

Self-management and self-control are similar terms describing the use of self-monitoring in a greater effort to change one’s own behavior. Self-management 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). Self-management involves not only self-observation and recording, but also self-reinforcement.

Reactivity. Self-monitoring was originally used as an assessment procedure designed to allow psychologists to gain insight into patients’ behaviors, cognitions, or feelings to determine the effectiveness of interventions (Reid & Harris, 1993). It was found that being aware of and recording behaviors caused changes in the frequency of occurrence (Nelson & Hayes, 1981). This reactive effect intrigued practitioners and researchers, and because of this reactivity, self-monitoring has become a major therapeutic
intervention (DiGangi et al., 1991). Lipinski et al. (1975) saw self-monitoring or self-recording as serving two functions: to alter behaviors in therapeutic directions and to assess behavioral frequencies in the natural environment.

Currently self-monitoring is used as a procedure for changing behavior due to its reactivity, or its ability to alter a behavior simply through self-observation and self-recording. Because of this reactivity, self-monitoring has been called “the lifeblood of effective self-control methods” (Thorensen & Mahoney, 1974). The subject seemingly becomes more aware of the target behavior and thus its frequency changes (Nelson & Hayes, 1981). Reactivity is desirable because it almost always creates change in a desired or positive direction (Cooper et al., 1987, p.524). The more obtrusive an observation and measurement method, the greater the likelihood of reactivity (Kazdin, 1974). Because the subject in a behavior change effort is also the recorder and observer, obtrusiveness is at its fullest and there is a good chance for reactivity (Cooper et al., 1987).

Advantages of Self-monitoring

Self-monitoring has many advantages. It is effective for a variety of target behaviors, it is motivating, it is portable, it develops independence, it aids in classroom management, and it is learner centered. Self-monitoring is widely accepted as being an effective procedure for behavior change. Self-monitoring has historically been viewed as an important and valuable variable and, more recently, as a critical component of child development and learning (Zimmerman & Schunk, 1989). It allows the students to become aware of and responsible for their behavior.

Effective. Self-monitoring techniques can be used for a variety of target behaviors. It has increased the frequency of such behaviors as: class participation (Gottman & McFall, 1972), parent attention to appropriate child behaviors (Herbert & Baer, 1972), and swimming practice attendance and performance (McKenzie & Rushall, 1974).
variety of academic behaviors have also been increased by use of self-monitoring: on-task behavior (DiGangi et al., 1991; Hallahan & Lloyd, 1984; Hallahan, Lloyd, Kosiewicz, Kauffman, & Graves, 1979 Hallahan, Marshall, & Lloyd, 1981; Hallahan, & Sapon, 1983; Lloyd et al., 1989; Reid & Harris, 1993; Rooney, Prater, Joy, Chilman, Temple, & Miller, 1991;), arithmetic quantity (Dunlap & Dunlap, 1989; Lloyd et al., 1989; Maag et al., 1993), quantity of writing (Harris et al., 1994), quality of writing (Ballard & Glynn, 1975; Harris et al., 1994), and spelling practices (Harris, 1986; Reid & Harris, 1993; Harris, 1994). Self-monitoring has also been used to decrease the frequency of undesirable behaviors: talking out in the classroom (Broden, Hall, & Mitts, 1971), smoking (McFall & Hamm, 1971), and face touching (Lipinski & Nelson, 1974).

Self-motivating. Students find self-monitoring motivating. They must not look to others to control their behavior, but they prove to themselves that they can control their own behavior. The procedures are especially helpful for learning disabled students as it teaches them that they can control their behavior, it need not always be regulated by others (Graham, Harris & Reid, 1992).

Portable. Once trained in self-monitoring techniques, students can carry these skills with them throughout their educational, career, and personal lives. Self-monitoring skills are completely portable as once they are learned, they are part of the student’s repertoire and he can employ them whenever necessary.

Leads to independence. Self-monitoring develops skills within the learner that lead to independence. “Self-regulated learning reveals planfulness, control, and reflection; it indicates competence and independence, which are virtues that are prized on the developmental path to maturity” (Paris & Newman, 1990, p. 87). The students’ awareness of their behavior and their ability to change allows them control, which they have henceforth left to someone else, usually a parent or teacher. They begin to realize
their own strength and ability to control themselves.

Aids in classroom management. Because the students gain the ability to monitor or regulate their behavior, the classroom teacher can shift attention to other tasks. The teacher may aid in the students' self-monitoring program by discussion of appropriate target behaviors, gathering materials needed, and maybe providing a cuing device, but the students are in charge of monitoring their own behavior.

Learner centered. Self-monitoring is "the life blood of effective self control methods," (Thorensen & Mahoney, 1974). This learner centered instruction technique makes students active participants as they evaluate, record, and reinforce positive behavior (Christie, Hiss & Lozanoff, 1984).

Efficacy research in school-based settings. There has been much research on the use of self-monitoring as a procedure for behavior change. Research has been conducted at the elementary level (Ballard & Glynn, 1975; DiGangi, 1991; Dunlap & Dunlap, 1989; Gickling & Armstrong, 1978; Hallahan et al., 1981; Hallahan et al., 1979; Harris et al., 1994; Harris, 1986; Lloyd et al., 1989; Lloyd, Hallahan, Kosiewicz & Kneedler, 1982; Maag et al., 1993; Reid & Harris, 1993; Rhode, Morgan, & Young, 1983; Rooney, Polloway, & Hallahan, 1985; Watson, 1996), the middle school level (Broden et al., 1971; Prater et al., 1991), the high school level (Blick & Test, 1987), the college level (Lipinski et al., 1975) and with adults (Ackerman & Shapiro, 1984). While the bulk of research seems to be with students with disabilities, there have been a few studies with students without disabilities (Ballard & Glynn, 1975; Broden et al., 1971; Christie et al., 1984; Lipinski et al., 1975). Still, self-monitoring has been used with a variety of disability areas, learning disabled students (Blick & Test, 1987; DiGangi et al., 1991; Dunlap & Dunlap, 1989; Hallahan et al, 1981: Harris et al., 1994; Reid & Harris, 1993), mentally retarded students (Ackerman & Shapiro, 1984; Agran, Fodor-Davis, Moore, & Deer, 1989; Blick
& Test, 1987), and students with severe emotional disturbance (behavior disabilities) (Blick & Test, 1987, Lloyd et al., 1989; Rhode et al., 1983; Watson, 1996). Research on self-monitoring has been conducted in varied settings: regular classrooms (Ballard & Glynn, 1975; Broden et al., 1971; DiGangi et al., 1991 Lipinski et al., 1975), special education classrooms (Blick & Test, 1987; Dunlap & Dunlap, 1989; Hallahan et al., 1981; Harris, 1986; Lloyd et al., 1989), a sheltered workshop (Ackerman & Shapiro, 1984), and mainstream settings (Maag et al., 1993; Prater et al., 1991).

**Accuracy in recording.** In any self-monitoring study, consideration must be given to the relationship of accuracy of student recording and the effectiveness of self-monitoring. However, there is some debate about this issue. Some researchers state that consistency with which the same behavior is recorded is more important than accuracy of recording (Rooney et al., 1984); others have seen an increase in on-task behavior when accuracy was stressed (Hallahan & Sapon, 1983; Rhode et al., 1983).

**Summary.** Self-monitoring involves students observing and recording their own behavior. This awareness leads to a change in behavior, a phenomenon called reactivity. Due to reactivity, self-monitoring is an effective procedure for changing behavior. It is ideal for learning disabled students as it is portable, they can use it wherever they are. Self-monitoring leads to independence as it teaches students to monitor their own behavior, not to rely on others. Teacher responsibility can shift to other areas. Research supports self-monitoring at all grade levels, even adulthood, and in a variety of settings. Self-monitoring has been used in regular classrooms, contained special education classrooms, and mainstream settings.

**On-task Behavior**

On-task behavior involves the student attending to the ongoing instructional activity (Heward, 1994). Advantages of increasing on-task behavior can be found for
students and teachers. For instance, if the students are on-task, the teacher can focus attention on other areas. The notion of on-task behavior has created controversy in research. There has been discussion on the definition of on-task, self-monitoring of on-task, and the effects of self-monitoring on-task v. self-monitoring academic performance. There seems to be consensus that appropriate on-task behavior is necessary, in a school setting, but not sufficient for increased academic productivity.

Advantages of increased on-task behavior. Increased time on-task has benefits for students and teachers. The more time spent attending to instructional material, the more opportunities for learning can occur. The classroom can become more academic as there are fewer behavioral concerns. Self-monitoring of on-task allows students to take control of their on-task behavior, and has been shown to increase academic productivity (Hallahan & Saponà, 1983; Hallahan et al., 1979; Lloyd et al., 1982). Increased on-task behavior sets the occasion for an increased opportunity for learning. Research has shown that if teachers can help students (learning disabled, developmentally handicapped, and behavior handicapped in particular) increase their on-task behavior, learning increases (Gettigier & Fayne, 1982; McKinney, Mason, Perkerson & Clifford, 1975). Increased on-task behavior frees teachers to concentrate on academics rather than behavior management (Rhode et al., 1983; Rosenbaum & Drabman, 1979).

On-task behavior defined. On-task behavior has been a controversial phenomenon in the behavioral research. It is seen as an important skill for classroom management, but the controversy lies in the definition of on-task, and perhaps more so in how on-task behavior affects productivity. There is some consensus that increased productivity leads to increased on-task behavior, but the inverse is not held as widely as true. Targeting academic skills is said to be a parsimonious intervention, because improving academic skills often results in both improved performance and reduced off-task behavior, however
the reverse is not necessarily true (Broughton & Lahey, 1978; Klein, 1979; Ruggles & LeBlanc, 1982). It seems that while on-task behavior may be necessary for increased learning to occur, it is not sufficient, there are many other variables involved.

Lloyd et al. (1989), defined on-task behavior as including two dimensions: “(a) what the pupil was doing with their hands (e.g., manipulating a writing instrument, holding other objects, raising his or her hand, counting fingers, or using his or her hands in some other activity), and (b) at what the students’ eyes were directed (e.g., assigned work, the teacher, peers, or non-academic objects or simply looking around)” (p.317). Kimball (1994) believed that recording on-task behavior can be problematic. He states that “it is traditionally considered better practice (i.e., easier, more accurate) to record the presence of a response rather than its absence” (p.97). He argues that recording on-task behavior does not account for thinking pauses. For example, a student could be recorded as off-task because he was looking out the window, when in fact he could be thinking about the assignment. Kimball (1994), asserts that “Such a possibility is often not accounted for in definitions of active on-task responses (thereby underestimating the behavior and providing an inadvertently conservative measure); if it is accounted for, it requires a subjective judgment” (p. 97). Kimball (1994), chose to record “blatantly off-task behavior” (p. 97), which was recorded “whenever a student was observed doing any of the following: (a) being out of seat (e.g., standing up or walking around); (b) talking to his/her self or others; (c) making inappropriate or idiosyncratic vocalizations (e.g., laughing, singing); (d) being disruptive by audibly banging on desk or floor or by making physical contact with another person; and (e) having his/her head on his/her desk and/or sleeping” (p.97-98).
**Self-monitoring of on-task behavior.** The controversy continues as some researchers believe that self-monitoring of on-task behavior or attention is limited in its effects because it does not teach what paying attention is, but encourages the behavior. Students who know what paying attention is, can do it without self-monitoring. Snider (1987), said “Self-monitoring of attention... will only benefit students who have already acquired the academic skills necessary to perform a given task.... Self-monitoring of attention must be preceded by knowledge of what to pay attention to” (p.149). Hallahan and Lloyd (1987), counter this argument by stating “that for some learning disabled students, knowing what to pay attention to is not a sufficient condition for academic learning... although attention is not a sufficient ingredient, it is undoubtedly a prerequisite for appropriate academic performance” (pp.153-154).

**Effects of self-monitoring of attention on academic performance.** While self-monitoring of attention is frequently used simultaneously with self-monitoring of academic performance, increased academic performance tends to lead to increased on-task behavior. The converse is generally not necessarily true. In one of the original studies to measure academic performance at the same time as measuring on-task, Hallahan et al. (1979), found that correct arithmetic and handwriting performance improved when on-task was self-monitored. Lloyd et al.(1982), found similar results with math performance. Academic performance improved in these studies when on-task behavior was self-monitored.

On the other hand, Hallahan et al. (1982) and Lloyd et al. (1982) did not find that improvements in on-task lead to increase in performance. This supports the findings of Broughton & Lahey (1978); Klein (1979); and Ruggles & LeBlanc (1982), that increased on-task behavior does not necessarily lead to increased academic performance.
Comparison of self-monitoring of attention and self-monitoring of academic performance. There have been several studies comparing self-monitoring of attention and academic performance, (Harris, 1986; Lloyd et al., 1989; Maag et al., 1993; Reid & Harris, 1993; Roberts & Nelson, 1981; and Rooney et al., 1985) however, there has been criticism that this body of research is missing the point (Kimball, 1994; Johnson, 1988). “The proper question is not ‘Which is better?’, but ‘What are the variables that each require to produce optimal effects?’” (Johnson, 1988, p.5). Johnson (1988) continues by stating that we should have an understanding of the variables involved with both procedures so that we may predict the relationship between the behavior and the procedures. This way we will know there will be a fairly reliable effect on the behavior (Johnson, 1988). Lloyd and Landrum (1990) draw conclusion to this controversy: “As a practical matter, there does not appear to be the empirical support for choosing to use one procedure over the other. However, there may be other reasons for making such a choice.... At present, we suggest that the decision about whether attending is an appropriate target for interventions is one that should be made by teachers, students, parents, and administrators on the basis of each individual case” (pp. 247-248).

Summary. Time on-task is defined as the amount of time a student is attending to instructional activity. Advantages to increasing this behavior can be found for students and teachers. As on-task behavior increases, the opportunities for learning increase. It lets the teacher focus on academics, which may lead to the students learning more as a result of a greater focus. While there is controversy about on-task behavior, most believe that there is a need for appropriate on-task behavior in an academic setting. Although we have not seen academic performance increase as a result of an increase in on-task behavior, research has shown that academic productivity does increase when on-task behavior is self-monitored.
Academic Performance

When recording academic performance, students usually self-assess the quality and/or quantity of their work and record their findings (Klein, 1979; Reid & Harris, 1983). Monitoring of academic productivity is assumed to increase academic productivity and on-task behavior (Harris et al., 1994), thus the major difference between self-monitoring of academic performance is simply what is assessed.

Arithmetic as academic measure. Some researchers believe that self-monitoring is more appropriate for academic outcomes, than overt behaviors, like on-task behavior. It is stated that improvement in on-task behavior need not represent improvement in academic measures (Triebert & Lahey, 1983).

There have been many studies conducted using arithmetic as a dependent variable (Dunlap & Dunlap, 1989; Lloyd et al., 1994; Maag et al., 1993). Arithmetic lends itself to self-monitoring as is easily quantifiable, and each problem is a separate entity. With more complex tasks, quantifying effort becomes more difficult. Dunlap and Dunlap (1989), studied subtraction with regrouping as an academic measure. Due to the complexity of each problem, it would be inaccurate to count each problem for the academic measure. The researchers devised a method of counting efforts toward completion of a problem to give a more accurate picture of the student's performance.

Written language as academic measure. Due to its complexity, written language is a rare dependent variable in self-monitoring studies (Ballard & Glynn, 1975; Harris et al., 1994; Rumsey & Ballard, 1985). Ballard and Glynn (1975) had students self-monitor the number of sentences, different action words and different describing words. They found that self-monitoring these variables did not affect their performance. Rumsey and Ballard (1985) used a combination of attention and performance monitoring and found that self-monitoring increased the on-task behavior and the length of stories written by the
students. Harris et al., (1994) studied the effects of self-monitoring on-task behavior and length and quality of students' stories. They found that self-monitoring had a positive effect on all variables: on-task behavior, length of stories, and quality of stories. While these three studies use self-monitoring as an intervention in effort to affect a change in written language performance, they each examine a different population of subjects. Ballard and Glynn (1975) studied subjects in the regular classroom, Rumsey and Ballard (1985) studied students with behavioral problems and Harris et al. (1994) studied learning disabled students.

Harris et al. (1994), saw self-monitoring as appropriate for learning disabled students due to their difficulty with staying on-task during academic activities (Licht, 1983; Wiederholt, 1974). The area of written language was chosen due to the nature of the writing of a typical learning disabled student. They generate an inordinately small amount of content when writing (Graham & Harris, 1992). Due to the complexity of writing tasks compared to other dependent variables, Harris et al. (1994) expected the effects of the self-monitoring techniques to be modest.

Summary. Using self-monitoring to change academic performance behaviors generally involves a student observing and recording the quality and/or quantity of some academic dependent variable. To date, the majority of studies on self-monitoring have employed an arithmetic measure as the academic variable. Arithmetic is easily quantifiable, thus lends itself to self-monitoring. Written language, however, has not been used as often as a dependent variable due to its complexity. In the past 22 years there have been only three studies conducted to determine the effects of self-monitoring on written language performance, at a pace of one per every ten years (1975), (1985), and (1994). The research that has been conducted has reported mixed results in determining the effectiveness of self-monitoring with writing. Ballard and Glynn (1975) found that self-
monitoring did not have an effect on the number of sentences, different action words and
different describing words. Rumsey and Ballard (1985) found that self-monitoring
increased the on-task behavior and length of stories written by the students. Harris et al.,
1994 found that self-monitoring had a positive effect on all variables examined: on-task
behavior, length of story, and quality of stories.

Generality

Generality is used to “indicate behavior changes that occur in nontraining
conditions” (Cooper et al., 1987). Baer, Wolf and Risley (1968) state that “A behavior
change may be said to have generality if it proves durable over time, if it appears in a wide
variety of possible environments, or if it spreads to a wide variety of related behaviors”
(p.96). For example, if a student is trained in self-monitoring in a resource room using
written language as a dependent variable and his written language behavior improves, and
he continues this improved behavior in a mainstream setting, the change in his behavior
has generality.

Generality defined. Generality is comprised of three facets: stimulus generality,
response generality, and response maintenance. Stimulus generality refers to the extent to
which a student exhibits an improvement in the target behavior in settings other than the
training environment (Cooper et al., 1987; Stokes & Baer, 1977). The example used
above would have stimulus generality as the student continues the change in behavior in
the mainstream setting. If the entire program used to set the stage for the behavior change
in the training environment is necessary for the change to occur in another environment,
then stimulus generality can not be claimed. If just a few of the components of the
training program are necessary to set the occasion for the change, however, and it can be
shown that not all parts were needed, then stimulus generality can be claimed (Cooper et
al., 1987).
Response generality refers to the extent to which the student exhibits the changed behavior in a variety of responses in addition to the trained response, responses for which there has been no formal training (Cooper et al., 1987). In the example above, the student would exhibit response generality if he increased the number of arithmetic problems he completed, or the number of descriptive terms he uses. This demonstrates that the student is able to emit untrained responses with in the same response class.

Response maintenance is defined as the extent to which the student continues to exhibit the behavior change after the training program has been discontinued. This is similar to stimulus generality in that the behavior must be emitted without benefit of the training program. Stimulus generality refers to the behavior occurring in a different setting, and response maintenance refers to the continuation of the behavior change following termination of the program. Stimulus generality can not be claimed when behavior changes are not emitted in the natural environment. Response maintenance can not be claimed when a behavior change meets extinction or punishment contingencies in the natural environment (Cooper et al., 1987; Whaley & Malott, 1971).

**Efficacy research in generality of behavior changes involving self-monitoring.**

While there is importance in the generality of behavior changes involving self-monitoring, it seems to be an area in need of further research. Without generality, the changes occurring in behavior as a result of self-monitoring would be futile; it does not make a difference for the student if he can only do it in the training environment for one specific behavior. If a student can use the behavior change in his natural environment or with a variety of behaviors, it creates a much more significant impact.

Due to the intrinsic nature of self-monitoring, the changes occurring in behavior should be likely to generalize to other environments, as the student is responsible for the change. These behaviors should be more likely to have maintenance and generalization
than those that are more extrinsic (Drabman, Spitalnik, & O'Leary, 1973; Glynn, Thomas, & Shee, 1973; O'Leary & Drabman, 1971). Because this type of training is unlikely to occur in a regular education classroom, teaching students to self-monitor in a resource room should be under conditions as similar to the regular education classroom as possible. This should include common stimuli such as class discussion, reading, and individual seatwork. This should aid in the generalization from the resource room to the regular education room (Blick & Test, 1987; Cameron & Robinson, 1980; Christie et al., 1984; Stokes & Baer, 1977). Self-monitoring is seen as "protecting the individual from environmental distractions (i.e., more immediately appealing alternative behaviors, and/or competing cognitions that could interfere with task performance), and providing a push to encourage behavior" (Reid, 1996, p. 325). Reid describes the relationship of self-regulation and cognition/metacognition as the metaphor of a wire and insulation. Self-regulation insulates the wire (cognition and metacognition) from distractions, while it is independent of the force or electricity flowing through the wire. The insulation is not interfering with the energy, but allowing it to flow easier. Self-regulation should allow the thinking and learning to flow more easily as well (Reid, 1996).

Self-monitoring of on-task behavior often employs the use of a cuing system to alert the students when to record. This seems stilted and therefore may cause a problem in generalization. Hallahan and Sapona (1983) showed that students can successfully be weaned from an auditory cue to record and continue to record/monitor their behavior. They also found the recording response to be an important part of the procedure, but that the child could be weaned from this as well.

Hallahan and Sapona (1983) found maintenance of behavior change effects to be demonstrated for up to two and a half months, the longest duration they had tested. Hallahan et al. (1979) used a follow-up measure one month after the study and found a
continued high level of on-task behavior. Rhode et al. (1983) found that students transferred and maintained high levels of appropriate classroom behavior in their regular classrooms, once self-evaluation procedures were extended into those settings. When these procedures were changed, only two of the six students required a modified form of the original procedure to maintain their behavior gains in the regular classrooms.

**Summary.** Generality is comprised of three facets: stimulus generality, response generality, and response maintenance. Stimulus generality refers to the extent to which a behavior continues to be emitted under different conditions or stimuli. Response generality refers to the extent to which the student uses untrained but functionally similar responses in addition to the trained responses. Response maintenance refers to the duration the student continues to emit the behavior in the natural environment after termination of the training program. Research has shown that there is some success in demonstrating stimulus generality with self-monitoring. Students have demonstrated the ability to transfer this behavior to the regular education setting. There is also research to show that the effects of self-monitoring have some maintenance. The research in these areas seems to be limited, however, and that this is an area in need of future research.

**Social Validity**

Social validity refers to the importance of the targeted behavior change to the student. Specifically, there are three areas to consider in social validity: social significance of the target behavior, the appropriateness of the procedures, and the social importance of the results (Wolf, 1978). Every study conducted should address these concerns as they relate to the students involved.

**Target behavior.** The target behavior should be of social significance to the student (Wolf, 1978). Following the study, the student should benefit socially from the change in this behavior. For example, when focusing on written language performance as
a dependent variable, it must be determined that this is an important behavior and that improving it will improve the student's quality of life. This was determined to be true in the Harris et al. (1994) study as they recognized their target population, learning disabled students, as generating an inordinately small amount of content when writing (Graham & Harris, 1992). Writing is generally accepted as an important and crucial behavior for survival and success in education, thus this is a socially valid target behavior for change. The ultimate consideration when determining social validity of a target behavior should be: "Will an increase or decrease in the measured dimension of this behavior result in an improvement in the subject's life, either directly or indirectly?" (Cooper et al., 1987, p. 249).

Procedures. The appropriateness of the procedures must be taken into consideration before conducting a study (Wolf, 1978). "The independent variable in a published study should be evaluated not only in terms of the effects it produces in the dependent variable, but also in terms of its social acceptance, complexity, practicality, and cost" (Cooper et al., 1987, p. 249). A procedure can be very effective, but if it is not acceptable to all involved in the study, parents, students, teachers, and experimenters, it should not be used. Additionally, a procedure that is difficult to learn or use, or is expensive, should not be used if there is a simpler, more cost effective strategy to accomplish the same goals.

Results. The final consideration within the realm of social validity that should be considered is the social importance of the results (Wolf, 1978). A behavior can appear to be changed on a graph or table, but it may not be a significant enough change within the student's environment. Social importance refers to setting a criteria for when a behavior change is significant within the student's environment. Determining criteria for a behavior change should occur before intervention is conducted (VanHouten, 1979).
determining the social importance of the results of a given study, one should ask questions such as: "Is the subject (or significant others) better off now that the behavior has changed? Will this new level of performance result in increased reinforcement for the subject now or in the future?" (Cooper et al., 1987, p. 249). This type of evaluation involves looking at the student’s environment and determining what types of reinforcement exist and for what types of behaviors. This can be done through observation or by asking the student whether he believes his behavior has changed (Wolf, 1978).

**Social validity in research.** Throughout the research, students are often questioned about the self-monitoring techniques. Some common questions are: Do you believe your behavior changed while you used self-monitoring? Would you like to continue using self-monitoring? (Harris et al., 1994; Lloyd et al., 1989). Lloyd et al. (1989) found that all the students in his study wanted to continue using self-monitoring. They also preferred the self-monitoring of attention procedure. Four of the five students believed that self-monitoring of academic productivity was more time-consuming and often slowed them down (Lloyd et al., 1987).

Harris et al. (1994) questioned the students involved and the first three were positive about using self-monitoring. They reported that they were on-task more or concentrating better and that their stories were longer and more creative. Some students envisioned negative consequences if they discontinued self-monitoring: their stories would not be as good, they would not be able to write much. As this study used self-monitoring of attention and academic performance, the students were questioned as to which activity they preferred and which seemed to help them more. The students could not agree which activity they preferred. Some chose self-monitoring of attention because it was easier, while some chose self-monitoring of academic performance because they
didn’t have to listen to the tape (Harris et al., 1994).

Summary. Social validity involves three general considerations in research: Is the target behavior of social significance to the student? Are the procedures socially acceptable? Are the results socially significant for the student’s environment? The most important criterion in determining the target behavior should be: Will improving this behavior improve the students’ life either directly or indirectly? The procedures should not only be chosen due to effectiveness, but whether they are acceptable to the people involved: parents, students, teachers, and experimenter. The results should be such that the change in behavior will achieve increased reinforcement for the student within the natural environment. Researchers have measured social validity through observation and questioning students involved in the study.
CHAPTER 2

METHOD

This chapter describes the subjects, setting, and experimenter as well as the dependent variables and the measurement of these variables. Procedures to measure interobserver agreement, a list of materials and the experimental design are also discussed. Further, this chapter involves the actual procedures followed as the study was conducted, including the training procedures, and the procedures used within each phase of the study: baseline, self-monitoring of on-task behavior, self-monitoring of written language performance, and changing criterion with public posting. Finally, a description of the social validity measures: student opinion questionnaire, teacher opinion questionnaire, and mainstream teacher questionnaire are presented.

Subjects

The subjects in this study were four male elementary students with learning disabilities. Students were selected because they lacked appropriate on-task and written language behaviors. The teacher believed that all four students had the academic skills and ability to complete their work, but lacked the attending skills to complete their assignments. All four students were enrolled in a resource room, three were in third grade and one was in second and all received services for learning disabilities. All students qualified as having a specific learning disability. The ages ranged from eight to ten, and grades two through four. Student 1 lived with both parents and a sixteen year old sister. He often came to school exhausted, reporting that he stayed up late during the week. He
was extremely distractible and disorganized. Once started on a task, he lost his train of thought quickly, and he was thus distracted from his assignment. His parents seemed concerned with his lack of progress; however, they made many excuses for his inattention and lack of sleep. Student 1 received special education services for 2 years. Student 2 lived with his mother, his younger brother and his mother’s fiancee. His mother had shown some concern in his education. This was his first year (1996-1997) of special education services, as he qualified in the spring of his second grade year (1995-1996). Student 3 was in third grade, and lived with both parents. He had no siblings and spent a great deal of time alone. His mother was supportive and very concerned as her son had had some significant behavior problems throughout his educational career. His father was not very involved, but he did show some concern. This was student 3’s second year with special education services. Student 4 was repeating second grade, with the consensus of his mother and the previous teacher. Student 4 lived with both parents, a sister and a brother. His mother was supportive of his education. He rushed through assignments without any regard to appropriate responses. He was inattentive in most class discussions. He had received special education services for 2 years. Table 1 shows demographic information on the students.

While data were only recorded for the described subjects, all students in the class took part in the exercises. All students received instruction on self-monitoring on-task behavior and written language performance and practiced these activities. The data for the non-participating students were not recorded for the purpose of the study, but used by the teacher and students for instructional purposes.

Setting

This study was conducted in a special education resource room during a writing lesson in which 12 male students participated. There was one teacher. There was
<table>
<thead>
<tr>
<th>Student</th>
<th>Sex</th>
<th>Age</th>
<th>Number of years in Special Education</th>
<th>Achievement Scores</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>M</td>
<td>9</td>
<td>2</td>
<td>low</td>
</tr>
<tr>
<td>2</td>
<td>M</td>
<td>9</td>
<td>1</td>
<td>low</td>
</tr>
<tr>
<td>3</td>
<td>M</td>
<td>9</td>
<td>2</td>
<td>low</td>
</tr>
<tr>
<td>4</td>
<td>M</td>
<td>9</td>
<td>1</td>
<td>low</td>
</tr>
</tbody>
</table>
significant emphasis on writing and language arts in this room. The approximate
dimensions of the classroom were 6.2 meters by 6 meters. There are windows the entire
length of one wall. The student desks were arranged in rows with a small horse shoe in
the front of the room. The chalkboard was in the front of the room. There were two
large tables and a small carpeted reading area. The teacher’s desk was located on the side
of the classroom, in front of stationary bookshelves, and near the door. There was a sink
and drinking fountain near the door (see Appendix A for a schematic diagram of the
classroom).

**Experimenter**

The experimenter was a graduate student at The Ohio State University working
toward a master’s degree in special education supervision. She had four years prior
experience as a teacher of students with learning disabilities. She taught high school and
elementary school for the Columbus Public Schools.

**Definition and Measurement of the Dependent Variables**

There are two dependent variables involved in this study: on-task behavior and
written language performance. On-task behavior was defined as the percentage of time a
student had his eyes on his paper, pencil in his hand, engaged in written expression or
interacting with the teacher during the observation period. On-task behavior was not
daydreaming, looking out the window, doodling, or writing nonsense responses. The data
for this variable were gathered as the students self-monitored this behavior and recorded
on the self-monitoring of on-task behavior recording sheet (see Appendix B). The second
dependent variable, written language performance, was defined as the number of words
written during the 10 minute period; all words were counted, including “nonsense” words.
It was also measured through the self-monitoring recording sheets (see Appendix C for
the self-monitoring of written language performance recording sheet). The students
checked their papers for the number of words written and record this number. Data for each dependent variable were recorded once daily for 10 minutes.

**Interobserver Agreement Procedures**

For this study, there were three sets of interobserver agreement (IOA) data collected. A second observer collected data on both dependent variables a minimum of 25% of the sessions. Secondly, the experimenter acted as a second observer for the students and gathered data daily for each student for both dependent variables. Finally, IOA data was gathered for the independent variable, self-monitoring, procedures.

During the study, a second observer would collect data periodically in effort to ensure reliability of the data collected by the experimenter. The observer was trained in the procedures of self-monitoring and then collected data just as the experimenter. The data collected were then compared. IOA was determined by the number of agreements between the observers divided by the total number of responses, multiplied by 100.

The experimenter acted as an interobserver and simultaneously collected data as the students self-monitored their behavior. The data collected by the experimenter were compared to the data collected by the students. The experimenter listened to a tone, and recorded on-task behavior for each of the four students. The experimenter then compared her marks on the recording sheet with those of the corresponding students, counting the agreements of scores. Interobserver agreement was calculated in the following manner to determine reliability of the data: number of agreements divided by the total number of agreements plus disagreements times 100. This process occurred during a minimum of 25% of the sessions.

A procedural interobserver agreement measure was also recorded and calculated. A trained observer, other than the experimenter, watched a minimum of 25% of the
sessions and responded to questions regarding whether the procedures were being followed. For example, was a prewriting activity completed before the writing session, were the students given 10 minutes for writing, was the recorded tone played at an audible level, were the word counting procedures followed and the quantities recorded accurately? The responses to these questions were “Yes” or “No”. A percentage was calculated with a “Yes” response meaning agreement and a “No” response meaning a disagreement: number of agreements divided by the number of agreements plus disagreements multiplied by 100 (see Appendix D for the procedural interobserver agreement recording form).

**Materials**

Pre-recorded audio-tape

Audio cassette player

Recording sheets for on-task behavior and written language performance

Graph for written language performance

Cumulative recording sheet for on-task and written language performance

Calculator

**Experimental Design**

This study employed a reversal (ABABC) experimental design. The first phase (A₁) was baseline, next was the first self-monitoring phase (B₁). Baseline occurred again (A₂), before a return to self-monitoring (B₂). Following the reversal ABAB, another baseline condition was conducted, then the final condition, changing criterion with public posting. Both baseline conditions involved data collection on the dependent variables, on-task behavior and written language performance, while normal classroom procedures were in effect. The self-monitoring conditions involved data collection by the students as they employed the independent variable, self-monitoring. They collected data as they monitored their own on-task behavior and written language performance. The first
baseline phase acted as a prediction phase. The second baseline phase acted as verification and the second intervention phase was replication of any change in behavior affected by the independent variable.

Prediction occurred in the baseline phase of this study. At this time data were collected for both as normal classroom procedures were in effect. These data allowed the experimenter to make predictions on what effects occurred throughout the study.

"Prediction may be defined as the anticipated outcome of a presently unknown or future measurement. It is the most elegant use of quantification upon which validation of all scientific and technological activity rests" (Johnson & Pennypacker, 1980, p.120). The changing criterion with public posting condition consisted of five phases, in which criterion for reinforcement was altered. The criterion in phases 1-3 rose two words per phase. Phase 4 was a reversal, the criterion was dropped below phase 1. The highest criterion was reinstated in phase 5.

To claim a behavior change has occurred, the observed behavior should change markedly upon introduction of self-monitoring. The data should reflect this change of variability. To verify this change, a return to baseline is required. The study proceeded such that the conditions began at baseline, followed by a self-monitoring phase, then a return to baseline, a return to self-monitoring, back to baseline, and finally the changing criterion with public posting: baseline (A₁), self-monitoring (B₁), baseline (A₂), self-monitoring (B₂), baseline (A₃), changing criterion with public posting (C₁). This second baseline phase served to verify that the prior baseline level would have continued if there had been no self-monitoring. The second baseline served as the verification phase, verifying the original baseline level.

When self-monitoring was again introduced, the experimenter expected to see a trend in the data similar to the first self-monitoring phase. This second self-monitoring
phase acted as replication for the previously observed change. To claim a functional relationship, the experimenter reported baseline, then introduced the independent variable, self-monitoring. Returning to baseline and withdrawing the use of the independent variable "turned off" the behavior change and reintroducing the independent variable in the second self-monitoring phase "turned on" the behavior change or affected the change in behavior seen in the prior self-monitoring phase. This "turning on and off" of the behavior allowed the experimenter some confidence in reporting that the independent variable, self-monitoring, was responsible for the change in behavior.

**Training of Self-monitoring On-task Behavior**

Prior to the self-monitoring, the students were trained in how to do the self-monitoring activities. Training occurred in five stages: 1) orientation/presentation, 2) teacher modeling, 3) group discussion, 4) role play, and 5) practice. This protocol followed a model, lead, test format. The training for the on-task behavior self-monitoring involved direct instruction as well as modeling and role playing. After direct instruction on what is and what is not on-task behavior, the students were taught how to monitor these behaviors. The teacher modeled on-task behavior and the students demonstrated understanding through role play. The students practiced self-monitoring their own behavior several times with feedback and reinforcement for accuracy (see Appendix E for the training script).

**Training of Self-monitoring Written Language Performance**

Training for self-monitoring of written language performance proceeded much as the training for on-task behavior. It occurred in five stages: 1) orientation/presentation, 2) teacher modeling, 3) group discussion, 4) guided practice, and 5) independent practice. It included direct instruction, modeling and role play. The students had sufficient trials of practice with feedback and reinforcement to allow them to have some level of comfort.
with the recording and graphing (see Appendix F for the training script).

Procedures

Baseline. During the baseline condition, normal classroom procedures were in effect. The experimenter collected data on on-task behavior and written language performance. Data for on-task behavior were recorded using the same procedure the students used, responding at a tone to the question: "Is the child paying attention?" The experimenter responded at each tone and totaled the data for the observation period. Written language performance was also recorded in the same manner as the students self-recorded, counting the number of words written in the 10 minute session.

Self-monitoring of on-task behavior. Following instruction, the students began to monitor their on-task behavior. They responded each time they heard the tone to the question, "Am I on-task?" The tone sounded at intervals averaging 60 seconds. The duration of monitoring was 10 minutes. Upon completion of the monitoring time, students totaled the number of "yes" and "no" responses. They graphed the number of positive responses on their own graph to show progress. These data were later transferred to the experimenter's summative graph. Accuracy in recording was reinforced. Upon student absence during the study, the data reflected this by a break in the data path.

Self-monitoring of written language performance. This condition involved the students responding in writing to a given prompt corresponding to thematic work in progress in the classroom. Prior to independent writing the students engaged in a class discussion to develop a web of the topic. The students were given 10 minutes after completion of the class web discussion to write. This prewriting activity was drawn on the chalkboard, and it remained there during independent writing to aid the students in spelling and content. Students commenced work upon a signal from the teacher and continued working throughout the session. The teacher simply said to the class, "You
may begin.” as the session began and after 10 minutes said, “Pencils down, the time is up.” Each writing session lasted 10 minutes. Upon completion of the allotted time, the students counted the words they have written and recorded this quantity on their record sheet. The students counted the words written using the method taught in training, counting the words in each line and marking the consecutive number at the end of the line, to aid in case they lost their place. The students also graphed the results on their own graph to show progress. They were reinforced for accuracy of counting and recording. Verbal praise and a token system were used for reinforcement. Tokens were exchanged for lunch in the classroom with the teacher. The data collected by the students were later recorded by the experimenter on a summative graph. As with self-monitoring of on-task behavior, student absence was reflected in the data by a break in the data path.

Changing criterion with public posting. Self-monitoring procedures in this condition remained the same as in the previous conditions, monitoring both on-task behavior and written language performance. Before the students began to write during this condition, however, the experimenter set goals for each student. For example, the goal for student 1 on the first day of this condition was writing 15 words within the 10 minute session. The students then wrote as in the previous conditions, and then counted and graphed the number of words written. They then put a star on a chart posted on the wall in the classroom, if they met or exceeded their goal for the day. The stars were tokens earned toward lunch in the classroom with the teacher.

This changing criterion condition consisted of five phases in which a goal was set for the student. The experimenter determined the goals based on the data collected for the number of words written in previous conditions. The experimenter established a goal that the student could easily meet for the goal of the first phase in the condition. The goals were then increased by two words in the next two phases. The first three phases
contained a steady increase in the number of words necessary to meet the goals. The
fourth phase involved a reversal, the goals were dropped to below the original goal in the
first phase. The goals were reinstated at the highest goal prior to the reversal in the fifth
and final phase. The reversal was necessary to demonstrate that the goal setting or the
changing criterion with public posting was responsible for the change in behavior.

Student Opinion Questionnaire

To determine social validity of the self-monitoring activities, each student in the
study was given a questionnaire (see Appendix G for the student opinion questionnaire).

Teacher Opinion Questionnaire

To determine social validity for the teacher of the classroom, she was asked to
respond to a questionnaire (see Appendix H for the teacher questionnaire).

Mainstream Teacher Questionnaire

While the mainstream teacher was not directly involved in the study, she was asked
to report her views on on-task behavior and written language performance within the
mainstream setting at the conclusion of the study. To determine social validity for the
mainstream setting and generalizability of the any behavior change, the mainstream teacher
was asked to respond to a questionnaire. The mainstream teacher did not have any day-
to-day responsibilities in conducting this study (see Appendix I for the mainstream teacher
questionnaire).
CHAPTER 3

RESULTS

This chapter presents the results of the study in light of the experimental procedures. Interobserver agreement is discussed for the experimenter and the second observer data, and for the experimenter and the student data. Interobserver agreement (procedural/reliability) for the independent variable is also discussed. The interobserver agreement data are described in narrative form and graphically. Data for each student across each condition are also discussed. Finally, there is an analysis of the data.

Interobserver Agreement: Experimenter and Second Observer

Data were collected by the experimenter daily as the students monitored their behavior. In an effort to demonstrate believability for these data, a second observer collected data periodically throughout the study. This observer followed the same data collection procedures as the experimenter. The mean interobserver agreement (IOA) for baseline_1 was 100%, as the experimenter and second observer agreed on all responses for all four students. The mean IOA self-monitoring_1 was 87.5%. The second observer recorded data on two sessions in this phase. During baseline_2, the IOA returned to 100% agreements. All of the following conditions, self-monitoring_2, baseline_3, changing criterion with public posting phases 1 through 5, IOA was 100% agreement. The grand mean, or the mean of the means, of each condition was 98.4%, range 87.5% to 100%. See Table 2 for graphical representation of these data.
Table 2. Interobserver Agreement: Experimenter Data v. Second Observer Data for On-task Behavior. Each quantity listed for percentage agreement.

<table>
<thead>
<tr>
<th>Condition</th>
<th>Student 1</th>
<th>Student 2</th>
<th>Student 3</th>
<th>Student 4</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baseline1</td>
<td>100 (2/2)</td>
<td>100 (1/1)</td>
<td>100 (1/1)</td>
<td>100 (1/1)</td>
<td>100 (5/5)</td>
</tr>
<tr>
<td>S-M1</td>
<td>100 (1/1)</td>
<td>50 (1/2)</td>
<td>100 (2/2)</td>
<td>100 (1/1)</td>
<td>87.5 (5/6)</td>
</tr>
<tr>
<td>Baseline2</td>
<td>100 (1/1)</td>
<td>100 (1/1)</td>
<td>100 (1/1)</td>
<td>100 (1/1)</td>
<td>100 (4/4)</td>
</tr>
<tr>
<td>S-M2</td>
<td>100 (1/1)</td>
<td>100 (1/1)</td>
<td>100 (1/1)</td>
<td>ab.</td>
<td>100 (3/3)</td>
</tr>
<tr>
<td>Baseline3</td>
<td>100 (1/1)</td>
<td>100 (1/1)</td>
<td>100 (1/1)</td>
<td>100 (1/1)</td>
<td>100 (4/4)</td>
</tr>
<tr>
<td>Ccpp1</td>
<td>100 (1/1)</td>
<td>100 (1/1)</td>
<td>100 (1/1)</td>
<td>100 (1/1)</td>
<td>100 (4/4)</td>
</tr>
<tr>
<td>Ccpp2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ccpp3</td>
<td>100 (1/1)</td>
<td>100 (1/1)</td>
<td>ab.</td>
<td>100 (1/1)</td>
<td>100 (3/3)</td>
</tr>
<tr>
<td>Ccpp4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ccpp5</td>
<td>100 (1/1)</td>
<td>100 (1/1)</td>
<td>100 (1/1)</td>
<td>100 (1/1)</td>
<td>100 (4/4)</td>
</tr>
<tr>
<td>Grand mean</td>
<td>100 (9/9)</td>
<td>93.8 (8/9)</td>
<td>100 (8/8)</td>
<td>100 (7/7)</td>
<td>98.4(32/33)</td>
</tr>
<tr>
<td>Range</td>
<td>100-100</td>
<td>50-100</td>
<td>100-100</td>
<td>100-100</td>
<td>87.5-100</td>
</tr>
</tbody>
</table>

( ) = number of agreements/ total number of responses
S-M= Self-monitoring condition
Ccpp= Changing criterion with public posting condition
ab.= student absence

<table>
<thead>
<tr>
<th>Condition</th>
<th>Student 1</th>
<th>Student 2</th>
<th>Student 3</th>
<th>Student 4</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baseline₁</td>
<td>100 (1/1)</td>
<td>100 (1/1)</td>
<td>100 (1/1)</td>
<td>100 (1/1)</td>
<td>100 (4/4)</td>
</tr>
<tr>
<td>S-M₁</td>
<td>100 (2/2)</td>
<td>100 (2/2)</td>
<td>100 (2/2)</td>
<td>100 (1/1)</td>
<td>100 (7/7)</td>
</tr>
<tr>
<td>Baseline₂</td>
<td>100 (1/1)</td>
<td>100 (1/1)</td>
<td>100 (1/1)</td>
<td>100 (1/1)</td>
<td>100 (4/4)</td>
</tr>
<tr>
<td>S-M₂</td>
<td>100 (1/1)</td>
<td>100 (1/1)</td>
<td>100 (1/1)</td>
<td>ab.</td>
<td>100 (3/3)</td>
</tr>
<tr>
<td>Baseline₃</td>
<td>100 (1/1)</td>
<td>100 (1/1)</td>
<td>100 (1/1)</td>
<td>100 (1/1)</td>
<td>100 (4/4)</td>
</tr>
<tr>
<td>Ccpp₁</td>
<td>100 (1/1)</td>
<td>100 (1/1)</td>
<td>100 (1/1)</td>
<td>100 (1/1)</td>
<td>100 (4/4)</td>
</tr>
<tr>
<td>Ccpp₂</td>
<td>100 (1/1)</td>
<td>100 (1/1)</td>
<td>100 (1/1)</td>
<td>100 (1/1)</td>
<td>100 (4/4)</td>
</tr>
<tr>
<td>Ccpp₃</td>
<td>100 (1/1)</td>
<td>100 (1/1)</td>
<td>ab.</td>
<td>100 (1/1)</td>
<td>100 (3/3)</td>
</tr>
<tr>
<td>Ccpp₄</td>
<td>100 (1/1)</td>
<td>100 (1/1)</td>
<td>100 (1/1)</td>
<td>100 (1/1)</td>
<td>100 (4/4)</td>
</tr>
<tr>
<td>Ccpp₅</td>
<td>100 (1/1)</td>
<td>100 (1/1)</td>
<td>100 (1/1)</td>
<td>100 (1/1)</td>
<td>100 (4/4)</td>
</tr>
<tr>
<td>Grand mean</td>
<td>100 (9/9)</td>
<td>100 (9/9)</td>
<td>100 (8/8)</td>
<td>100 (7/7)</td>
<td>100 (33/33)</td>
</tr>
<tr>
<td><strong>Range</strong></td>
<td>100-100</td>
<td>100-100</td>
<td>100-100</td>
<td>100-100</td>
<td>100-100</td>
</tr>
</tbody>
</table>

( ) = number of agreements/ total number of responses

S-M = self-monitoring conditions

Ccpp = changing criterion with public posting condition

ab. = student absence
Interobserver Agreement: Experimenter Data and Student Data

As the students monitored their behavior, they collected data on their own behavior. To ensure the believability of these data, the experimenter collected data as well. The experimenter followed procedures in data collection as did the students. See Table 4 for a representation of these data. As the tones sounded, the experimenter recorded the on-task behavior of the four students, while the students each recorded their own on-task behavior. Upon completion of the 10 minute writing session, the students counted and graphed the number of words they wrote. The experimenter later counted and graphed each student’s number of words for the session. Interobserver agreement was determined by the number of agreements, divided by the total number of responses, multiplied by 100. An agreement consisted of the experimenter and student similarly recording either on-task or written language performance.

Because the students were learning to monitor their own behavior, the data gathered for interobserver agreement for experimenter and student data are not as strong from student-to-student as the data for the interobserver agreement for the experimenter and second observer. For example, interobserver agreement for Students 1 through 4 was 59.3%, range 28.6 to 85.7% for the first self-monitoring condition for on-task behavior, but was 100%, range 100% to 100%.

The mean IOA for the first self-monitoring condition for on-task behavior, self-monitoring1, was 59.3% agreement for all students. In self-monitoring2, the mean IOA increased to 63.6% agreement. The mean IOA for the changing criterion with public posting condition phases 1 through 5 increased to 60%, 75%, 77.8%, 75%, and 71.4% agreements respectively. The grand mean for all students across all conditions was 65.5% agreements, range 59.3 to 77.8% agreements.

IOA data for written language performance was significantly lower. The mean
Table 4. Interobserver Agreement: Experimenter Data and Student Data for On-task Behavior. Each quantity listed for percentage agreement.

<table>
<thead>
<tr>
<th>Condition</th>
<th>Student 1</th>
<th>Student 2</th>
<th>Student 3</th>
<th>Student 4</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baseline1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>S-M1</td>
<td>28.6 (2/7)</td>
<td>42.9 (3/7)</td>
<td>85.7 (6/7)</td>
<td>83.3 (5/6)</td>
<td>59.3 (16/27)</td>
</tr>
<tr>
<td>Baseline2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>S-M2</td>
<td>66.7 (4/6)</td>
<td>50 (3/6)</td>
<td>80 (4/5)</td>
<td>60 (3/5)</td>
<td>63.6 (14/22)</td>
</tr>
<tr>
<td>Baseline3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ccpp1</td>
<td>33.3 (1/3)</td>
<td>66.7 (2/3)</td>
<td>50 (1/2)</td>
<td>100 (2/2)</td>
<td>60 (6/10)</td>
</tr>
<tr>
<td>Ccpp2</td>
<td>100 (2/2)</td>
<td>50 (1/2)</td>
<td>100 (2/2)</td>
<td>50 (1/2)</td>
<td>75 (6/8)</td>
</tr>
<tr>
<td>Ccpp3</td>
<td>100 (2/2)</td>
<td>33.3 (1/3)</td>
<td>100 (2/2)</td>
<td>100 (2/2)</td>
<td>77.8 (7/9)</td>
</tr>
<tr>
<td>Ccpp4</td>
<td>100 (2/2)</td>
<td>0 (0/1)</td>
<td>100 (1/1)</td>
<td>100 (1/1)</td>
<td>75 (3/4)</td>
</tr>
<tr>
<td>Ccpp5</td>
<td>100 (2/2)</td>
<td>50% (1/2)</td>
<td>50 (1/2)</td>
<td>100 (1/1)</td>
<td>71.4 (5/7)</td>
</tr>
<tr>
<td>Grand mean</td>
<td>60.9 (14/23)</td>
<td>45.8 (11/24)</td>
<td>81 (17/21)</td>
<td>79 (15/19)</td>
<td>65.5 (57/87)</td>
</tr>
<tr>
<td>Range</td>
<td>28.57-100</td>
<td>0-66.7</td>
<td>50-100</td>
<td>50-100</td>
<td>59.3-77.8</td>
</tr>
</tbody>
</table>

( ) = number of agreements/ total number of responses

S-M = self-monitoring condition

Ccpp = changing criterion with public posting condition.
Table 5. Interobserver agreement: Experimenter Data and Student Data for Written Language Performance. Each quantity listed as percentage of agreements.

<table>
<thead>
<tr>
<th>Condition</th>
<th>Student 1</th>
<th>Student 2</th>
<th>Student 3</th>
<th>Student 4</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baseline1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>S-M₁</td>
<td>57.1 (4/7)</td>
<td>14.3 (1/7)</td>
<td>14.3 (1/7)</td>
<td>0 (0/6)</td>
<td>22.2 (6/27)</td>
</tr>
<tr>
<td>Baseline2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>S-M₂</td>
<td>16.7 (1/6)</td>
<td>33.3 (2/6)</td>
<td>0 (0/5)</td>
<td>40 (2/5)</td>
<td>22.7 (5/22)</td>
</tr>
<tr>
<td>Baseline₃</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ccpp₁</td>
<td>66.7 (2/3)</td>
<td>0 (0/3)</td>
<td>0 (0/2)</td>
<td>0 (0/2)</td>
<td>20 (2/10)</td>
</tr>
<tr>
<td>Ccpp₂</td>
<td>50 (1/2)</td>
<td>50 (1/2)</td>
<td>0 (0/2)</td>
<td>50 (1/2)</td>
<td>37.5 (3/8)</td>
</tr>
<tr>
<td>Ccpp₃</td>
<td>50 (1/2)</td>
<td>33.3 (1/3)</td>
<td>0 (0/2)</td>
<td>33.3 (1/3)</td>
<td>30 (3/10)</td>
</tr>
<tr>
<td>Ccpp₄</td>
<td>0 (0/1)</td>
<td>100 (1/1)</td>
<td>0 (0/1)</td>
<td>0 (0/1)</td>
<td>25 (1/4)</td>
</tr>
<tr>
<td>Ccpp₅</td>
<td>50 (1/2)</td>
<td>0 (0/2)</td>
<td>0 (0/2)</td>
<td>0 (0/1)</td>
<td>14.3 (1/7)</td>
</tr>
<tr>
<td>Grand mean</td>
<td>43.5 (10/23)</td>
<td>25 (6/24)</td>
<td>4.8 (1/21)</td>
<td>20 (4/20)</td>
<td>23.9 (21/88)</td>
</tr>
<tr>
<td>Range</td>
<td>0-66.7</td>
<td>0-100</td>
<td>0-14.3</td>
<td>0-40</td>
<td>14.3-37.5</td>
</tr>
</tbody>
</table>

( ) = number of agreements/ total number of responses
S-M = self-monitoring condition
Ccupp = changing criterion with public posting condition
IOA for the first self-monitoring condition was 22.2% agreement. This remained stable in self-monitoring, as mean IOA was 22.7% agreement. This continued into the first phase of the changing criterion with public posting condition, mean IOA was 20% agreements. IOA then rose in the second phase of this condition to 37.5% agreements and the fell again to 30% agreements in the third phase. The following phases continued this decreasing trend, as IOA was 25% agreements and 14.3% agreements for phase 4 and 5, respectively. The grand mean for IOA of written language performance was 23.86% agreement, range 14.29% to 37.5% agreements. See Tables 4 and 5 for a graphical representation of these data.

**Procedural Interobserver Agreement**

Procedural interobserver agreement data were collected 9 of the 41 sessions in the study, or for 22% of the sessions. An observer watched the procedures at the study was conducted and responded to a questionnaire (See Appendix D for the procedural interobserver agreement questionnaire). Procedural interobserver agreement for on-task behavior in all phases was 100% agreement.

**Student 1**

Figure 1 shows a graphical representation of on-task behavior for student 1. During baseline, student 1’s on-task behavior ranged from 0% to 50%, with an average of 16% on-task. On session 7, he achieved 50% on-task behavior. This data point was perceived as an outlier as it is 30 percentage points higher than the next highest score. If this data point is set aside, the trend during baseline is relatively stable, varying from 0% to 20%. During self-monitoring, there was significant increase in the percentage of time on-task. The student averaged 72.9% on-task, range 20% to 100%. During this phase, student 1 showed a strong improving trend as his recorded on-task behavior was 60%, 90%, 80%, 20%, 60%, 100%, 100% respectively across sessions. His average of
Figure 1. Percentage On-task Behavior—Student 1
Ccpp = Changing criterion with public posting for written language performance
A = Student absence
☐ = Interobserver agreement data collected in this session
72.9% is a significant improvement over the average of 16% in the first baseline phase. Upon return to baseline, student 1’s on-task behavior deteriorated. His average on-task behavior fell to 60%, range 50% to 70%. The trend was decreasing as his scores were 70%, 60%, and 50% on-task. When he remonitored his on-task behavior in self-monitoring, his scores rose immediately. He averaged of 83.3% on-task and range 50% to 100% on-task behavior. Five of the six scores recorded were in the range of 90% to 100% on-task behavior.

The self-monitoring activities were again discontinued to return to baseline. Student 1 had an average of 54% on-task behavior, range 40% to 80% on-task. The score of 80% seemed to be an outlier as the remainder of the scores were stable in the range of 40 to 50% on-task behavior. This is a drop in the average percentage on-task behavior of 44.3 percentage points.

The final phases of this study involved changing criterion with public posting of written language performance. On-task behavior was not the focus during this phase, however, self-monitoring of on-task behavior did continue. Student 1 averaged 98% on-task, range 90% to 100% on-task behavior. The trend in this final phase was stable at 100% with only two scores varying from 100% on-task, two days of 90% on-task behavior.

Figure 2 shows a graphical representation of written language performance data for student 1. Student 1 did not show such dynamic changes in behavior in the written language performance measure. In baseline, he averaged 12.4 words per 10 minute session, range 2 to 28 words. During self-monitoring, his average increased to 16.9 words per session, range 5 to 28 words. With some variability, the trend seemed to be improving.

During baseline, student 1’s average fell slightly to 10.7 words per session, range
Figure 2. Written Language Performance—Student 1

CCP = Changing criterion with public posting for written language performance
A = Student absence

☐ = Interobserver agreement data collected in this session
8 to 14 words. Self-monitoring was then reintroduced and his average increased to 16.3 words per session, range 11 to 20 words. This average is consistent with the average recorded in the first self-monitoring phase.

This average was maintained in the third baseline phase. The average number of words per session were 15.2 words, range 10 to 20 words.

The final phases of this study included using a changing criterion condition with public posting. The first of these phases involved setting a goal for student 1 of 15 words per session. He averaged 22.7 words, range 22 to 24 words per session. The trend during this phase was increasing.

The second phase of the changing criterion condition involved a goal of 17 words per session. With the higher goal, the student increased his average to 28.5 words per session, range 25 to 32 words. The trend was increasing.

The third phase of the changing criterion condition involved a higher goal of 19 words per session. Student 1 met and surpassed this goal, as he recorded an average of 20 words per session, range 15 to 25 words. There was a decreasing trend in the phase, there were only two sessions in this phase due to student absence, the student surpassed the goal in one session and failed to meet it on the second.

The fourth phase of the changing criterion condition involved a reversal and the goal was set at 10 words per session, a goal that the student had much surpassed in previous sessions. Student 1 failed to meet the lower goal. His average fell to 7 words per session and no recorded range as there was only one session in this phase.

The final phase of the changing criterion condition and the study was a return to the higher goal. For student 1, the goal for words written in the 10 minute session returned to 19 words. He met the goal with an average of 22.5 words per session, range 18 to 27 words. The trend was decelerating.
Student 2

Figure 3 shows a graphical representation of data on on-task behavior for student 2. During baseline₁, student 2’s on-task behavior ranged from 10% to 60%, with an average of 37.5% on-task. The trend during baseline₁ is variable, changing from 10% to 60%. During self-monitoring₁, there was significant increase in the percentage of time on-task. The student averaged 80% on-task, range 50% to 100%. During this phase, student 2 continued to show some variability. His recorded on-task behavior was 90%, 70%, 100%, 90%, 50%, 70%, 90% respectively across sessions. The score recorded on session 13, 50% on-task was viewed as an outlier as it is 20 percentage points lower than any other score recorded in this condition. His average of 80% is a significant improvement over the average of 37.5% in baseline₁.

In baseline₂, student 2’s on-task behavior decreased significantly. His average on-task behavior fell to 25%, range 10% to 50%. The trend was variable as his scores were 20%, 20%, 10% and 50% on-task. When he remonitored his on-task behavior in self-monitoring₂, his scores immediately jumped back up. He averaged of 88.3% on-task and range 60% to 100% on-task behavior. Four of the six scores recorded were in the range of 90% to 100% on-task behavior.

The self-monitoring activities were again discontinued to return to baseline. Student 2 had an average of 65% on-task behavior, range 50% to 80% on-task. This is a drop in the average percentage on-task behavior of 23.3 percentage points.

During the final phases of this study, changing criterion with public posting of written language performance, the student continued to monitor both dependent variables. Student 2 averaged 90% on-task, range 80% to 100% on-task behavior across all phases of this condition. Of the eleven sessions in this condition, student 2 recorded four sessions at 100% and three at 90% on-task.
Figure 3. Percentage On-Task Behavior—Student 2
Ccpp = Changing criterion with public posting for written language performance
A = Student absence
□ = Interobserver agreement data collected in this session
Figure 4 shows a graphical representation of written language performance data for student 2. Student 2 did not show such dynamic changes in behavior in the written language performance measure. In baseline₁, he averaged 28 words per 10 minute session, range 10 to 41 words. During self-monitoring₁, his average increased to 27.7 words per session, range 16 to 43 words. With some variability, the trend seemed to be increasing.

During baseline₂, student 2’s average increased slightly to 29 words per session, range 18 to 49 words. Self-monitoring was then reintroduced and his average increased to 49 words per session, range 28 to 56 words. This average is higher than the average recorded in the self-monitoring₁.

This average again increased in baseline₃. The average number of words per session were 37.8 words, range 25 to 54 words. The trend in this condition, however was decreasing quickly as the last three sessions were 54, 36, 25, respectively.

The final phases of this study, changing criterion condition with public posting, involved setting goals for the number of words written. In the first of these phases, a goal of 40 words per session was set for student 2. He averaged 36.7 words, range 28 to 43 words per session.

The second phase of the changing criterion condition involved setting a goal of 42 words per session. With the higher goal, the student decreased his average to 29 words per session, range 24 to 34 words. The trend was increasing.

The third phase of the changing criterion condition involved the same goal of 42 words per session. Student 2 did not meet this goal, as he recorded an average of 39 words per session, range 33 to 46 words. This average was 10 words higher than the average in the prior phase. There was a decreasing trend in the phase.
Figure 4. Written Language Performance—Student 2
Ccpp = Changing criterion with public posting for written language performance
A = Student absence
□ = Interobserver agreement data collected in this session
The fourth phase involved a reversal and the goal was set at 35 words per session a goal that the student had surpassed in previous sessions. Student 2 failed to meet the lower goal. His average fell to 28 words per session and no recorded range as there was only one session in this phase.

The final phase of the changing criterion condition and the study was a return to the higher goal. For student 2, the goal of 42 words written in the 10 minute session was reintroduced. He just missed the goal with an average of 38.5 words per session, range 37 to 40 words. The trend was accelerating.

**Student 3**

Figure 5 shows a graphical representation of on-task behavior data for student 3. During baseline1, student 3’s on-task behavior ranged from 20% to 90%, with an average of 44.3% on-task. The trend during baseline1 is highly variable. On the second session of the study, student 3 had a score of 90% on-task. This was viewed as an outlier as it was 30 percentage points above the nest highest score. During self-monitoring1, there was significant increase in the percentage of time on-task. The student averaged 98.6% on-task, range 80% to 100%. During this phase, student 3 had scores of 100% during 6 of the 7 sessions. His average of 98.6% is a significant improvement over the average of 44.3% in baseline1.

In baseline2, student 3’s on-task behavior fell; however, it was higher than in baseline1. His average on-task behavior fell to 77.5%, range 70% to 80%. The trend was very stable as his scores were 80%, 80%, 80% and 70% on-task. When he remonitored his on-task behavior in self-monitoring2, his scores immediately rose to an average similar to self-monitoring1. He averaged 98% on-task, range 80% to 100% on-task behavior. Four of the five scores recorded were 100% on-task behavior.

Returning to baseline, student 3 had an average of 70% on-task behavior, range
Figure 5. Percentage On-Task Behavior—Student 3
Ccpp = Changing criterion with public posting for written language performance
A = Student absence
☐ = Interobserver agreement data collected in this session
from 40% to 100% on-task. This is a drop in the average percentage on-task behavior of 28 percentage points. Student 3’s on-task behavior in this condition was highly variable as his scores were recorded as 40%, 100%, 70%, 40%, and 100%, respectively.

During the final phases of this study, changing criterion with public posting of written language performance, the student continued to monitor both dependent variables. Student 2 averaged 95.6% on-task, range 80% to 100% on-task behavior across all phases of this condition. Of the nine sessions in this condition, student 3 recorded seven sessions at 100% on-task.

Figure 6 shows a graphical representation of written language performance for student 3. Student 3 showed a less significant change in behavior in the written language performance measure, however there was an increasing trend throughout all conditions. In baseline1, he averaged 39.6 words per 10 minute session, range 24 to 51 words. During self-monitoring1, his average increased to 66.6 words per session, range 54 to 77 words. The trend was accelerating.

During baseline2, student3’s average fell to 54.5 words per session, range 41 to 62 words. Self-monitoring was then reintroduced, and his average increased slightly to 58 words per session, range 49 to 71 words.

This average again decreased in baseline3. The average number of words per session were 54.2 words, range 31 to 64 words. The trend in this condition was increasing.

The final phases of this study, changing criterion condition with public posting, involved setting goals for the number of words written. In the first of these phases, a goal of 60 words per session was set for student 3. He averaged 48.5 words, range 37 to 62 words per session.

The second phase of the changing criterion condition involved in a goal of 62
Figure 6. Written Language Performance—Student 3
Ccpp = Changing criterion with public posting for written language performance
A = Student absence
☐ = Interobserver agreement data collected in this session
words per session. With the higher goal, the student met and far surpassed it averaging 82 words per session, range 74 to 90 words. The trend was accelerating.

The third phase of the changing criterion condition involved an increased goal of 64 words per session. Student 3 again far surpassed this goal, as he recorded an average of 87 words per session, range 77 to 97 words. This average was 37.5 words higher than the average in the initial phase of the changing criterion condition. There was a significantly increasing trend in the phase.

The fourth phase involved a reversal and the goal was set at 55 words per session, a goal that the student had very much surpassed in previous sessions. Student 3 barely met this lower goal. His average fell dramatically to 57 words per session, and no recorded range as there was only one session in this phase.

The final phase of the changing criterion condition and the study was a return to the higher goal. For student 3, the goal of 64 words written in the 10 minute session was reestablished. He just met and surpassed the goal with an average of 70 words per session, range 64 to 76 words. The trend was decelerating.

**Student 4**

Figure 7 shows a graphical representation of on-task behavior data for student 4. During baseline₁, student 4's on-task behavior ranged from 20% to 90%, with an average of 48.6% on-task. The trend during baseline₁ is variable and decreasing. On the first session of the study, student 4 had a score of 90% on-task, this was viewed as an outlier as it was thirty percentage points above the next highest score. During self-monitoring₁, there was significant increase in the percentage of time on-task. The student averaged 78.3% on-task, range 60% to 100%. During this phase, student 4 had scores of 100% 2 of the 7 sessions. His average of 78.3% is a significant improvement over the average of 48.6% in baseline₁.
Figure 7. Percentage On-Task Behavior—Student 4
Ccpp = Changing criterion with public posting for written language performance
A = Student absence
☐ = Interobserver agreement data collected in this session
In baseline\textsubscript{2}, student 4's on-task behavior decreased. His average on-task behavior fell to 46.7%, range 30% to 60%. The trend was variable as his scores were 50%, 30%, and 60% respectively, on-task. When he remonitored his on-task behavior in self-monitoring\textsubscript{2}, his scores rose dramatically to an average higher than that of self-monitoring\textsubscript{1}. He averaged of 92% on-task and range 80% to 100% on-task behavior. Two of the five scores recorded were 100% on-task behavior.

Returning to baseline, student 4 had an average of 74% on-task behavior, range from 40% to 100% on-task. This is a drop in the average percentage on-task behavior of 18 percentage points. Student 4's on-task behavior in this condition was on a decreasing trend.

During the final phases of this study, changing criterion with public posting of written language performance, the student continued to monitor both dependent variables. Student 2 averaged 97.8% on-task, range 80% to 100% on-task behavior across all phases of this condition. Of the nine sessions in this condition, student 4 recorded eight sessions at 100% on-task.

Figure 8 shows a graphical representation of written language performance for student 4. Student 4 showed a less significant change in behavior in the written language performance measure, however there was an increase in written language in the self-monitoring condition and the changing criterion condition with public posting. In baseline\textsubscript{1}, he averaged 28.6 words per 10 minute session, range 13 to 47 words. During self-monitoring\textsubscript{1}, his average decreased slightly to 26.3 words per session, range 12 to 45 words. The trend was increasing.

During baseline\textsubscript{2}, student 4's average fell to 14.3 words per session, range 12 to 17 words. Self-monitoring was then reintroduced and his average increased to 22 words per session, range 14 to 45 words.
Figure 8. Written Language Performance—Student 4
Ccpp = Changing criterion with public posting for written language performance
A = Student absence
☐ = Interobserver agreement data collected in this session
This average again decreased in baseline. The average number of words per session were 26.4 words, range 17 to 36 words. The trend in this condition was decreasing.

The final phases of this study, changing criterion condition with public posting, involved setting goals for the number of words written. In the first of these phases, a goal of 30 words per session was set for student 4. He averaged 51 words, range 42 to 60 words per session.

The second phase of the changing criterion condition involved in a goal of 32 words per session. With the higher goal, the student met and far surpassed it averaging 48 words per session, range 43 to 53 words. The trend was decelerating.

The third phase of the changing criterion condition involved an increased goal of 34 words per session. Student 4 again surpassed this goal, as he recorded an average of 54 words per session, range 36 to 74 words. There was a significantly decreasing trend in the phase, as he recorded the number of words written as 74, 53 and 37, respectively.

The fourth phase involved a reversal and the goal was set at 25 words per session, a goal that the student had very much surpassed in previous sessions. Student 4 met this lower goal. His average fell to 35 words per session and no recorded range as there was only one session in this phase.

The final phase of the changing criterion condition and the study was a return to the higher goal. For student 4, the goal of 34 words written in the 10 minute session was introduced. He just met the goal with an average of 38 words per session, no range was recorded as the student was absent on one session so there was only one data point.

**Generality**

Generality in this study was measured by asking mainstream teachers to respond to a questionnaire (see Appendix I for mainstream teacher questionnaire). While there was some consensus from the mainstream teachers that three of the students had increased the
amount of time they attended, they reported no significant change had occurred in the number of assignments the students completed.

Social Validity

To determine the social validity of the study, the students, teacher, and mainstream teachers were asked to respond to a questionnaire (see Appendix G, H, and I for questionnaires). There was general consensus that using the self-monitoring activities was a positive experience.

Students. The students all enjoyed using self-monitoring. All four responded that they felt that self-monitoring helped them write more. When asked which procedure they liked best: self-monitoring on-task behavior or written language performance, 3 students reported liking self-monitoring written language performance more, while the fourth liked self-monitoring on-task performance more. There was consensus from all four students that self-monitoring written language performance helped them more. There was also consensus that they would like to continue using self-monitoring. All four students would like to use self-monitoring in their mainstream room.

Teacher. The teacher also felt positively about the self-monitoring procedures. She enjoyed it and reported that it was not difficult to implement in her routine. She reported that she thought it helped her students produce more writing. She thought the students liked both procedure the same: self-monitoring of on-task behavior and written language performance. She will use self-monitoring in the future.

Mainstream teachers. The mainstream teachers each responded that they would be interested in using self-monitoring in their classrooms.

Summary

The data for interobserver agreement demonstrate that the agreement for experimenter data and second observer were extremely high. The data for interobserver
agreement for experimenter and student data, however were not very close at all. The results for student on-task behavior show an increase in this variable when self-monitoring was used as compared to baseline data. Written language performance data were not as compelling, as there were only slight improvements in this variable when the students used self-monitoring. When the students used a combination of self-monitoring and changing criterion, the results were more compelling. Mainstream teachers reported an increase in on-task behavior in the students in the mainstream classroom, however no change in academic performance. All students teachers and mainstream teachers involved in the study felt positively about using self-monitoring.
CHAPTER 4

DISCUSSION

This chapter consists of five sections. First, the research questions will be addressed. Next, a discussion of the limitations of the study will be presented. A discussion of the implications of the study will follow, and suggestions for future research will be addressed. Finally, a summary of the study will be provided.

Research Questions

1. What effect will self-monitoring of on-task behavior have on students’ on-task behavior?

The results of this study are consistent with the findings of other studies. That is, self-monitoring produced an increase in on-task behavior (Blick & Test, 1987; Cotterman, 1993; Hallahan & Sapona, 1983; Harris et al., 1994; Harris, 1989; Lloyd et al., 1989; Reid & Harris, 1993). When self-monitoring was in effect, on-task behavior increased. When self-monitoring was not, on-task behavior decreased. All students benefited from the self-monitoring procedure with respect to their on-task performance. The most dramatic change occurred for students 2 and 3, the least change was noted for student 1.

2. What effect will self-monitoring academic performance have on written language performance?

Although there were modest positive effects for some of the students in the study (e.g., Student 2, and Student 3), it was not significant enough to claim a functional relationship
or even a positive effect on written language performance. This is contradictory to the results found by Harris et al. (1994), as they found a positive effect for the written language measure. This change in written language was, however, less robust than the change in the on-task behavior. In the present study, a comparable and robust change in written language did not occur. Hence, not all of the students showed a significant difference in written language performance from baseline to self-monitoring conditions, the relationship between self-monitoring and written language performance can not be called functional in the present study.

Beginning with session 20, it became evident that self-monitoring was not producing a corresponding change in written language performance as it was for on-task. Because of this lack of change, the experimenter added the changing criterion with public posting to boost written language performance. This procedure did increase the written language performance for three of the four students. For instance, varying criterion levels were introduced between sessions 31 and 41. At each introduction of the change in criterion, student performance changed as well. Hence, a functional relationship can be claimed between the change in criterion and the dependent variable. Clearly, however, the sole contributing effect of self-monitoring is commingled with the changing criterion component, which was added as a programmatic feature to enhance student learning and productivity.

3. What effect does self-monitoring instruction have on students’ on-task behavior in other classrooms?

The students in this study were involved with two other classrooms. Student 1 attended another class for social studies, science, and health. The teacher in this classroom stated that Student 1 was quieter in her room, more so after the study than before the study and was seemingly paying attention. Student 2 attended another class for
social studies, science and health as well. His teacher for these areas also stated that he was more attentive after the study. Student 3 attended the same class as Student 2 for math, social studies, science, and health. The teacher commented that Student 3 had always been very attentive in her class and had maintained this behavior throughout the study. Student 4 went to another room for social studies, science, and health. His teacher reported that he had always been quiet in her room, “I hardly knew he was there!”, but engaged very little with the class. She added that this did not change during the study.

Given the limitation of not being able to collect direct, observational records of student on-task behavior in the other classrooms, analysis can only be applied to the anecdotal reports of the teachers. Overall, the teacher reports are not conclusive with respect to improved and generalized on-task performance in non-trained settings.

4. What effect does self-monitoring have on students’ written language performance in other classrooms?

Upon interviewing the mainstream teachers regarding written language performance, it was clear that self-monitoring in the resource room had little effect on written language performance in other environments. Student 1’s mainstream teacher said that while student 1 did seem a little more attentive, he had not completed much more written work. This seemed to remain constant throughout the study. Student 2 had begun to turn in some assignments. Prior to self-monitoring, he had not turned in anything. This, however, may be caused by a contingency reinforcement schedule unrelated to this study, that was set up in the resource room to increase Student 2’s output in this class. Student 3 was maintaining his behavior. His teacher reported that he completed his written assignments with some consistency prior to the study and it had not changed. Student 4 continued to remain passive in his mainstream class engaging with neither the class nor the assigned materials. Plans for contingency reinforcement were
under way in the resource room. In sum, with respect to on-task and written language performance in non-trained settings (i.e., other classrooms), the data are inconclusive on the effects of self-monitoring. Teacher reports do not provide compelling evidence of change, especially change that could be attributed to the independent variable. In retrospect, this finding should not be surprising, especially given Baer, Wolf, and Risley’s (1968) admonitions that generalized outcomes need to be planned, not lamented. It was not possible given the constraints of the experiment to program adequately for these generalized outcomes.

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

Students responded positively on a questionnaire including such items as: (1) Did you enjoy monitoring your own behavior? (2) Do you think self-monitoring helped you write more? (3) Which self-monitoring activity did you like best? (4) Which activity did you think helped you more? (5) Would you like to continue using self-monitoring? (6) Would you use self-monitoring in your mainstream room? All four students reported that they enjoyed self-monitoring activities. There was consensus among the four students that using self-monitoring helped them write more words. Three of the four students liked self-monitoring written language performance better than self-monitoring on-task behavior. They commented that they liked to “count up the score and put it on the graph to see how you did”. The student who like self-monitoring on-task behavior better commented that he liked it because it reminded him to “get back to work”. All four students believed that self-monitoring written language performance helped them more. When asked to respond to the question: “Would you like to continue using self-monitoring?” one student said, “What do you mean, we don’t get to do it anymore?” All four students agreed that they would like to continue using self-monitoring. When asked whether they would like to use self-monitoring in the mainstream room, all four reported
that they would like to try it, but only if the other students in the room did it too. "I think it would help the others, too," commented one of the students.

6. Will the teacher view self-monitoring positively?

The resource room teacher, while also the experimenter in the study, had very positive feelings about self-monitoring. It was not difficult to implement self-monitoring and the students enjoyed it. The students did make some improvements, albeit small, in their writing during the study, albeit small improvements, but improvements. The students seemed to like counting their words and finding their "score" for the day. I will definitely use self-monitoring in the future, experimenting further with differing dependent variables.

7. Will the mainstream teacher view self-monitoring positively?

The mainstream teachers, while not directly involved in the study, were asked to respond to a questionnaire upon conclusion of the study. The questionnaire asked the following: (1) Did you see a difference in on-task behavior while the student was monitoring his own behavior? (2) Did you see a difference in the amount of work completed? (3) Would you be interested in trying self-monitoring in your own classroom? Two of the mainstream teachers reported a positive change in the on-task behavior of the students mainstreamed in their rooms. The other teachers saw no change in behavior. However, one commented that the student mainstreamed in her room already had appropriate on-task behavior when he was in her room. Only one mainstream teacher reported a difference in the amount of work completed in their room by these students. This change may be attributed to a contingency reinforcement schedule that was not related to the study. All of the mainstream teachers said that they would like to be trained in self-monitoring so that they may implement it in their rooms. One teacher commented that "It may be too severe of a change in environment from the resource room to the mainstream room for the students to have the same benefits of the self-monitoring in the
mainstream room.” She added that she would like to use self-monitoring in her room to have a consistency for the mainstreamed students, in addition to helping other students in the room.

Limitations

When looking at the data in this study there are several factors to consider that may have an effect on the data. Some of the students involved in the study were taking medication. For instance, two of the students in the study (Student 1 and Student 3) took medication to help focus their attention. This medication is a variable and could have affected the data. Student 1 began taking medication in the first baseline condition. All of the data proceeding baseline were gathered while he was on medication. Student 3 has taken medication for most of his educational career, including all sessions during the study. There is inconsistency in his homelife, and there may have been inconsistency in him receiving medication. This may have affected his behavior and the data.

Student absences occurred during the study. Student 3 had relatively frequent absences, missing four of the 38 sessions (approximately 11%). This inconsistency may have affected the data collected for his on-task behavior and especially written language performance. The representation given by the data may be lower than Student 3’s ability.

The written language measure was based on the total number of words the students wrote within the 10-minute session, including any “nonsense” words. This could affect the data, however, the context of the students writing was reasonably connected, not just a random string of words. Most of the words they used in their writing they copied from the prewriting activity on the chalkboard.

Perhaps the greatest limitation of the study relates to the nature of self-monitoring. Self-monitoring generally works best with tasks that students can do well already. Self-monitoring may be used to build fluency, as it acts as an incentive to encourage quicker
work. In the present study, the students, who were learning disabled, were asked to self-monitor their written language performance, one of their more challenging academic areas. This area was chosen due to the very limited quantity of writing the students were generating. Self-monitoring can build motivation to write faster; however, it does not teach students to write. The task involved reading from the chalkboard, copying words (sometimes letter-by-letter), then scanning the chalkboard again for more ideas. This is a difficult sequence for students with learning disabilities. While the data show only a slight increase in the number of words written, this could be significant given the students, ability and the task.

While there are limitations to the data presented in this study, they may give a more conservative depiction of the actual ability and potential of the students. The gains achieved in the data presented may be understatements due to the nature of self-monitoring and the tasks the students were asked to monitor.

Implications

There are several implications of this study for students, teachers (both preservice and inservice, regular and special education), and parents. Because of the reactivity, associated with self-monitoring, it is a powerful procedure to change behavior. Students should learn this skill and be able to apply it in a variety of ways necessary for their success in educational and personal life. Preservice, inservice, regular, and special education teachers should have this procedure in their repertoire of instruction techniques. Preservice teachers should be trained in self-monitoring while working on certification. Inservice training in self-monitoring is recommended for teachers already in the classroom. Regular education teachers could benefit from this procedure as well as special education teachers. As students with high incidence disabilities as more often serviced in the regular education classrooms, regular education teachers need this type of procedure to aid these
students in achieving success. Self-monitoring can be used in a whole class setting, with benefits similar to those found in this study: increased on-task behavior and academic performance. The increase in academic behavior might be more significant with a class of regular education students because they would not have disabilities to interfere with their efforts.

Parents should also be aware of this procedure as it can be reinforced and applied at home as well as school. Parents could also benefit from training in self-monitoring. This would allow them to reinforce efforts at school to train their students, but also to apply the procedure in the home. As disabilities can occur in more than one member in the family, the parents could train other children—or themselves—to self-monitor, applying this procedure in their own lives.

Further, students at all levels, especially those enrolled in high incidence special education programs (mentally retarded, learning disabled and seriously emotionally disturbed), should be trained in this procedure. It teaches students to take control of their behavior, which is often difficult for students in these programs. Once learned, students can take this skill with them wherever they need it. It’s transportable. This is an especially important skill for special education students as they are frequently in a variety of environments throughout the day due to mainstreaming. Because it is discrete, the special education students can be trained in this procedure and use it covertly, allowing them to fit better into the mainstream environment.

In short, self-monitoring is a powerful procedure for changing behavior in students’ educational, personal, and career lives. It is discrete in the sense that once trained in self-monitoring, students can use it on their own. Teachers should be trained in this procedure and apply it to their unique situations. Self-monitoring is recommended for parents, so that they can reinforce its use at home, and perhaps benefit from its use as
Suggestions for Future Research

While the results of this study have provided additional evidence on the functional effects of self-monitoring with respect to on-task, they have spurred many questions. There are several areas uncovered in this study that could benefit from further research. One methodological improvement on the present study would be to introduce the goal setting, changing criterion condition earlier. The changing criterion procedure that was paired with self-monitoring in this study showed some preliminary positive results, and is a suggested area for further research. Also, generality of behavior change created by self-monitoring needs exploration as well. Replicating this study, but with direct measures of student performance in the mainstream class would be a step in the direction of producing generalized outcomes.

Methodological improvement in the present study. One improvement on the present study would be to introduce the goal setting, changing criterion condition earlier. The effect this condition had on the written language performance of the students involved was more significant than using self-monitoring alone. The changing criterion with public posting condition seemed to be a natural fit with self-monitoring as an independent variable. The students were already observing and recording their behavior through the self-monitoring procedures. The next step involved setting goals for how many words they would write each day, then posting their results.

The use of self-monitoring with written language. The majority of self-monitoring research has employed an arithmetic skill as a dependent variable. Research using written language as a dependent variable with self-monitoring is rare; however more research needs to be conducted in this area. Written language is a difficult task as it requires synthesis of a variety of tool skills. If a student is deficient in any of the necessary skills,
the task of writing is even more difficult. Self-monitoring builds motivation and
certainty as a student observes and records his behavior and receives immediate,
concrete feedback.

**Features critical to self-monitoring procedures using written language.** Further
research needs to be conducted on the use of self-monitoring with written language
performance as a dependent variable, so as to determine the critical features of a self-
monitoring procedure with written language. This might require a different method of
using self-monitoring than has been used in prior research to best facilitate the writing
procedures. The writing task itself needs to be analyzed to determine how self-monitoring
would be most effective in building the complex skills necessary in writing.

**Generality of behavior change created with self-monitoring.** While it has been
shown that self-monitoring produces change in behavior, further research needs to be
conducted on whether this change is generalized to other settings or other behaviors. A
behavior change is not a complete change unless it occurs in the students’ natural
environment. Research should be conducted to determine the conditions necessary for a
student to apply his skills in self-monitoring to another environment or behavior. This
might require analysis of the natural environment (mainstream classroom, occupational
setting) to determine the features necessary for the student to be successful using self-
monitoring in this setting. Research in this area would increase the value of self-
monitoring significantly.

**Using changing criterion procedure in conjunction with self-monitoring with
written language.** While self-monitoring of written language seemed to make only a slight
difference in written language performance in the present study, the changing criterion
with public posting condition set the occasion for a more significant change in this
measure. When using the combination of self-monitoring with changing criterion, as the
students observe and record their behavior, they can aim for a goal and post their results using the public posting procedures. Further research in this area could focus on features critical in the combination of these procedures to increase written language. The combination of these procedures could be used for a variety of dependent variables as well.

The effects of goal-setting on student performance. Combining changing criterion with self-monitoring allows for using goal-setting in a behavior change procedure. Changing criterion procedures are based on setting a criterion for reinforcement and changing this criterion as the student demonstrates success in reaching it to build the target skill. This allows the experimenter to either increase or decrease a behavior. In the present study, the effort was to increase written language performance. In a changing criterion condition, the experimenter generally sets the criterion or goal the student needs to achieve to receive reinforcement. However suggested research would focus on allowing students to set their own goals. This would build the motivation and give students further ownership of the behavior change.

Summary

The present study was conducted to determine the effects of a combination of self-monitoring of on-task behavior and written language performance and changing criterion with public posting on student on-task behavior and written language performance. The subjects were four elementary school boys enrolled in a resource room for students with learning disabilities. This study took place in a resource room containing twelve male students who qualified for services for learning disabilities in an urban elementary school. Self-monitoring procedures for on-task behavior included listening to a tone recorded at 60 second intervals and responding to the question, “Am I on-task?” Responses were recorded by the student. The procedures for self-monitoring of written language
performance involved the student writing for a 10-minute session, counting the number of words he had written, and graphing the number of words. The changing criterion with public posting condition involved the experimenter setting a goal for each student for the number of words written in the 10-minute session, then posting whether he met his goal. During baseline conditions, the experimenter collected data on student on-task behavior and written language performance. During the self-monitoring conditions, the students monitored their on-task behavior and written language performance simultaneously. In the changing criterion with public posting condition, the student received their goal for the day’s session prior to writing, wrote, and recorded whether they met their goal.

While the results show a functional relationship between self-monitoring and on-task behavior, the data for the relationship between self-monitoring and written language performance were less compelling. The increase in written language performance during the self-monitoring alone conditions was only slight however, it was much greater upon introduction of the changing criterion with public posting condition.

The results imply that self-monitoring is a powerful procedure for changing on-task behavior; however, further research needs to be conducted to determine the conditions that would produce the same effects for written language performance. Several implications for students and teachers and parent training were discussed.
LIST OF REFERENCES


Psychology, 8, 405-419.


Appendices

Appendix A  Classroom schematic
Appendix B  Student recording sheet for on-task behavior
Appendix C  Student recording sheet for written language performance
Appendix D  Procedural interobserver agreement form
Appendix E  Training script for self-monitoring on-task behavior
Appendix F  Training script for self-monitoring of written language performance
Appendix G  Student opinion questionnaire
Appendix H  Teacher opinion questionnaire
Appendix I  Mainstream teacher questionnaire
Appendix B

Was I on-task?

<table>
<thead>
<tr>
<th>ON</th>
<th>OFF</th>
</tr>
</thead>
<tbody>
<tr>
<td>ON</td>
<td>OFF</td>
</tr>
<tr>
<td>ON</td>
<td>OFF</td>
</tr>
<tr>
<td>ON</td>
<td>OFF</td>
</tr>
<tr>
<td>ON</td>
<td>OFF</td>
</tr>
<tr>
<td>ON</td>
<td>OFF</td>
</tr>
<tr>
<td>ON</td>
<td>OFF</td>
</tr>
<tr>
<td>ON</td>
<td>OFF</td>
</tr>
<tr>
<td>ON</td>
<td>OFF</td>
</tr>
<tr>
<td>ON</td>
<td>OFF</td>
</tr>
</tbody>
</table>

**total**

**total**
Appendix C

<table>
<thead>
<tr>
<th>NAME</th>
<th>DATE</th>
<th>SESSION</th>
<th>IOA (Data)</th>
<th>Proc. IOA</th>
</tr>
</thead>
</table>

Written Language Performance Student Recording Sheet

<table>
<thead>
<tr>
<th>Date</th>
<th>Words Written</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix D

Procedural interobserver agreement recording form

1. Did the teacher complete a prewriting activity discussion and web prior to the writing session?  
   ____ Yes  ____ No

2. Were the students given 10 minutes for writing?  
   ____ Yes  ____ No

3. Was the recorded tone played audibly during the writing session?  
   ____ Yes  ____ No

4. Did the students have on-task recording forms?  
   ____ Yes  ____ No

5. Did the students use the on-task recording forms accurately?  
   ____ Yes  ____ No

6. Did the students have written language recording forms?  
   ____ Yes  ____ No

7. Did the students record written language on the forms accurately?  
   ____ Yes  ____ No

8. Did the students have graphs for written language?  
   ____ Yes  ____ No

9. Did the students graph written language data accurately?  
   ____ Yes  ____ No
Appendix E

Training Script for Self Monitoring of On-task Behavior

"While I believe that you are all putting forth some effort in your daily work, I believe that each of you is capable of much more. You know how sometimes you are sitting in your seat and listening and then you start thinking about something else and all of a sudden you realize that the teacher has been talking the whole time and you didn't hear any of what she said? Or you are sitting at your desk with an assignment in front of you and you start drawing a picture in the corner and you feel really busy because you are drawing a picture, but when the teacher asks you to hand in your assignment, yours isn't finished? Or when you get started and are working really hard on your assignment and then you see something out the window and you keep watching it and thinking about it and next thing you know it is recess time and your work isn't finished? Well, we are going to learn something that will help you keep your behavior focused on your task, whether that is listening to the teacher, or working quietly at our seats. It is an activity called self-monitoring. It involves you recording your own behavior."

"You will each get a recording sheet, like this, to tape to your desk. On the recording sheet, you will notice two columns, one that says "ON" and one that says, "OFF". This recording sheet will help you keep track of your behavior. While you are working on your writing, I will play a tape that has a tone every once in a while. Listen, while I play the tone for you. TONE. When you hear the tone as you are working, you will ask yourselves, "Am I on-task?". If you are, mark an "X" in the box in the "ON" column. If you are not on-task at the time of the tone, don't waste time worrying about not paying attention, just mark an "X" in the "OFF" column. What do you do when the you hear the tone? [mark a box]. How do you know if you are on-task? On-task means you have your eyes where they are supposed to be--maybe on the teacher or a classmate
when they are talking during instruction or discussion, maybe on your paper. You are on-task when your pencil is in your hand in a writing or erasing position. You are on-task when you are writing on your paper. You are also on-task if you are talking with the teacher. What are some examples of not being on-task? Looking out the window is not being on-task. Talking to a neighbor is not on-task. Playing with something is not on-task. Drawing doodles on your paper is not on-task. Rushing through to get finished first is not being on-task.

**Teacher Modeling**

Demonstrate what on-task behavior looks like. Sit at desk with pencil in writing position. Look at the chalkboard and copy words on your paper.

Demonstrate what not being on-task looks like. Look out window. Doodle on your paper. Talk to your neighbor. Quickly write down nonsense to finish first.

**Buzz Session:** Is this on-task? Sit twirling pencil around and looking around the room.

Is this on-task? Sit in seat with eyes on your paper and pencil in writing position.

Is this on-task? Draw pictures on the paper at your desk.

Is this on-task? Sit with eyes on the paper and pencil in erasing position.

Do as many trials as necessary for students to feel confident with the difference between on-task and not being on-task.

**Role Play**

Now it’s your turn to show me that you know what is on-task and what is not. I will put you with a partner and you should take turns demonstrating a behavior and your partner has to decide whether you are on-task or not. When one partner has done three demonstrations and the other has decided which they are, switch roles. Each partner should have a turn being the demonstrator and the guesser. [Put students in partners and
walk around the room to see whether the understand the concept]

Let's go back to our seats. Who would like to do a demonstration of on-task for the class. [Choose a student] What was he doing that told you he was on-task? Who would like to demonstrate not on-task? [Choose a student] What was he doing that told you he was not on-task?

**Practice Self-monitoring**

I will give each of you a recording sheet now so that we can practice monitoring whether we are on-task. When you hear the tone on the tape remember you should ask yourself, “Am I on-task?” and mark either the “ON” or “OFF” box. Let’s practice, I will turn on the tape and you should listen for the tone and mark your sheet. Ready begin. [Listen to the tape for one tone and stop the tape] Everybody should have marked their sheets. [Reinforce everyone who marked their sheet with accuracy] We will do a few more tones to practice marking our sheets. It is important that you mark the sheet correctly, you will not get in trouble if you mark “OFF”. You should be honest each time you mark your sheet. [Go through several trials and watch and reinforce accuracy] Now that you have finished recording, count how many “ON” responses you have and put the number in the box at the bottom of your recording sheet. Now do the same for the “NO” responses.

I am going to pass out your handwriting for today and as you work on this I will leave the tape running. You should mark you record sheet each time you hear the tone then go back to your handwriting. [At the end of the session reinforce for accuracy]
Appendix F

Training Script for Self-monitoring Written Language Performance

"You are working on becoming better writers, and many of you are improving quickly. I realized that you have trouble seeing the improvement you are making. You turn your papers in and I record your improvement, but maybe you don’t see it. I am going to teach you a way of recording your own writing improvement so that you can actually see and understand it."

"Our writing program will stay the same, we will make a web on the chalkboard of ideas responding to a prompt. Then we will write for 10 minutes quietly at our seats. You will write the entire time, trying to write as much as you can. When I tell you time is up, you will put your pencil down and I will give you a sheet like this. [Show written language recording sheet] 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 cute and funny.’ --5 Then you count the second line and write the number at the end of the line, and continue this procedure throughout the passage. Once each line is counted, you would add the numbers to get a total number of written words in the passage. You may use a calculator for this. You will circle the total number of words written and write it in the box marked ‘Total number of words written’ on your recording sheet. Next you will need to write the date in the box marked, ‘Date.’"

"After you have recorded the date and total number of words written, you are ready to graph your data. Each of you will receive a graph like this. [Show written language graph.] You see that the date is on the bottom of the graph and the number of written words is on the side. You will first write the date on the first blank on the bottom then look up the graph to find the number of written words. You will make a dot where the date and the number of words meet. For example, let’s say today is December 6,
1996, I’ll write the date on the first blank, all in numbers so it fits: 12-6-96. Let’s say I wrote 20 words, I look up to find the twenty mark and I trace my fingers along the date and number lines and make a dot where they meet. I’d like you to do the same on your graph.”

Guided Practice

“I will pass back your writing from earlier today, let’s count the words. Remember to count the words in each line and write it at the end.” [Walk around the room assisting where necessary and reinforcing efforts with verbal praise] [When ready.] “I will give you a calculator so you can add up your total words.” [Again walk around and assist and reinforce.] [When ready] “Now I will give you your recording sheet, record the date and your total.” [When ready.] “Next I will give you your 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 for the total number of words on the side of the graph. Put a finger on the date and one on the number and trace them along the lines until they meet. Make a dot where the lines meet.” [Walk around and assist and reinforce.] “Great job! Tomorrow we will do this after writing and see how we compare. Please pass in your recording sheets and graphs.”
Appendix G

Student Opinion Questionnaire

Please answer each question. Mark an “X” on the line for the answer that best fits each question.

1. Did you enjoy monitoring your own behavior?
   ■ Yes
   ■ No

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

3. Which self-monitoring activity did you like best?
   self-monitoring: ■ on-task behavior
   ■ written language performance
   ■ I liked them the same.

4. Which activity did you think helped you more?
   self-monitoring: ■ on-task behavior
   ■ written language performance
   ■ I think they helped the same.

5. Would you like to continue using self-monitoring?
   ■ Yes
   ■ No

6. Would you use self-monitoring in your mainstream room?
   ■ Yes
   ■ No
Appendix H

Teacher Opinion Questionnaire

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

1. Did you enjoy using self-monitoring 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. Did your students enjoy monitoring their own behavior?
   - Yes
   - No

5. Which self-monitoring activity did your students like better?
   - self-monitoring:
     - on-task
     - written language performance
     - They like both the same.

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

Mainstream Teacher Questionnaire

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

1. Did you see a difference in on-task behavior while the student was monitoring his own behavior?

   _____ Yes
   _____ No

2. Did you see a difference in the amount of work completed?

   _____ Yes
   _____ No

3. Would you be interested in trying self-monitoring in your own classroom?

   _____ Yes
   _____ No