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EXAMINING THE EFFECTS OF WRITING INTERVENTIONS ON THIRD-GRADE STUDENTS' READING COMPREHENSION

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Abstract

Writing interventions have proven to be effective in improving students' reading skills (Graham & Herbert, 2011) but are generally underacknowledged. In the current study, data from a randomized controlled trial examined whether there were differences in third-grade students' reading comprehension based on whether they received a Performance Feedback + Cover, Copy, Compare intervention (n = 47) or a Performance Feedback intervention (n = 48). Results indicated that students assigned to the Performance Feedback + Cover, Copy, Compare intervention did not improve their reading comprehension to a greater extent than the Performance Feedback intervention. No statistically significant differences were observed in students' post-intervention reading comprehension performance based on the intervention they received. However, an exploration of students' reading performance over time revealed that only students assigned to the Performance Feedback intervention demonstrated statistically greater improvements. Based on these findings, further adaptations of the Cover, Copy, Compare intervention need to be investigated to fully examine whether it can be incorporated as part of classwide instructional practices to improve emerging writers' reading comprehension.

Keywords: writing interventions, writing, reading, reading comprehension

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Reading interventions have been at the forefront of improving literacy skills among students. However, although not a primary focus, writing interventions have been shown to be effective in influencing students' literacy skills, including students' reading abilities (Graham & Herbert, 2011). Previous research has demonstrated that reading and writing have a shared relationship and are important for improving one another (Tierney & Shanahan, 1991). However, most of the research studies examining the relationship between reading and writing were conducted with small groups of participants who were experiencing academic difficulties. Given that many students in the United States are experiencing difficulties in reading and writing, classwide instructional interventions have the potential to address the academic needs of a larger group of students. As a result, the purpose of this study is to examine whether classwide writing interventions, such as Performance Feedback and Cover-Copy-Compare, affect students' reading performance.

The Importance of Literacy Skills and The Condition of Literacy in the United States

Literacy skills play a fundamental role in how people engage in daily life activities and affect social, educational, economic, and health outcomes. Lacking the ability to read, write, or speak fluently can limit daily life functioning as well as inhibit educational attainment. For example, longitudinal studies of students with low literacy skills suggest they tend to have poor academic performance in comparison to their typically developing peers (Juel, 1988; McNamara et al., 2011), are more likely to repeat a grade level (McCoy & Reynolds, 1999), drop out of school, fail to meet graduation requirements, or have lower graduation rates (Hernandez, 2011). In addition, some studies have suggested that students with low literacy skills are at greater risk

for delinquency, incarceration, and adverse life outcomes (Manguin & Loeber, 1996). Because literacy skills serve a foundational role in students' development, it is critical that students become proficient in these skills.

Reading and writing are fundamental components of literacy and are crucial to students' academic success. However, a large portion of students in the United States are not performing at the expected proficiency levels. In reading, 66% of fourth-, 73% of eighth-, and 70% of twelfth-grade students were not reading at the proficient level (U.S. Department of Education, 2019). In writing, 72% of fourth-, 74% of eighth-, and 73% of twelfth-grade students were not writing at the proficient level (U.S. Department of Education, 2003; 2011). Reading assessments are conducted by the U.S. Department of Education every two years for fourth- and eighth- grade students and every four years for twelfth-grade students, with the most recent assessment occurring in 2019. However, writing assessment for fourth-, eighth-, and twelfth-grade students have not been conducted in several years, with the most recent assessment for fourth-grade students occurring in 2011. Thus, across the United States, it is evident that students are struggling to establish proficiency in their literacy skills.

Several factors, such as absenteeism, instructional practices, teacher training and home factors, may contribute to the difficulty students have establishing proficiency in literacy, resulting in poor academic performance. For example, Gottfried's (2014) work on school absenteeism highlighted that students with a significant number of unexcused absences were at greater risk for poor math and reading performance as well as engagement in learning. Aside from student absenteeism, ineffective instructional practices also impact students' academic performance because many teachers encounter difficulty effectively implementing reading strategies in the classroom and need additional training in order to improve students' reading

comprehension (Okkinga et al., 2018). Additionally, the training teachers receive can also influence the practices they implement in the classroom, which can impact literacy development. Given that many teachers are not adequately trained on effective practices for students' learning (Kennedy, 2016), and professional development for teachers varies across schools, both in terms of content and quality, exiting educational practices may not support the development of students' reading comprehension. Lastly, home literacy experiences are associated with students' reading comprehension, and students with parents who are engaged in literacy activities and have literacy expectations were more likely to improve in their reading comprehension (Dong et al., 2020).

Theoretical Conceptualizations of Reading and Writing

Because literacy proficiency in the United States is low for students, it is important to focus on the development of literacy skills in children. In reading, there are numerous theoretical models that describe how literacy skills develop, such as the Bottom-up Model (Gough & Tunmer, 1986), the Top-down model (Goodman, 1967; Smith, 1971), and the Interactive Model (Rumelhart, 1980). However, Juel and colleagues' (1986) Simple View of Reading model is widely considered, especially for emergent readers. This model hypothesizes that students' reading comprehension is developed by word recognition and listening comprehension skills. Results from Juel and colleagues' initial empirical work demonstrated that word recognition significantly affected reading comprehension among first- and second-grade students; however, listening comprehension did not significantly affect reading comprehension until the second grade.

In writing, there are a number of theoretical models, such as the Not So Simple View of Writing model (Berninger & Winn, 2006), the Literacy Processing Model (Clay, 2001), and the

Metacognitive Model (Flavell, 1979). For emergent writers, Berninger and Winn's (2006) Not So Simple View of Writing identifies three focal components, text generation (i.e., ideation and composition), transcription (i.e., spelling and handwriting), and executive functioning (i.e., supervisory attention, planning, reviewing, revising, and self-regulation strategies), which are mediated by working memory. A study based on the Simple View of Writing (Juels et al., 1986) and the Not So Simple View of Writing (Berninger & Winn, 2006) examined the direct and indirect relationship between language and cognitive skills in writing (Kim & Schatschneider, 2017). This study hypothesized that working memory is a major component of writing and is associated with both language and cognitive skills. Results indicated that working memory (ES = .43) was related to students' language and cognitive skills. Specifically, students' writing was influenced directly by oral language (ES = .46), spelling (ES = .37), and handwriting (ES = .17), whereas higher-level cognitive skills (i.e., inference and perspective-taking), vocabulary, grammatical knowledge, and working memory indirectly influenced students' writing. These results suggest that when students are engaging in writing, words are retrieved from memory and utilized to spell and write words. Further, these findings suggest that in both reading and writing, students need to engage in word decoding and encoding, which is consistent with the theoretical conceptualizations of the relationship between reading and writing, wherein writing can improve students' reading skills through encoding and decoding. Decoding requires students to be able to break down written words into letters, match sounds to the letters, and blend them together to sound out words, whereas encoding requires students to hear a sound, utilize their working memory to retrieve the letter that represents the sound, and write it out to spell words.

Theoretical Conceptualization of the Relationship Between Reading and Writing

The utilization of decoding and encoding in the Simple View of Reading (Juel et al., 1986) and the Not So Simple View of Writing (Berninger & Winn, 2006) models highlight the

relationship between reading and writing. However, there are additional components that contribute to the relationship between reading and writing that are not directly identified in the previously reviewed theoretical models. Specifically, Tierney and Shanahan (1991) classified three focal components in the reading and writing relationship. First, the communication component emphasizes that reading and writing inform one another. For example, students should be able to acquire reading comprehension when writing text for other readers and readers should acquire knowledge about writing when reading and interpreting text. Second, the collaboration component identifies reading and writing as essential skills that enable students to perform specific tasks. For example, as students read a text and answer text questions, they process and organize the information read and then translate their thoughts into writing. Finally, the shared knowledge and cognitive processes component highlights that reading and writing retrieve information from similar knowledge and cognitive systems. As a result, it is conceptualized that similar knowledge systems are used when students decode and encode words in reading and writing.

Empirical Evaluations of the Relationship Between Reading and Writing

A number of studies have been conducted that support the previously reviewed theoretical models examining the relationship between reading and writing. Many of these studies (Abbott et al., 2010; Berninger et al., 2002; Foorman et al., 2011; Hayes & Berninger, 2010; Langer, 1986; Kim, Park, & Park, 2013; Kintsch & Mangalath, 2011) examined the relationship between reading and writing using cross-sectional or correlational methods and found that reading and writing were positively related, among school-age children. Further, evidence from neuroimaging studies (Longcamp et al., 2003; Pugh et al., 2006; James &

Engelhardt, 2012) has supported previous literature findings on the relationship between reading and writing.

Several studies have attempted to examine the developmental nature of the reading and writing relationship. In one of the earliest studies, Shanahan (1984) examined the relationship between reading and writing skills by comparing 256 second- and 251 fifth-grade students in areas of reading (i.e., phonics, reading comprehension, word recognition) and writing (i.e., vocabulary diversity, range of grammatical structures, spelling accuracy, organization). Findings indicated a statistically significant association between word recognition skills and organization in second grade. In addition, there were statistically significant associations between reading comprehension and components of writing, including the range of grammatical structures, vocabulary, and spelling accuracy in the fifth grade. These findings demonstrated that there was a developmental relationship between reading and writing and prompted additional studies that examined this relationship using alternative research methodologies to further examine whether the relationship is bidirectional or unidirectional.

For example, Abbott and colleagues (2010) examined the developmental relationship between students' reading and writing performance across elementary and middle school. Using a longitudinal cohort design, 128 first-grade students were followed through fifth grade, and 113 third-grade students were followed through seventh grade. Students were assessed annually on handwriting, writing composition, spelling, word reading, and reading comprehension measures. In this study, three developmental models were examined including (a) the relationships between handwriting, spelling, and written composition; (b) the relationships between handwriting, spelling, and word reading; and (c) the relationship between word reading, spelling, reading comprehension, and written composition.

Results of this study indicated that, in relation to the first and third models investigated, for reading and writing, students' spelling performance had a statistically significant association with text composition across the first through seventh grades. In addition, as assessed by the second model examined in this study, findings indicated that spelling had a statistically significant association with word reading across first through seventh grade, and it was reported that handwriting mediated the relationship between spelling and word reading when introduced in the first grade. Of direct relevance to the relationship between writing and reading as well as the purpose of the present study, the third model found that written composition had a statistically significant association with reading comprehension across third through fifth grade.

More recently, Ahmed and colleagues (2014) further examined the longitudinal relations between students' reading and writing performance. Using latent change models, this study examined two unidirectional models (i.e., reading-to-writing, writing-to-reading) as well as one bidirectional model (i.e., shared relations of reading and writing) among 316 first-grade students who were followed over four years. Annually, students were assessed on their reading decoding, sentence reading, oral reading fluency, reading comprehension, spelling, sentence writing, compositional fluency, and writing quality. Unlike the work of Abbott and colleagues (2010), Ahmed and colleagues differentiated students' reading and writing skills at the word, sentence, and passage levels to account for intraindividual differences that may exist within the subskills associated with reading and writing.

Findings suggested that the reading-to-writing model was a better fit and had a greater effect on writing, specifically at the word and text level. The shared relations of the reading and writing model had a greater effect on writing, specifically at the sentence level. However, sentence reading, and sentence writing had a bidirectional relationship, which suggests that

students use both reading and writing to improve sentence-level skills. Although the results of this study suggest that reading affects writing to a greater degree across developmental levels, given the longitudinal design of the study and lack of experimentation regarding reading and writing instructional practices, it is important to consider how typical classroom instructional procedures may have affected the findings. Specifically, assessments of classroom literacy instruction practices (Baumann et al., 2000; Cutler & Graham, 2008; Graham et al., 2003; Foorman et al., 2006) suggest that the majority of instructional time in the elementary grades focuses on reading instruction, with writing instruction limited to approximately six hours per week. As a result, it is possible that the results obtained by Ahmed and colleagues were affected by the increased amount of reading instructional practices relative to writing instruction practices that were occurring during elementary school.

Empirical Evaluations of the Effect of Reading and Writing Interventions

Although prior research has examined the developmental aspect of reading and writing, additional information regarding the relationship between reading and writing can be obtained from experimental studies examining the effect of reading and writing interventions on reading and writing (Graham & Hebert, 2011; Tierney & Shanahan, 1991; Weiser & Mathes, 2011). Among those empirical investigations examining the effect of reading interventions on students' writing performance, Graham and colleagues (2018) conducted a meta-analysis examining the effect of reading interventions on writing performance. In this study, 89 experiments conducted from 1980 to 2016 were synthesized, examining a variety of reading instructional practices among preschool through twelfth-grade students. Results suggested that reading instructional practices, such as phonological awareness, phonics, and reading comprehension, had a moderate effect on students' writing performance (d = .57), spelling (d = .56), and writing quality (d =

.63), and a small effect on words written (*d* = .37). In addition, Graham and colleagues reported that reading text as well as observing other students' interactions with words or text (i.e., reading) had a small to moderate effect on students' writing performance (d = .35), writing quality (*d* = .44) and spelling (*d* = .28). The evidence of this study suggests that there is an effect of reading on students' writing, wherein students who are provided reading instructions, engage in reading, or observing other students' read words or text improved their writing performance.

Because classroom instructional practices generally focus on reading more than writing, research on reading interventions is more frequently conducted than writing interventions. However, in a meta-analysis of studies investigating the effect of writing interventions on reading, Graham and Herbert (2011) synthesized 95 experiments conducted from 1930 to 2008 that examined a variety of writing instructional practices among students from first to twelfth grade. Findings indicated there was a small effect (*d* =.37) in typical students' reading comprehension when they were instructed to read a passage and write about the text read and a large effect (*d* = .67) for students who displayed difficulty in reading and writing. In addition, a small effect size (*d* = .22) was found for writing instructional procedures, which included process writing, text structure, paragraph, and sentence instruction, on students' reading comprehension, whereas instructional procedures focusing on sentence construction and spelling produced a large effect (*d* = .66) on students' reading comprehension. Graham and Herbert reported a small effect (*d* = .35) on students' reading comprehension when the time students spent engaged in writing increased. These findings suggest that reading and writing about a passage that was read as well as writing instructional procedures such as sentence construction and spelling affect students' reading comprehension.

Classwide Instructional Writing Interventions

Prior research has shown that instructional interventions are beneficial to students' reading and writing development. Although many of the reading and writing studies synthesized in the previously reviewed meta-analyses (Graham & Hebert, 2011; Graham et al., 2018) demonstrated improvements in student's reading and writing development, many of the studies were conducted with small groups of participants who were experiencing academic difficulties. Given that many students in the United States are experiencing difficulties in reading and writing, classwide instructional interventions have the potential to address the academic needs of a larger group of students because they are developed to be used with an entire classroom of students. Specifically, classwide instructional interventions are cost-efficient, easy to implement, and used with all students (Barrett et al., 2020).

One classwide intervention that has been used to improve students' writing performance is performance feedback. This intervention provides students with feedback from their teacher, peers, or parents about their performance (Hattie & Clarke, 2019). Graham and colleagues (2015) conducted a meta-analysis of studies that examined the relationship between writing assessments that included some form of feedback or assessment of writing skills and first- through eighth-grade students' writing quality. In this study, 35 experiments that were conducted over a 37-year period (1975 to 2012) were synthesized based on the form of writing feedback or assessment results that were provided to students and included: (a) self-assessment, (b) peer and adult feedback, (c) curriculum-based measurement results, (d) computer marking systems, and (e) 6 + 1 Trait writing program. Findings indicated that feedback provided by the student (d = .62), peers (d = .58), and adults (d = .87) had moderate to large effects on students' writing quality. In this study, the use of a classwide feedback intervention improved the writing ability of

typically developing students, demonstrating the need for additional classwide writing interventions that are efficient, and effective in helping students improve their writing ability.

Because classwide writing interventions are a proven resource for students in a school setting, several researchers conducted randomized control trials, specifically examining the efficacy of a classwide performance feedback intervention in writing among elementary students (Eckert et al., 2006; Hier & Eckert, 2014, 2016; Koenig et al., 2016; Truckenmiller, et al., 2014). In this intervention, weekly, students received feedback from the experimenters regarding their total words written on a writing prompt from the previous writing session in an effort to provide feedback regarding their writing performance (i.e., improve or decline). Findings in these studies suggested that students receiving the performance feedback intervention improved their writing generation (as measured by the total words written) and their writing accuracy (as measured by the total number of correct writing sequences) to a greater extent than students receiving a control writing condition. Although the collective findings from these research studies demonstrated the efficacy of the performance feedback intervention on students' writing, none of the studies examined whether the intervention affected other literacy skills, such as students' reading comprehension.

Another classwide writing instructional intervention that has been used to improve students' spelling performance is Cover-Copy-Compare. In this intervention, students examine the spelling of a word and attempt to correctly spell the word covered from memory (McGuigan, 1975). Specifically, students (a) view and study the spelling word, (b) cover the spelling word, (c) write the spelling word from memory, and (d) uncover the spelling word and evaluate their spelling for accuracy. If the students' spelling is accurate, the students move on to the next spelling word. If the students' spelling is incorrect, they cover the word and practice spelling the

word an additional time. Any spelling word can be used for the intervention, including spelling words previously targeted in school or new words that students are unable to spell accurately.

In a meta-analysis examining the Cover, Copy, Compare intervention, Joseph and colleagues (2012) synthesized 17 single-case experimental design studies from 1983 to 2007 that examined the effects of Cover-Copy-Compare, and other variations of the intervention on elementary and secondary students' spelling performance. Although the results indicated that the intervention had limited effectiveness when used in isolation (Percent Nonoverlapping Data [PND] = 67.3%), large effects (PND = 92.3%) on students' spelling were reported when Cover, Copy, Compare was combined with another intervention, such as goal- setting, or performance feedback.

To further examine the efficacy of Cover-Copy-Compare, Williams, and colleagues (in press) conducted a randomized controlled trial that compared the classwide performance feedback intervention in isolation with a combined classwide performance feedback and Cover, Copy, Compare intervention. Third-grade students' spelling and writing performance was examined. Although students assigned to both conditions improved their spelling and writing performance over the course of the study, students assigned to the combined intervention had greater improvements in their spelling accuracy. Although the work by Williams and colleagues expands our understanding of how the two classwide interventions affect students' spelling and writing performance, no examination of the effect on students' reading comprehension was considered.

Purpose of the Present Study

The purpose of the present study was to further examine the relationship between reading and writing by assessing the effect of writing interventions on third-grade students' reading performance. To date, no research has examined the effect of Performance Feedback or

Performance Feedback + Cover, Copy, Compare interventions on elementary students' reading performance. For the purpose of this study, I utilized data from one randomized controlled trial (RCT; Eckert et al., 2023) that examined the effectiveness of Performance Feedback and Cover, Copy, Compare interventions on students' writing performance. As a result, the scope of the present study and the dataset used is different from the RCT, which did not examine the effect of the two interventions on students' reading performance.

To address the study's aim, the following research question was posed:

1) Did the Performance Feedback + Cover, Copy, Compare intervention improve students' reading comprehension to a greater extent than the Performance Feedback intervention?
    a) Based on prior research (Graham & Hebert, 2011) indicating that students who engage in combined writing interventions, such as sentence construction and spelling, demonstrated greater improvements in reading comprehension, it was hypothesized that students in the Performance Feedback + Cover, Copy, Compare intervention, would exhibit greater reading comprehension performance than students assigned to the Performance Feedback intervention.

Method

Participants and Setting

The data for this study were obtained from an individual randomized controlled trial collected among a single cohort of third-grade students during the 2017-2018 academic year. Approval by the participating school district and the Syracuse University Institutional Review Board was obtained. All human research protection guidelines were followed, including obtaining parental/guardian consent and student assent prior to screening students for the study's

inclusion criteria. Third-grade students were recruited from urban public elementary schools in the northeast, with the majority of students eligible for free- or reduced-price lunch.

Prospective participants were screened for eligibility. To be enrolled in the study, students were required to meet the inclusion criteria: (a) receiving general education; and (b) writing more than five words on the Essay Composition subtest of the Wechsler Individual Achievement Test-Third Edition (WIAT-III, Pearson, 2009), which corresponded with a standard score above 40. Students were excluded from the study if they were receiving (a) special education services that affected their writing skills based on teacher reports, or (b) English instructional programming for English Language Learners or Multilingual Learners.

Although a total of 105 students were enrolled to participate in the present study, only 95 students (see Figure 1) met the inclusion criteria and were retained for the final sample. Overall, there were more male (55.8%) than female (44.2%) students and the average age was 8 years, 3 months (range, 8.08 to 10.08). Most students were Black or African American (44.2%) or White (31.6%). A small percentage of students self-identified as Somali (7.4%), Hispanic (7.4%), Nepali (6.3%), and Arab (5.3%). A small percentage of students were receiving special education services (8.4%) but met the inclusionary criteria and were provided instructional modifications or accommodations that did not influence their ability to participate in the present study.

Research Assistants

This study included two groups of research assistants. The first group of research assistants was responsible for administering interventions to participants, and the second group was responsible for scoring and data entry. Doctoral-level graduate students and undergraduate students in psychology served as research assistants in both groups. Research assistants were required to complete extensive training in research ethics through the Collaborative Institute

Training Initiative (CITI), administration and scoring of measures, procedural integrity, and data entry. All research assistants were required to be 100% proficient in the administration of intervention protocols as well as scoring and entering data.

Eligibility

Participants completed two subtests of the Wechsler Individual Achievement Test-Third Edition (WIAT-III; Pearson, 2009) to determine eligibility for the study (a) the Alphabet Writing Fluency subtest, and the Essay Composition subtest. The WIAT-III is a norm-referenced measure of academic achievement that can be administered to children and youth between the ages of 4 to 19 years and includes a number of subtests assessing math, reading, writing, oral expression, and listening comprehension.

For the purpose of this study, only the two subtests were administered to all participants in a group format following the standard administration directions detailed in the manual. The Alphabet Writing Fluency subtest assessed participants' ability to write letters from the alphabet in a 30-second time frame, whereas the Essay Composition subtest assessed participants writing fluency using a descriptive prompt, where participants planned and composed an essay in a 10-minute time frame.

Psychometric evidence supporting the reliability and validity of the two subtests was reported in the manual (WIAT-III, Pearson, 2009). Test-retest reliability was measured for subtests in the WIAT-III by administering the test two times over a range of 2 to 32 days. The third-grade test-retest reliability coefficient of the Alphabet Writing Fluency subtest is .69, and the reliability coefficient of the Essay Composition subtest ranged from .86 to.87. The intercorrelation of the WIAT-III Alphabet Writing Fluency subtest and the Written Expression Composite score is .68, and the intercorrelation of the WIAT-III Essay Composition subtest and

the Written Expression Composite score is .73. Validity evidence was provided by correlating the subtests of the WIAT-III with WIAT-II (WIAT-II; Wechsler, 2001). The resulting estimates fell below accepted validity thresholds for the Essay Composition subtest (r = .39) and the Alphabet Writing Fluency subtest (r = .45).

Pre-Intervention

Following the eligibility assessment, three pre-intervention sessions were conducted over a three-week period. The pre-intervention sessions consisted of administering (a) the Test of Silent Reading Efficiency and Comprehension (TOSREC; Wagner et al., 2010), (b) a Curriculum-Based Measurement in Written Expression (CBM-WE; AIMSweb, 2002) probe, and (c) a Curriculum-Based Measurement in Spelling (CBM-S; AIMSweb, 2002) probe. For the purposes of this study, the TOSREC is being used to examine participants' reading comprehension performance over the course of the study. Students' performance on the CBM-WE and CBM-S probes were used to establish pre-intervention equivalency across intervention conditions and were reported descriptively.

TOSREC

The TOSREC is a norm-referenced measure of silent reading efficiency and comprehension that can be used with students in grades first through tenth. By asking participants to determine whether a sentence read is true, based on their understanding. For the purpose of this study, the TOSREC was administered in a group format using a third-grade version of the TOSREC that consists of 56 items. Following standardized procedures outlined in the manual (TOSREC; Wagner et al., 2010), research assistants administered Form A of the TOSREC (see Appendix F), which was composed of multiple sentences (e.g., "The grass is

green") to participants. Participants were instructed to silently read and mark sentences (e.g., "yes or no") that were valid statements in three minutes.

For the major analyses, the raw scores on the TOSREC were used, which were computed by subtracting the total number of incorrect answers from the total number of correct answers. This scoring is considered conservative but was designed to control for guessing. In addition, the raw scores were converted into standard scores and used descriptively to provide an overall description of students' reading efficiency and comprehension.

The technical adequacy of the measure was examined and reported in the publisher's manual (Wagner et al., 2010). The TOSREC had high alternate-form reliability estimates (r =.86 to .95), a high test-retest reliability estimate across two months (r =.85), and a high interscorer reliability estimate (r = .99). High criterion validity estimates (r = .68 to .79) were reported when compared to the Florida Comprehensive Assessment Test (Pearson Education, 2006), as well as the Woodcock-Johnson III Test of Achievements (Woodcock et al., 2001; r = .69 to .83), the Woodcock Reading Mastery Tests-Revised (Woodcock, 1998; r = .61 to .83), the Group Reading Assessment and Diagnostic Evaluation (Williams & Cassidy, 2001; r = .76), the Dynamic Indicators of Basic Early Literacy Skills, Sixth Edition (Good & Kaminski, 2003; r =.90 to .94), the Test of Word Reading Efficiency (Torgesen et al., 1999; r = .45 to .88), and the Test of Silent Contextual Reading Fluency (Hammill et al., 2006; r = .76).

CBM-WE

A CBM-WE probe was administered in a group format to examine participants' writing productivity prior to intervention implementation. Following standardized procedures (AIMSweb, 2017), participants received a worksheet with a story stem (e.g., "One night I had a strange dream…"). Participants were instructed to plan their stories for one minute and compose their stories in a three-minute timeframe, with no additional instructions. For the purposes of this

study, the total words written on the CBM-WE was used, which was computed by counting the total number of correct and misspelled words written.

The CBM-WE probe administered to participants was assessed on a diverse group of elementary-aged students (McMaster et al., 2010). Results from McMaster et al. (2010) study showed the CMB-WE probe had high alternate-form reliability estimates (r =.82 to .95) and criterion validity estimates (r = .40 to .66), and moderate standard errors of the estimate (SEE = 5.95).

CBM-S

A CBM-S probe was administered in a group format to participants to examine their spelling fluency. Following standardized procedures, research assistants dictated a list of 17 spelling words to students, with each spelling word dictated every 7 seconds. Participants were instructed to write the dictated spelling words on a worksheet with numbered blank lines. For the purposes of this study, the correct letter sequence on the CBM-S was used, which was computed by counting the number of correct pairs of letters contained in the correct sequence of a word.

The technical adequacy of the measure was examined in a series of studies reported in the publisher's manual (AIMSweb; Shinn & Shinn 2002). Moderately high test-retest reliability estimates (r = .73 to .92) were reported when utilizing 10 parallel forms over 10 weeks (Marston et al., 1982). Moderately high criterion validity estimates (r = .80 to .86) were reported when compared to the Stanford Achievement Spelling (SAT; Madden et al., 1973) subtest.

Intervention Conditions

In this study, two intervention conditions were administered over six weeks: (a) Performance Feedback, and (b) Performance Feedback + Cover, Copy, Compare. A total of 15 minutes were allocated to each intervention condition, though the Performance Feedback +

Cover, Copy, Compare condition took two minutes longer than the Performance Feedback condition.

Performance Feedback Condition

Research assistants administered a packet of worksheets to participants assigned to the Performance Feedback condition, which included an identifying cover sheet, an individualized Performance Feedback page, and a CBM-WE probe. On the Performance Feedback page (see Appendix C), individualized feedback was provided in a number inside a box, which represented the number of words a participant wrote during the previous session. The arrow next to the box indicated how a participant performed in their previous session. For example, if the arrow was pointed upwards, then the participant wrote more words. However, if the arrow pointed downwards, then the participant wrote fewer words. An equal sign was indicated if participants wrote the same number of words.

All research assistants followed a procedural script (see Appendix A) to conduct the session and to provide instructions to participants. The CBM-WE probe (see Appendix D) was administered after participants reviewed the Performance Feedback worksheet. Participants were given the probe and were instructed to think about composing a story for one minute and then instructed to compose a story for three minutes.

Performance Feedback + Cover, Copy, Compare Condition

In the Performance Feedback and Cover, Copy, Compare condition, participants were administered a packet that consisted of an identifying cover sheet, an individualized Performance Feedback page, a CBM-WE probe, and a Cover, Copy, Compare worksheet (Skinner et al., 1997) that was modified for spelling based on procedures developed by Manfred et al., 2015. All procedures were identical to those described for the Performance Feedback intervention condition, except the Cover, Copy, Compare worksheet was administered. The Cover, Copy,

Compare worksheet consisted of (a) the intervention target words column, (b) a copy column, (c) a write from memory column, and (d) a try again column (see Appendix E). A total of 15 intervention target words were selected from the most commonly misspelled words identified on the first CBM-WE probe (i.e., scared, strange, was, school, about, clothes, every, ghost, movie, trying annoying, going, thought, where, people) and were replaced with new words when a classwide 85% mastery criterion was achieved. This percentage was based on prior recommendations (Shapiro, 2010) regarding mastery criterion levels in elementary classrooms.

Participants were instructed to turn to the page containing the Cover, Copy, Compare worksheet. On this worksheet, the intervention target words were covered with strips of colored paper, and participants were instructed to uncover the words one at a time. While looking at the target word, participants were instructed to rewrite the word in the copy box. Then the participants were instructed to cover the target word box and the copy box with strips of paper. Participants were asked to rewrite the target word from memory in the write from memory box. Then the participants were instructed to remove the strips of paper from the target word and copy boxes and compare their responses to the target word. If participants did not write the target word correctly the first time, they were instructed to cross out the word and rewrite the word in the try again box. These procedures were repeated for each intervention target word. A total of three minutes was allocated for participants to complete the worksheet based on recommendations by Zannikos (2012). All research assistants followed a procedural script (see Appendix B) to conduct the session and provided instructions to participants.

Post-Intervention

After completion of the intervention, research assistants administered Form C of the TOSREC, as well as a CBM-WE probe, and a CBM-S probe to the participants. The administration procedures were identical to those followed during the pre-intervention sessions.

Experimental Design

Participants were randomly assigned to one of the two interventions: (a) Performance Feedback Only; or (b) Performance Feedback + Cover, Copy, Compare by utilizing a covariate adaptative randomization method. Using an online software program, participants were randomized to intervention conditions sequentially based on their pre-intervention writing and spelling performance. Based on the randomized allocation, participant demographic characteristics (i.e., gender, race/ethnicity) were examined prior to intervention implementation to ensure equal distribution across intervention conditions. For the purposes of the present study, a multivariate analysis of covariance was used to examine whether there are differences in participants' reading comprehension based on the type of intervention received.

Because the present study relied on previously collected data, the a priori power analysis associated with the individual randomized controlled trial from which the current data were obtained was used. The a priori power analysis was performed with GPower (Erdfelder et al., 1996) using an expected effect size of .60, power of .80, and an alpha of .05. This resulted in an overall necessary sample size of 52 students. It is important to note that the expected effect size was based on prior research studies examining the effectiveness of the performance feedback intervention on students' writing outcomes. It is likely that a much smaller effect size is associated with the effects of the interventions on students' reading comprehension. As a result, it is likely that the current study is underpowered.

Procedural Integrity

Procedural scripts were utilized in all sessions conducted by doctoral graduate research assistants. Undergraduate research assistants observed the pre-intervention, intervention condition, and post-intervention sessions to examine whether procedures were implemented as described. Procedural integrity was computed by dividing the completed number of procedural steps by the total possible steps and multiplying by 100. For the combined pre- and post-intervention sessions, procedural integrity was assessed for 91.67% of the total sessions (n = 12). For the intervention condition sessions (i.e., Performance Feedback condition had 24 steps, Performance Feedback + Cover, Copy, Compare condition had 43 steps), procedural integrity was assessed for 89.28% of the total sessions (n = 28). Overall, the mean procedural integrity for the combined pre- and post-intervention was 98.75% (97.50% to 100%), and 99.25% for the intervention sessions (95.83% to 100%).

Interscorer Agreement

In order to examine the scoring reliability of the primary dependent measure used in this study, 100% of pre- and post-intervention TOSREC assessments were rescored using the TOSREC answer key to ensure reliability. The mean interscorer agreement was 99.89% (range, 99.7% to 100%) and was computed on an item-by-item basis by calculating the number of agreements divided by agreements plus disagreements and multiplied by 100%. To control for chance agreements, a kappa coefficient was also computed and was 0.80 (range: 0.60 to 1.00). Doctoral graduate research assistants reexamined discrepancies between scorers and made final determinations that were used in the subsequent data analysis.

Results

Data Preparation

Data Input and Consistency Checks

All data from the TOSREC, CBM-WE, and CBM-S were entered by the primary researcher into Excel, and research assistants conducted data checks to verify the accuracy of the entered data. Data from Excel was transferred into SPSS 29 (IBM Corporation, 2023) to perform the analyses.

Data Inspection

An inspection of the data was performed prior to conducting the analyses and revealed that there were no missing demographic variables but missing outcome data for the TOSREC, CBM-WE, and CBM-S. The TOSREC outcome missing values were 3.2% at pre-intervention and 63.2% at post-intervention. Written outcome missing values were 18.9% at pre-intervention and 16.8% at post-intervention. Spelling outcome missing values were 9.5% at pre-intervention and 7.4% at post-intervention. According to the missing values analysis, the test of Missing Completely at Random (MCAR) was not significant χ^2 (95) = 94.79, p = 0.487. As a result of missing data values, especially the considerable amount of missing post-intervention TOSREC data due to significant student absenteeism, the multiple imputation procedure in SPSS was conducted to generate 25 imputed datasets that were averaged together to obtain a complete dataset used in all subsequent analyses (Baraldi & Enders, 2010).

Descriptive Statistics

Using parametric and non-parametric statistics, participants' demographic information was examined to see if there were demographic differences in students' assignment to the intervention conditions. Chi-square analyses were conducted to examine gender, race, and ethnicity and a t-test was conducted to examine age. Results indicated that there were no

statistically significant differences between students' demographic information between conditions (see Table 1). In addition, the pre- and post-intervention CBM-WE, CBM-S, and TOSREC descriptive outcomes were reported in Table 2. Based on winter normative outcomes for third-grade students, students' initial spelling (*M* correct spelling sequences = 67.19) performance was at the 15th percentile, and writing (*M* correct writing sequences = 17.67) performance was at the 12th percentile in the Performance Feedback condition (AIMSweb, 2017). In the Performance Feedback + Cover, Copy, Compare condition, students' initial spelling (*M* correct spelling sequences = 64.72) performance was at the 14th percentile, and writing (*M* correct writing sequences = 18.40) performance was at the 12th percentile, based on winter, third-grade students' normative outcomes (AIMSweb, 2017). Following the conclusion of the study, students' final spelling performance in the Performance Feedback condition (*M* correct spelling sequences = 74.71) was at the 12th percentile, and writing (*M* correct writing sequences = 26.38) performance was at the 17th percentile, based on spring, third-grade normative outcomes (AIMSweb, 2017). Based on spring normative outcomes for third-grade students, students' initial spelling (*M* correct spelling sequences = 71.00) performance was at the 10th percentile, and writing (*M* correct writing sequences = 24.98) performance was at the 15th percentile in the Performance Feedback + Cover, Copy, Compare condition (AIMSweb, 2017).

Pearson's correlation coefficients were computed to determine the relationship between the TOSREC, CBM-WE and CBM-S measures (see Table 3). Result indicated that there was no statistically significant relationship between the TOSREC and CBM-WE or CBM-S. However, there was a moderate, positive correlation between Pre-CBM-WE and Pre-CBM-S (r=.584, n=95, *p*=.01), Post-CBM-WE and Pre-CBM-S (r=.532, n=95, *p*=.01), and Post-CBM-WE and

Post-CBM-S (r=.557, n=95, *p*=.01). Further, there was a strong, positive correlation between Pre-CBM-WE and Post-CBM-S (r=.604, n=95, *p*=.01) that was statistically significant.

Major Analyses

To address the study's aim and research question, a one-way multivariate analysis of covariance (MANCOVA) was utilized to examine if there was a statistically significant difference in the students' post-intervention reading comprehension scores based on intervention conditions while controlling for their pre-intervention reading comprehension scores. Prior to conducting the analysis, the underlying statistical assumptions of a MANCOVA were examined (i.e., independence of observations, linearity, homogeneity of regression slopes, and normality) and all assumptions were met.

Results of the major analysis indicated that there were no statistically significant differences observed in students' post-intervention reading comprehension scores between the two intervention conditions, $F(2, 92) = .675$, $p = .512$, Wilks' $\Lambda = .986$, partial $\eta^2 = .014$. Similar mean levels of students' post-intervention reading comprehension, controlling for students' pre-intervention reading comprehension levels, were observed for students assigned to the Performance Feedback condition (adjusted mean score = 20.96, *SD*=1.76) and the Performance Feedback + Cover, Copy, Compare condition (adjusted mean score = 19.23, *SD*=1.78).

Because there was missing outcome data from the TOSREC, an additional MANCOVA was utilized for students with complete pre- and post-intervention TOSREC scores to evaluate the difference in students' post-intervention reading comprehension scores based on intervention conditions while controlling for their pre-intervention reading comprehension scores. Similarly to the major analysis results of the imputed data, results from this analysis also found that there were no statistically significant differences observed in students' post-intervention reading comprehension scores between the two intervention conditions, $F(2, 34) =$

2.061, p =.144, Wilks' Λ = .883, partial η^2 = .117. Furthermore, similar mean levels of pre- and post-intervention TOSREC scores were observed between the two intervention conditions for those students with complete data, which was similar to the major analysis results (see Appendix G).

Within-Condition Intervention Effects

Overall, students' initial reading comprehension performance in the Performance Feedback condition (*M* correct items = 17.44) and the Performance Feedback + Cover, Copy, Compare condition (*M* correct items = 17.38) was at the 30th percentile, based on winter, third-grade normative outcomes (TOSREC; Wagner et al., 2010). Following the conclusion of the study, students' final reading comprehension performance in the Performance Feedback condition (*M* correct items = 20.96) was at the 45th percentile whereas students' final reading comprehension performance in the Performance Feedback + Cover, Copy, Compare condition (*M* correct items = 19.23) was at the 37th percentile, based on spring, third-grade normative outcomes (TOSREC; Wagner et al., 2010).

Although a specific study aim was not associated with this analysis, I examined whether students assigned to each intervention condition demonstrated improvements in their reading comprehension over the course of the study by conducting two repeated measure ANOVAs. For students assigned to the Performance Feedback condition, a statistically significant main effect (i.e., pre- to post-intervention) was observed for students' reading comprehension scores, $F(1, 47) = 11.95$, p =.001, partial η^2 = .203. However, for students assigned to the Performance Feedback + Cover, Copy, Compare condition, no statistically significant main effect was observed for students' reading comprehension scores, $F(1, 46) = 3.40$, p =.071, partial η^2 = .069.

Discussion

Many students across all grade levels are underperforming in reading in the United States and writing interventions have been shown to be effective in improving reading comprehension, demonstrating a need for classwide writing interventions in schools (Abbot et al, 2010; Graham & Hebert, 2011). The purpose of the current study was to examine whether classwide writing interventions influenced students' reading comprehension. The primary aim of this study was to examine if the Performance Feedback + Cover, Copy, Compare intervention improved third-grade students' reading comprehension more than the Performance Feedback intervention. The results of this study suggest that students who received the Performance Feedback + Cover, Copy, Compare condition did not have higher improvements in their reading comprehension than students who received the Performance Feedback condition. Results indicated that both conditions affected students' reading performance differently, regardless of whether students were provided a writing prompt and feedback or a spelling task, writing prompt, and feedback.

Effectiveness of Cover, Copy, Compare in Improving Students' Reading Comprehension

According to prior research, students who have been provided with combined writing interventions, such as sentence construction and spelling, have shown greater improvements in reading comprehension (Graham & Hebert, 2011). In this study, compared to students assigned to the Performance Feedback intervention, it was hypothesized that students who received the Performance Feedback + Cover, Copy, Compare intervention would demonstrate higher reading comprehension scores because the combined writing intervention provided additional remediation in spelling. The results found no differences between students assigned to the two intervention conditions, and multiple explanations could be offered as to why students who received combined writing interventions in the Performance Feedback + Cover, Copy, Compare

intervention did not yield greater improvements. First, Graham (1983) suggests that unfamiliar words can be challenging for students who are beginners or perform poorly in spelling because they possess a limited number of spelling strategies when spelling an unfamiliar word. Because third-grade students are considered to be early spellers, utilizing misspelled words identified on the first CBM-WE probe in the Cover, Copy, Compare intervention may not have been developmentally appropriate. Second, although it has been suggested that any spelling word can be used for the intervention (McGuigan, 1975), even unfamiliar words, utilizing unfamiliar words can pose a challenge for less skilled spellers (Graham, 1983). In the present study, only misspelled words were included as intervention target words, and there was no differentiation in spelling word difficulty levels, which could have created more difficulty for those students with less spelling skills.

In the current study, the TOSREC assessed students' reading comprehension by asking students to determine whether sentences were true or false based on their understanding of the material presented in the sentence. As I assessed the reading comprehension measures included in the Graham and Herbert (2011) meta-analysis, I found that the type of reading comprehension task included in the TOSREC differs from the reading comprehension measures reported in the meta-analysis. For example, the majority of studies assessed reading comprehension by requiring students to read passages, answer short questions, generate questions, or complete multiple-choice recall questions (Bayne, 1984; Cohen, 1983; Macgregor, 1988). A smaller number of studies assessed students' reading comprehension by requiring them to write about passages in material they read (JaeKyung et al., 2008; Jenkins, 1987) or use story impressions to demonstrate their reading comprehension (Denner et al., 1989). In contrast to the reading comprehension measures utilized in Graham and Hebert's meta-analysis, the TOSREC

focused primarily on reading general statements and determining the accuracy of the statements, which may have also measured reading rate, vocabulary, working memory, inference-making ability, general knowledge, and sentence structure knowledge. As a result, the current study's outcomes may have differed due to how reading comprehension was measured.

In addition to the previously mentioned factors, there may have been procedural factors that affected the present study's results. First, the intervention was implemented for six weeks, which may not have been sufficient for generalizing to students' reading comprehension skills. In the meta-analysis conducted by Graham and Herbert (2011), they reported when students spent more time engaged in writing, their reading comprehension improved. Considering the length of the intervention in the current study, if more time had been allocated it is possible that greater improvements in reading comprehension performance could have been observed. Second, for students assigned to the Cover, Copy, Compare condition, before new spelling words were added, the class-wide spelling accuracy had to be 85% or greater, which was based on instructional recommendations provided by Shapiro (2010). However, according to Graham and colleagues (1997), handwriting and spelling approaches must be feasible for early learners, otherwise their ability to become proficient writers will be negatively affected. Spelling tasks need to be feasible, because, although the class-wide mastery level was set to 85%, some students experience greater difficulty, resulting in spelling performances below the set average. Additionally, Berninger (1999) argued that early spellers experience overload due to the difficulty of retrieving information automatically from their working memory during spelling and handwriting, resulting in difficulty with writing later. Therefore, it is possible that there was interference between spelling and writing for early learners who had limited transcription skills, resulting in difficulties in both processes. For those students assigned to the Performance

Feedback + Cover, Copy, Compare condition, there may have been too many components being implemented concurrently (i.e., writing feedback and spelling practice) that they had not mastered yet, which could have negatively affected their reading performance.

Because there were no statistically significant differences observed in students' reading comprehension scores between the Performance Feedback and Performance Feedback + Cover, Copy, Compare conditions, I examined whether students' reading performance changed over time in an attempt to examine whether reading comprehension growth occurred for students assigned to each respective condition. The results of this analysis indicated that only students assigned to the Performance Feedback condition exhibited growth in their reading comprehension over the course of the study. These findings could be associated with the fact that students in the Performance Feedback condition showed greater writing improvement over time (Eckert et al., 2023), which subsequently affected their reading comprehension as was observed in prior research findings that observed writing improvements boosted students' reading comprehension (Abbot et al., 2010; Ahmed et al., 2014: Graham and Herbert, 2011; Shanahan, 1984). Students assigned to the Performance Feedback + Cover, Copy, Compare intervention did not demonstrate any discernible improvements in their writing performance over the course of the study (Eckert et al., 2023), which may be associated with their lack of improvement in reading comprehension. It is possible that procedural factors associated with the combined intervention, including the implementation of numerous intervention components negatively affected their ability to improve their writing performance and their subsequent reading comprehension performance.

Limitations

Several limitations need to be considered when interpreting the present study's findings. To begin with, due to the relatively small number of participants, the current study was underpowered and as a result, increased the likelihood of committing a Type II error. Second, the study was conducted in a school setting and students' absences resulted in a considerable amount of missing data. Although multiple imputation was used to address the missing data and is in keeping with best practices (Graham et al. 2007; Peugh & Enders, 2004), the results could have been different if students had been present and performed differently than what the imputed data suggested. Third, the TOSREC measured reading comprehension in a different way than the prior studies included in the meta-analysis conducted by Graham and Herbert's (2011), which demonstrated improvements in students' reading comprehension. As a result, it is possible that different results would have been observed in the present study if alternative reading comprehension measures were selected. Fourth, despite previous studies using the Performance Feedback + Cover, Copy, Compare intervention effectively with third-grade students (Williams et al., in press), the present sample had much lower spelling skills, which may have resulted in the combined intervention not being developmentally appropriate, both in terms of the number of intervention components targeted and the spelling mastery criteria used. Finally, the generalizability of the present study is limited because the sample of participants consisted of third-grade students attending an urban elementary school, and as a result, the present findings can only be generalized to participants with similar demographics.

Directions for Future Research

There are several future research directions worth considering. First, as previously noted, the current study used misspelled words based on a class-wide evaluation of misspelled words

contained in a writing sample. Therefore, in future research, the selection of words should be customized for each student or based on a classwide spelling word list used during spelling instruction. Second, for emerging spellers, a word meaning component should be incorporated into the Cover, Copy, Compare intervention in an attempt to increase automaticity in students' working memory when retrieving information. Although some students did not experience difficulty spelling the targeted words, it is possible that the words were more challenging for less skilled spellers, especially if they were not yet mastered. For future research, students' spelling and word meaning skills should be taken into consideration when creating a spelling list or mastery level to examine the influence these factors have on reading performance. Lastly, the current study combined two writing interventions, Performance Feedback and Cover, Copy, Compare, into one condition that may have been too complex for third-grade students. Because there was no research done prior to the current study on the two condition effects on reading comprehension, future research should examine both interventions, alone, on third-grade students' reading comprehension. According to experimental procedures, it is known that the Performance Feedback intervention alone improves students' reading performance. Therefore, it would be useful to further examine how the Cover, Copy, Compare intervention alone affects reading comprehension in third-grade students, compared to the Performance Feedback intervention.

Conclusion

Although a great number of students across all grade levels are experiencing challenges with reading and writing in the United States (U.S. Department of Education, 2003; 2011), classwide writing instructional interventions have the potential to address the academic needs in a larger group of students and potentially affect students' reading comprehension skills (Graham

& Herbert, 2011). This current study aimed to examine whether the Performance Feedback + Cover, Copy, Compare intervention enhanced students' reading comprehension more than Performance Feedback alone. Contrary to my hypothesis, the findings of this study suggested that the Performance Feedback + Cover, Copy, Compare intervention did not improve students' reading comprehension to a greater extent than the Performance Feedback intervention alone. Moreover, an examination of the improvements in students' reading comprehension over time showed that only those students assigned to the Performance Feedback intervention improved their reading comprehension, suggesting that the Performance Feedback intervention has the potential to be a cost-effective, easy-to-implement, class-wide writing instructional intervention that can influence third-grade students reading development. Additionally, a combined intervention, such as Performance Feedback + Cover, Copy, Compare, needs to be further adapted to fit the needs of third-grade students to improve their reading comprehension.

Table 1

Student Demographic Data

	Conditions					
	PF		PF + CCC			
	N	%	N	%	X^2	*p*
Gender					.255	.614
Female	20	41.7	22	46.8		
Male	28	58.3	25	53.2		
Race					3.387	.495
American Indian or Alaska Native	0	0.0	1	2.1		
Asian	8	16.7	6	12.8		
Black or African American	21	43.8	21	44.7		
Native Hawaiian or Other Pacific Islander	0	0.0	2	4.3		
White	19	39.6	17	36.2		
Ethnicity					12.477	.489
Arab	2	4.2	3	6.4		
Chin	1	2.1	0	0.0		
Hispanic or Latino/Latina	3	6.3	4	8.5		
Hutu	0	0.0	1	2.1		
Karen	3	6.3	0	0.0		
Mandinka/Malinke	0	0.0	1	2.1		
Masalit	1	2.1	0	0.0		
Nepali	3	6.3	3	6.4		
Not Hispanic or Latino	29	60.4	29	61.7		
Oromo	2	4.2	0	0.0		
Other	1	2.1	0	0.0		
Somali	3	6.3	4	8.5		
Swahili/Waswahili	0	0.0	1	2.1		
Vietnamese	0	0.0	1	2.1		
	M	*SD*	*M*	*SD*	t	*p*
Age	8.03	0.04	8.04	0.05	-1.644	0.104

Note. Total $N = 95$; Performance Feedback (PF), $n = 48$; Performance Feedback + Cover-Copy Compare (PF + CCC), $n = 47$.

Table 2

Mean, Standard Deviations and Percentile of TOSREC, CBM-WE and CBM-S

	Conditions					
	PF			PF + CCC		
	M	*SD*	Percentile	*M*	*SD*	Percentile
Pre-Intervention						
TOSREC	17.44	9.39	30th	17.38	9.86	30th
CBM-WE	17.67	12.23	12th	18.40	11.57	12th
CBM-S	67.19	26.30	15th	64.72	32.77	14th
Post-Intervention						
TOSREC	20.96	12.28	45th	19.23	12.08	37th
CBM-WE	26.38	12.80	17th	24.98	13.98	15th
CBM-S	74.71	26.62	12th	71.00	31.62	10th

Note. Performance Feedback (PF); Performance Feedback + Cover-Copy Compare (PF + CCC); Test of Silent Reading Efficiency and Comprehension (TOSREC); Curriculum-Based Measurement in Written Expression (CBM-WE); Curriculum-Based Measurement in Spelling (CBM-S).

Table 3

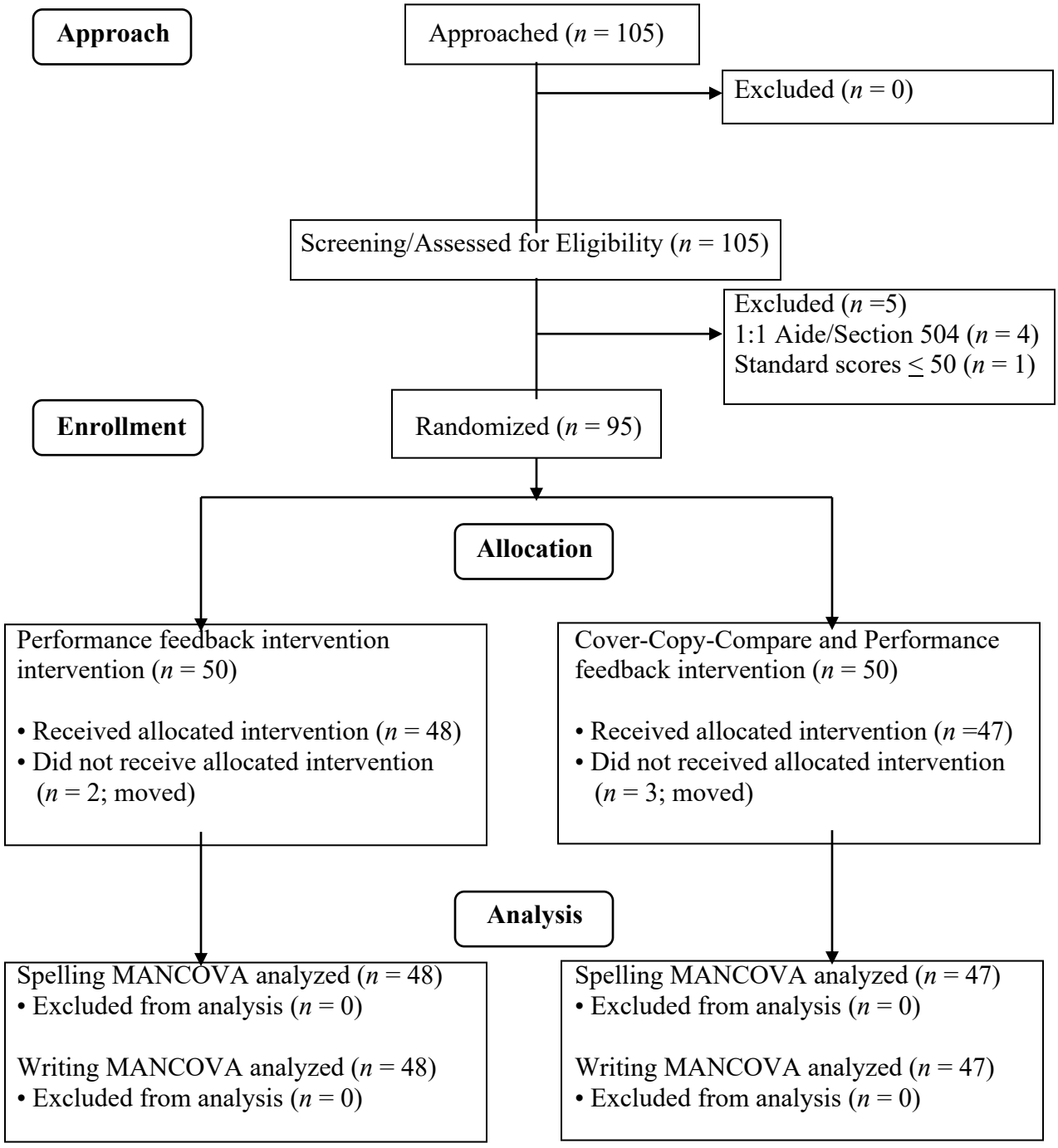
Pearson Correlations of TOSREC, CBM-WE and CBM-S

	1	2	3	4	5	6
1. Pre-TOSREC	—					
2. Post-TOSREC	.819**	—				
3. Pre-CBM-WE	.079	-.036	—			
4. Post-CBM-WE	.102	.067	.612**	—		
5. Pre-CBM-S	.145	.168	.584**	.532**	—	
6. Post- CBM-S	.046	.081	.604**	.557**	.773**	—

Note. Test of Silent Reading Efficiency and Comprehension (TOSREC); Curriculum-Based Measurement in Written Expression (CBM-WE); Curriculum-Based Measurement in Spelling (CBM-S).

** $p < .01$. *** $p < .001$.

Figure 1. Participant flow chart following Consolidated Standards of Reporting Trials guidelines



List of Appendices

Appendix A

Performance Feedback Procedural Intervention Scripts

<u>Directions:</u> Please fill out each area detailed below. Please make sure that the identifying information (box 1) is complete before you submit the form.

I.	Identifying Information		
Name of primary research assistant:			
Name of secondary research assistant:			or N/A
School/Classroom:			
Date:			
Notes:			
II.	Data Collection – Material Preparation	Circle	
a.	Five (5) sharpened pencils	Yes	No
b.	Assessment packets	Yes	No
c.	Experimenter's copy of packet	Yes	No
d.	Two (2) stopwatches	Yes	No
Notes:			

III. Data Collection Procedures [Please check [✓] each box as you complete each step]✓		
1.	State to the students: ***"Hello. If you have not already done so, please clean off the top of your desk, except for a pencil. Please listen for your name as _____ and I hand out the packets. Raise your hand when we call your name. "***	
2.	Both research assistants should distribute the packets. (This should be very quick and not take longer than 2-3 minutes.)	
3.	After all of the packets have been distributed, State to the students: ***"Today we will be splitting into groups. Please look at your packet; you will see a color. Please listen for instructions as I call your group color. Once you line up, please show me how you walk quietly through the halls at Huntington."***	

III. Data Collection Procedures [Please check [✓] each box as you complete each step]✓		
4.	State to the students who are staying in the classroom: ***"The _____group will be staying in this classroom to work with us. Please stay in your seats if you are in the _ group.***	

	State to the students who are transition to another the classroom: ***"The PURPLE group will be going to MRS. DECARLO'S classroom. Please line up now."*** ***"The BLUE group will be going to MRS. BRIGATI'S classroom. Please line up now.*** ***"The RED group will be will be going to MRS. RADLEY'S classroom. Please line up now.*** ***"The GREEN group will be going to MRS. COLABUFO'S classroom. Please line up now."***	
5.	As students from other classes enter the classroom, the research assistant should direct students to sit down at the nearest desk in a systematic fashion. Do not let students talk you into letting them sit next to friends. Once the desks fill up, place any remaining students at tables in the room. The other research assistant should be standing outside the classroom holding up a sheet of paper that indicates the appropriate color. The research assistant should assist students with quickly getting to the appropriate classroom.	
6.	Gain attention of the class in a voice **LOUD ENOUGH** for all of the students to hear: *"**Hello. My name is [insert name] and I am from Syracuse University. I am going to be working with you today as part of a project that your teachers are letting us do with all of the third-grade students.**"*	

III. Data Collection Procedures [Please check [✓] each box as you complete each step]✓		
7.	State to the students: *"**Please take out a pencil. If you do not have a pencil, raise your hand**."*	
8.	The research assistant should make sure each student has a pencil and provide pencils to those students without.	
9.	State to the students: ***"Please turn to the next page of your packet, which has a stop sign in the middle of the page. Today I want you to write a short story. You will have some time to think about the story you will write and then you will have some time to write it. Turn to the next page of your packet. This page has a funnel with some numbers, letters, and pictures going into it at the top of the page."***	
10.	The research assistant should scan the room to make sure all of the students are on the correct page.	
11.	State to the students: ***"The box in the middle of the page* [research assistant should point to the box] *tells you how many words you wrote last week. Next to the box you will see an arrow.*** ***If the arrow is pointing up towards the sky, that means you wrote more words since the last time I worked with you.*** ***If the arrow is pointing down towards the floor, that means you wrote fewer words since the last time I worked with you.*** ***If you have an equal sign instead of an arrow, that means you wrote the same number of words as you did the last time I worked with you.*** ***Every week when we work with you, we are going to tell you how you are doing with your writing."***	

III. Data Collection Procedures [Please check [✓] each box as you complete each step]✓		
12.	The research assistant should monitor the students for questions.	
13.	State to the students: "***Now I want you to write another story. I am going to read a sentence to you first, and then I want you to write a story about what happens next. You will have some time to think about the story you will write and then you will have some time to write it.***"	
14.	State to the students: "***Please turn to the next page of your packet. This page has a thought bubble at the top of the page***."	
15.	State to the students: ***"For the next minute think about writing a story that begins with this sentence:*** ***I was talking to my friends when all of a sudden ...*** ***Remember, take time to plan your story. A well-written story usually has a beginning, a middle, and an end. It also has characters that have names and perform certain actions. Use paragraphs to help organize your story. Correct punctuation and capitalization will make your story easier to read.*** ***Please do not write the story. Just think of a story that begins with this sentence:*** ***I was talking to my friends when all of a sudden ..."***	
16. 	The research assistant should begin the stopwatch and time the students for 1 minute. After **30 seconds**, state: ***"I was talking to my friends when all of a sudden ..."***	
III. Data Collection Procedures [Please check [✓] each box as you complete each step]✓		
17.	At the end of 1 minute, state to the students: ***"Okay, stop thinking, turn to the next page of your packet, and raise your own pencil high in the air. This page has a large pencil at the top."***	
18.	State to the students:	

	"When I tell you to start, please begin writing your story. Remember, if you don't know how to spell a word, you should try your best and sound it out. It is important that you do your best work. If you fill up the first page, please turn to the next page and keep writing. Do not stop writing until I tell you to. Do your best work."	
19.	State to the students: ***"Okay, you can start writing."*** The research assistant should begin the stopwatch and time the students for **3 minutes**.	
20.	The research assistant should monitor the students during the 3-minute period and make sure students are following the directions Also monitor the students to make sure that they are not re-copying the story starter. If a student is re-copying the starter, state to the student "you do not need to copy the words that have been provided"	
21.	After **1 minute, 30** seconds has elapsed, state to the students: ***"You should be writing about – I was talking to my friends when all of a sudden ..."***	

III. Data Collection Procedures [Please check [✓] each box as you complete each step]✓		
22.	After 3 minutes has elapsed, state to the students: ***"Please stop writing, close your packets, and turn them in. That is all the writing we will be doing today. Thanks for working so hard."*** Collect the packets before sending back to their respective classrooms.	
23.	State to the students: ***"All of the students in MRS BRIGATI's classroom, please pick up your pencil and line up to the left side of the door. All of the students in MRS RADLEY's classroom, please pick up your pencil and line up to the right side of the door. All of the students in MRS. DECARLO'S (or MRS. COLABUFO'S) classroom, please line up in the middle."***	
24.	The research assistants should then assist the students in getting back to their classrooms quickly and quietly. Make sure that they stand very quietly outside of the rooms if the classroom is not yet complete with their session.	
	Total number of steps completed:	

Appendix B

Performance Feedback + Cover, Copy, Compare Procedural Intervention Script

<u>Directions:</u> Please fill out each area detailed below. Please make sure that the identifying information (box 1) is complete before you submit the form.

I.	Identifying Information		
Name of primary research assistant:			
Name of secondary research assistant:			or N/A
School/Classroom:			
Date:			
Notes:			
II.	Data Collection – Material Preparation	Circle	
a.	Five (5) sharpened pencils	Yes	No
b.	Assessment packets	Yes	No
c.	Experimenter's copy of packet	Yes	No
d.	Two (2) stopwatches	Yes	No
Notes:			
III.	Data Collection Procedures [Please check [✓] each box as you complete each step]✓		
1.	State to the students: ***"Hello. If you have not already done so, please clean off the top of your desk, except for a pencil. Please listen for your name as _____ and I hand out the packets. Raise your hand when we call your name. "***		
2.	Both research assistants should distribute the packets. (This should be very quick and not take longer than 2-3 minutes.)		
3.	After all of the packets have been distributed, State to the students: ***"Today we will be splitting into groups. Please look at your packet; you will see a color. Please listen for instructions as I call your group color. Once you line up, please show me how you walk quietly through the halls at Huntington."***		

III.	Data Collection Procedures [Please check [✓] each box as you complete each step]✓	
4.	State to the students who are staying in the classroom: ***"The _____group will be staying in this classroom to work with us. Please stay in your seats if you are in the _ group.***	

	State to the students who are transition to another the classroom: ***"The PURPLE group will be going to MRS. DECARLO'S classroom. Please line up now."*** ***"The BLUE group will be going to MRS. BRIGATI'S classroom. Please line up now.*** ***"The RED group will be will be going to MRS. RADLEY'S classroom. Please line up now.*** ***"The GREEN group will be going to MRS. COLABUFO'S classroom. Please line up now."***	
5.	As students from other classes enter the classroom, the research assistant should direct students to sit down at the nearest desk in a systematic fashion. Do not let students talk you into letting them sit next to friends. Once the desks fill up, place any remaining students at tables in the room. The other research assistant should be standing outside the classroom holding up a sheet of paper that indicates the appropriate color. The research assistant should assist students with quickly getting to the appropriate classroom.	
6.	Gain attention of the class in a voice **LOUD ENOUGH** for all of the students to hear: *"**Hello. My name is [insert name] and I am from Syracuse University. I am going to be working with you today as part of a project that your teachers are letting us do with all of the third-grade students.**"*	

III. Data Collection Procedures [Please check [✓] each box as you complete each step]✓		
7.	State to the students: *"**Please take out a pencil. If you do not have a pencil, raise your hand**."*	
8.	The research assistant should make sure each student has a pencil and provide pencils to those students without.	
9.	State to the students: *"**Please turn to the first page of your packet. You will see a worksheet with colored pieces of paper on it."***	
10.	Research assistant should scan the room to make sure all students are on the right page.	
11.	When everyone is done, state to the students: *"**Please listen carefully as I go over the instructions. Follow along on your worksheet."***	
12.	The research assistant should scan the room for questions and answer any questions.	
13.	State to the students: *"**On your worksheet, you will see a colored strip of paper that is stapled over the left hand side of your page. Lift the slip of paper and look at the first word in the first box. Silently say the word to yourself.**"*	
14.	State to the students: *"**While looking at the word, copy it in the second box."*** **(Point to the first blank space)**	
15.	The research assistant should point to the space on the worksheet where the students should copy the word. The other research assistant should walk around to provide assistance when necessary.	
16.	State to the students: *"**If you incorrectly copy the word on the line, erase and try again.**"*	

III. Data Collection Procedures [Please check [✓] each box as you complete each step]✓		
17.	State to the students: *"**Now, you will use the strip of paper (point out strip of paper) to cover the printed and written word. In the third box under the words "Cover 1", write the word from memory. No peeking.**"*	
18.	The research assistant should scan the room to make sure the students understand the instructions.	
19.	Ask the students: *"**Did everyone write the word on the third box?**"*	
20.	The research assistant should scan the room to make sure all of the students followed the instructions.	
21.	State to the students: *"**Lift up the strip of paper and compare your answer to the correct spelling of the word.**"*	
22.	State to the students: *"**If you spelled the word correctly, you will move on to the next word. If you spelled the word incorrectly, put an "X" through the incorrectly spelled word and try again in the last box under "Cover 2". If you spell the word incorrectly again, put an X over it and move on to the next word"***	
23.	State to the students: *"**Does anyone have any questions before we begin?"***	
24.	The research assistant should answer any questions.	
25.	State to the students: *"**You will have 90 seconds to go through the worksheet. Complete as much as you can."***	
26. 	The research assistant should begin the stopwatch and time the students for **<u>90 seconds.</u>**	
III. Data Collection Procedures [Please check [✓] each box as you complete each step]✓		

27.	After 90 seconds have elapsed, state to the students: *"**Stop. Please put your pencils down."***	
28.	State to the students: ***"Please turn to the next page of your packet, which has a stop sign in the middle of the page. Today I want you to write a short story. You will have some time to think about the story you will write and then you will have some time to write it. Turn to the next page of your packet. This page has a funnel with some numbers, letters, and pictures going into it at the top of the page."***	
29.	The research assistant should scan the room to make sure all of the students are on the correct page.	
30.	State to the students: **"*The box in the middle of the page* [<u>research assistant should point to the box</u>] *tells you how many words you wrote last week. Next to the box you will see an arrow.*** ***If the arrow is pointing up towards the sky, that means you wrote more words since the last time I worked with you.*** ***If the arrow is pointing down towards the floor, that means you wrote fewer words since the last time I worked with you.*** ***If you have an equal sign instead of an arrow, that means you wrote the same number of words as you did the last time I worked with you.*** ***Every week when we work with you, we are going to tell you how you are doing with your writing."***	

III. Data Collection Procedures [Please check [✓] each box as you complete each step]✓		
31.	The research assistant should monitor the students for questions.	
32.	State to the students: "***Now I want you to write another story. I am going to read a sentence to you first, and then I want you to write a story about what happens next. You will have some time to think about the story you will write and then you will have some time to write it.***"	
33.	State to the students:	

	"***Please turn to the next page of your packet. This page has a thought bubble at the top of the page***."	
34.	State to the students: ***"For the next minute think about writing a story that begins with this sentence:*** ***I was talking to my friends when all of a sudden ...*** ***Remember, take time to plan your story. A well-written story usually has a beginning, a middle, and an end. It also has characters that have names and perform certain actions. Use paragraphs to help organize your story. Correct punctuation and capitalization will make your story easier to read.*** ***Please do not write the story. Just think of a story that begins with this sentence:*** ***I was talking to my friends when all of a sudden ..."***	
35. 	The research assistant should begin the stopwatch and time the students for 1 minute. After **30 seconds**, state: ***"You should be thinking about: I was talking to my friends when all of a sudden ..."***	
III. Data Collection Procedures [Please check [✓] each box as you complete each step]✓		
36.	At the end of 1 minute, state to the students: ***"Okay, stop thinking, turn to the next page of your packet, and raise your own pencil high in the air. This page has a large pencil at the top."***	
37.	State to the students: ***"When I tell you to start, please begin writing your story. Remember, if you don't know how to spell a word, you should try your best and sound it out. It is important that you do your best work. If you fill up the first page, please turn to the next page and keep writing. Do not stop writing until I tell you to. Do your best work."***	

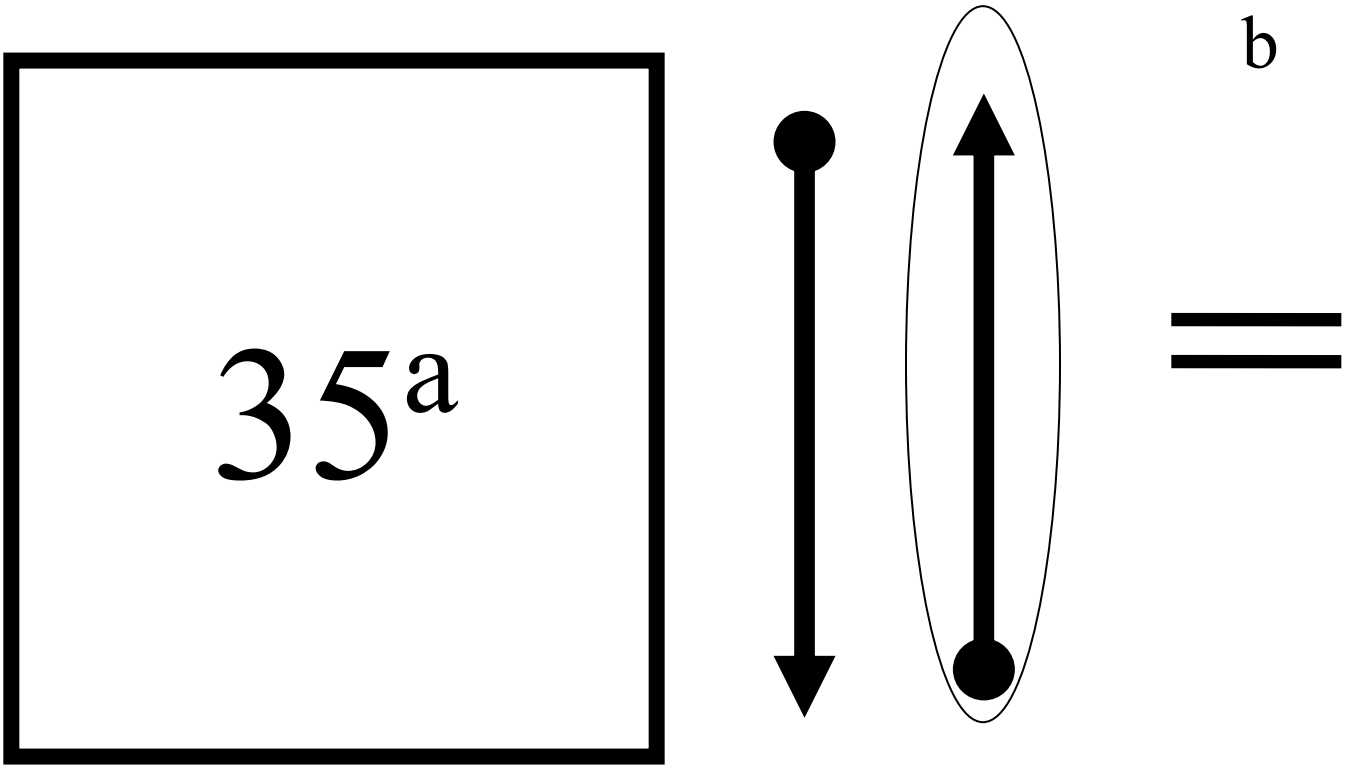
38.	State to the students: ***"Okay, you can start writing."*** The research assistant should begin the stopwatch and time the students for **3 minutes**.	
39.	The research assistant should monitor the students during the 3-minute period and make sure students are following the directions Also monitor the students to make sure that they are not re-copying the story starter. If a student is re-copying the starter, state to the student "you do not need to copy the words that have been provided"	
40.	After **1 minute, 30** seconds has elapsed, state to the students: ***"You should be writing about – I was talking to my friends when all of a sudden ..."***	

III. Data Collection Procedures [Please check [✓] each box as you complete each step]✓		
41.	After 3 minutes has elapsed, state to the students: ***"Please stop writing, close your packets, and turn them in. That is all the writing we will be doing today. Thanks for working so hard."*** Collect the packets before sending back to their respective classrooms.	
42.	State to the students: ***"All of the students in MRS BRIGATI's classroom, please pick up your pencil and line up to the left side of the door. All of the students in MRS RADLEY's classroom, please pick up your pencil and line up to the right side of the door. All of the students in MRS. DECARLO'S (or MRS. COLABUFO'S) classroom, please line up in the middle."***	
43.	The research assistants should then assist the students in getting back to their classrooms quickly and quietly. Make sure that they stand very quietly outside of the rooms if the classroom is not yet complete with their session.	
	Total number of steps completed:	

Appendix C

Sample Individualized Performance Feedback

Here is how you are doing in writing:

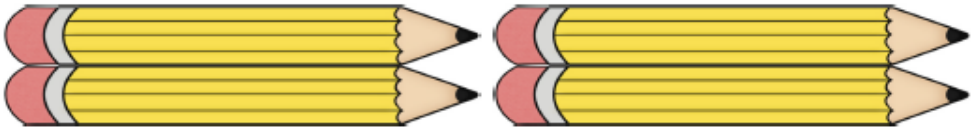


[a] Denotes how many words the student wrote during the prior intervention session.

[b] Denotes if number is greater than, less than, or equal to the number of words the student wrote during the prior intervention session.

Appendix D

CBM-WE Probe



One night I had a strange dream about . . .

Keep going

Appendix E

Cover, Copy, Compare Student Worksheet

Word	Copy	Write from Memory	Try Again
Scared			
Strange			
Was			
School			
About			
Clothes			
Every			
Ghost			
Movie			
Trying			
Annoying			
Going			
Thought			
Where			
People			

Appendix F

TOSREC Sample Sentences

A.	Yes	No	A cow is an animal.
B.	Yes	No	A fish lives on land.

Appendix G

Mean, Standard Deviations and Percentile of Students with complete outcome data for TOSREC

	Conditions					
	PF			PF + CCC		
	M	*SD*	Percentile	*M*	*SD*	Percentile
Pre-Intervention						
TOSREC	19.26	9.04	37th	15.93	8.84	25th
Post-Intervention						
TOSREC	23.79	8.59	58th	17.53	10.28	32nd

Note. Performance Feedback (PF); Performance Feedback + Cover-Copy Compare (PF + CCC); Test of Silent Reading Efficiency and Comprehension (TOSREC.

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Zannikos, M.E., McCallum, E., Schmitt, A., & Pearson, K.E. (2018). A comparison of the taped spelling intervention and cover, copy, compare for students with learning disabilities. *Journal of Behavioral Education, 27*(3)*,* 301-323. https://doi.org/10.1007/s10864-0189293-z

Curriculum Vitae

Monique Antoine

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EDUCATION

Syracuse University, Syracuse, NY August 2021-Present
Graduate Student, School Psychology Program (APA and NASP approved)
School Psychology, PhD
Expected graduation: August 2026

Rutgers University, College of Arts & Sciences Camden, NJ
Bachelor of Arts in Psychology; Major GPA: 3.823 January 2018
Bachelor of Arts in Electronic Art (concentration in Animation)
GPA: 3.656; Dean's List- Fall 2014, Spring 2015, Spring 2016-Fall 2017
Cum Laude

HONORS/AWARDS

- STEM Doctoral Fellowship 2022-2023
- Athenaeum Honor Society Spring 2017

RESEARCH EXPERIENCE

TRAC Research Lab October 2021-Present
Graduate Research Assistant
Syracuse University
Advisor: Tanya Eckert, PhD.

- Working on comparing the writing production and accuracy outcomes, criterion validity, classification accuracy, and student acceptability and conventional CBM-WE probe.
- Assisting with the development of research manuscripts for the acceptability project.
- Mentoring undergraduate research assistants on research.

Research Assistant September 2017-April 2018
Rutgers University
Worked with children aged 1-5 and their families to examine socio-demographic and psychosocial correlates of sleep health in a sample of children attending Early Research Learning Academy (ELRA). (PI: Lauren Daniel, PhD)

- Gained knowledge of the IRB procedures for approval.
- Attained IRB training and certification.
- Maintained IRB documentation, including reviewing and updating documents before submission.
- Performed literature searches.
- Learned Qualtrics and entered and edited English and Spanish Surveys via Qualtrics.
- Identified potential participants.
- Conducted informed consent in a preschool setting.
- Collected data via Qualtrics and paper survey, checked for missing data.
- Contacted families via email or in-person to ensure study completion.

- Maintained and updated contact and gift card logs and performed other clerical duties.

PROFESSIONAL EXPERIENCE

Graduate Student Clinician, August 2023-Present
Syracuse University, Psychological Services Center (PSC)

- Coordinated appointments with clients.
- Conducted individual therapy for children, adolescents and adults with academic difficulties and various mental health disorders.
- Designed treatment plans and established goals for individual clients.
- Created notes providing detailed summary of each session.
- Worked with clients weekly and monitored progress.
- Lead weekly social skills group therapy for parents.
- Collaborated with parents, mental health providers, physicians, school psychologist and administrative staff.
- Conducted assessments for an evaluations.
- Responsible for the intake and interviewing of new clients in the clinic.
- Used Cognitive Behavior Therapy and Motivational Interviewing in therapy.
- Wrote intake and assessment evaluation reports.
- Provided feedback to clients on assessment.

Research Teaching Specialist, October 2018-August 2021
Rutgers University, University Behavioral Health Care

- Coordinated with students aged 8-14 and their families to evaluate the effectiveness of behavioral interventions for reducing the development of substance abuse disorders in youth at high risk. (PIs: Alicia Lukachko, PhD and Steven Silverstein, PhD)
- Recruited participants in the study by screening families.
- Conducted informed consent to parents and informed assent to students.
- Administered diagnostic tests, including the Trauma Symptom Checklist for Children (TSCC) and symptom rating scales, including Adolescent Alcohol and Drug Involvement (AADIS), to students.
- Conducted suicide risk assessments with students.
- Administered cognitive tests, Wechsler Abbreviated Scale of Intelligence (WASI) and Webneuro, to students in school.
- Delivered school-based interventions including EmWave, Challenging Our Minds, and Ripple Effect to individual students and small groups of students.
- Conducted semi-structured interviews with parents using Structured Clinical Interviews for Disorders (SCID) and Diagnostic Interview Schedule for Children (DISC).
- Maintained a collaborative relationship with school personnel and families.
- Attended school board meetings to present the project and to update each school district about the continuation of the project throughout each year.
- Administered parent, teacher, and child questionnaires.
- Managed and scored data entry of multiple cohorts and time points.
- Maintained documentation of participant's information and study compensation as well as updated and edited IRB documents.
- Trained and supervised school personnel.
- Assisted with conference and manuscript submissions.

Data Collector/Child Assessor March 2018-October 2018
Rutgers University, National Institute of Early Education Research (NIEER)

- Worked with students in Pre-K to third grade to assess how preschool policies and practices at the school district, school, and classroom levels influence child outcomes.
  (PIs: W. Steven Barnett, PhD and Milagros Nores, PhD)
- Coordinated with school personnel to administer assessments.
- Administered four assessments, including Peabody Picture Vocabulary Test (PPVT), Woodcock-Johnson Test (WJ1, WJ2), Dimensional Change Card Sort Task (DCCS), and Peg Tapping Test (PT), to children in school.
- Updated and synced data from the Garmin Vivofit wristband, which kept track of each child's sleep patterns, physical activity, and stress reactivity.
- Maintained communication with the Project Coordinator and the National Institute of Early Education Research (NIEER).

UNDERGRADUATE TEACHING AND MENTORING EXPERIENCES

Graduate Teaching Assistant August 2021-May 2022

Syracuse University

- Worked as a Teaching Assistant for Foundations of Human Behavior course offered by the psychology department.
- Taught four recitations lectures weekly and leading class discussions.
- Graded students' work and provided feedback.
- Designed lesson plans.
- Served as a liaison between students and professor and holding weekly office hours and emailing students to provide extra support.
- Provided students with an exam review for each exam.

PRESENTATIONS AND PUBLICATIONS

Eckert, T. L., Maguire, S. C., Nelson, K. A., Amidon, S. Y. M., Goldstein, A. R., & **Antoine, M.** (in prep). Student intervention acceptability and dosage.

Eckert, T. L., Circe, J. J., Goldstein, A. R., Amidon, S. Y. M., Nelson, K. A., Maguire, S. C., & **Antoine, M.** (in prep). Comparison of paragraph and sentence writing prompts.

Eckert, T. L., Maguire, S. A., Nelson, K. A., Amidon, S. Y. M., **Antoine, M. S.**, Alderman, S. V., Young, T. J., Goldstein, A. R., & Williams, J. L. (2024, February 14-17). Improving literacy: Varying cover-copy-compare components. [Poster presentation]. National Association of School Psychologists, New Orleans, Louisiana, United States.

Eckert, T. L., Nelson, K. A., Maguire, S. A., **Antoine, M. S.**, Amidon, S. Y. M., Young, T. J., Alderman, S. V., Goldstein, A. R., & Williams, J. L. (2024, February 14-17). Students' self-assessed adherence to a cover-copy-compare intervention. [Poster presentation]. National Association of School Psychologists, New Orleans, Louisiana, United States.

Eckert, T., Maguire, S., Nelson, K., Amidon, S., Goldstein, A., **Antoine, M.** (2023). You'll learn to love it? Examining the relationship between intervention dose and acceptability among third-grade students.

Lukachko, A., Carr, V., **Antoine, M.**, Silverstein, S. (2022, April 6-9). Targeting Externalizing Behavior in a School-Based Approach to Early Substance Abuse Prevention: Results from a Tier II, Multisite Intervention. [Poster Presentation]. School Social Work Association of America, Chicago, Illinois, United States.

PROFESSIONAL SERVICES

Student member of the Social Justice, Inclusion, Diversity, and Equity (SIDE) Committee 2021-2022
Student member of the Admissions Committee 2021-Present
Student member of the Professional Development Committee 2023-Present

TRAINING AND CERTIFICATIONS

CITI Training
NYS Mandated Reporting Training
Trauma Focused-CBT Training
Clinical Suicidology
The Nurtured Heart Approach
Homicidal Risk Training
Intimate Partner Violence Training

REFERENCES

Tanya Eckert, PhD
Director of Graduate Studies Psychology
Syracuse University
taeckert@syr.edu

Alicia Lukachko, DrPH, MSW, LSW
Senior Training and Consultation Specialist, MHTTC
Department of Psychiatry
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Lauren Daniels, PhD
Associate Professor of Psychology
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