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The Impact of Classroom Behaviors and Student Attention on Written Expression

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Abstract

This study sought to examine classroom behaviors and attention as predictors of writing performance among third-grade students receiving a Tier 1 performance feedback intervention. Information about the classroom behavior of 80 third grade students (39 males, 41 females) was collected before intervention began through use of two teacher report measures: the Academic Performance Rating Scale (APRS; DuPaul, Rapport, & Perriello, 1991) and the inattention factor on the Strengths and Weaknesses of ADHD Symptoms and Normal Behavior Rating Scale (SWAN; Swanson et al., 2006). Results indicated that the APRS and SWAN were significant predictors of writing fluency in the combined sample of participants. When examining gender differences between these predictors, the APRS and SWAN were identified to be significant predictors for writing fluency among female students. No behavioral predictors were found to be significantly associated with any of the writing measures for male students, and no behavioral predictors were found to be significantly associated with writing productivity for any of the participants. Results from this study offer some guidance regarding the underlying factors that contribute to writing performance within the context of academic interventions.

Keywords: written expression, classroom behaviors, attention, performance feedback

THE IMPACT OF CLASSROOM BEHAVIORS AND STUDENT ATTENTION ON WRITTEN EXPRESSION

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Writing is an essential tool that individuals are often required to use to navigate through daily living. Not only are these skills important in achieving success within the school setting, they are also vital to effective functioning throughout life. Many contexts, such as school, the workplace, and even the community require writing skills. For example, writing is required for communicating through text messages, e-mails, writing checks, and even filling out forms at a doctor's office. Therefore, it is important for individuals to develop a mastery of the skills associated with writing at an early age, so that these skills can be generalized across settings.

As students are learning to develop their writing skills, two distinct functions or goals of writing are emphasized. The first goal of writing is for students to demonstrate their knowledge to their teacher through homework assignments and exams. In addition, the second goal of writing is to function as a useful tool that can be used for students to increase their understanding of concepts they have learned in class (National Commission on Writing, 2003). For example, in a study performed by Quitadamo and Kurtz (2007), undergraduate students in a general education biology course who were assigned weekly writing components during lab meetings significantly improved their critical thinking skills when compared to students who were not assigned weekly writing components, but were assessed based on quizzes.

Deficits displayed in writing at an early age may hold negative long-term consequences for students. For example, more than 50% of adults who achieved basic or below literacy skills subsequently dropped out of school (National Center for Education Statistics [NCES], 2005). This is great cause for concern when considering that more than 70% of eighth- and twelfth-grade students are performing at or below basic level in writing (NCES, 2012). As students move into early adulthood, they may be unable to meet the rigorous demands of higher education

(National Commission on Writing, 2004). In addition, these individuals may have trouble seeking employment because writing has been described as a skill required for all jobs within service industries, financing, insurance companies, and even within real estate agencies (National Commission on Writing, 2004). As a result, the importance of students developing mastery in the processes involved in writing is a necessity in order to ensure educational opportunities as well as enhance daily living, leisure, and employment opportunities.

Theoretical Conceptualization of Writing

According to Flower and Hayes (1981), there are three basic processes involved in writing: planning, translating, and reviewing. In the planning process, writers create, develop, and organize their ideas, which they anticipate using while writing. The writers then engage in the process of translating, where the information produced during the process of planning is then transcribed into written language. After ideas are converted into orthographic symbols, the writers then enter the process of reviewing. During the review process, the author evaluates and revises their written work.

The processes described above are proposed to be important components utilized by writers. However, Abbott and Berninger (1993) argued that planning and reviewing are difficult processes for beginning writers to engage in. Thus, they proposed that the Flower and Hayes (1981) model was more appropriate for describing the writing processes utilized by adult writers who have mastered the skills associated with writing. Abbott and Berninger (1993) focused upon the differences in developmental skill among children of varying ages and abilities (e.g., students with learning disabilities in comparison to typically developing students) that impact the writing process. This theoretical approach proposed that neurodevelopmental constraints (e.g., finger movement, visual-motor integration, memory retrieval of alphabet letters), linguistic

constraints (the process and production of words, sentences, paragraphs, etc.), and cognitive constraints (e.g., planning and revising) are present at all developmental stages of the writing process but that the weight of each constraint differs across each stage (Berninger, Mizkokawa, & Bragg, 1991). For instance, during the primary grades, neurodevelopmental constraints are more influential in writing. In contrast, linguistic constraints are more influential during the intermediate grade. Finally, cognitive constraints are more influential during junior-high school.

Because the writing process of young students is heavily impacted by neurodevelopmental constraints, Abbott and Berninger (1993) argued the importance of developing these lower-level processes (e.g., memorizing letter representation, memory retrieval of these representations, and motor production of these representations) in emerging writers. Once these lower-level processes are automatized, cognitive resources are freed for writers to engage in planning and reviewing. Planning and reviewing are cognitive constraints that both require higher-level processes (e.g., using strategies when planning and evaluating and revising written work). Thus, before an emerging writer can successfully engage in these higher-level processes, the lower-level processes must first be automatized. Therefore, Abbott and Berninger (1993) proposed a model where translation, instead of planning and reviewing, was identified as a significant contributor in the writing process for developing writers.

Elementary-Aged Student's Writing Development

The theoretical conceptualization of writing as proposed by Flower and Hayes (1981) and Abbott and Berninger (1993) suggests that the writing process for elementary-aged students can be broken down into two stages: higher-level and lower-level processes. Students between the grade levels of kindergarten and second grade are utilizing lower-level processes in their writing development, which is characterized by establishing proficiency in motor production of written

text. Within this stage students begin to integrate their orthographic and motor skills, which then allow them to develop automaticity in handwriting. Memory for the visual patterns associated with letters shapes, words, and groups of words are then coded and rehearsed. Eventually students are able to immediately retrieve information related to these patterns allowing them to transcribe this information into orthographic symbols. The importance of orthographic skills relates to the findings in a previous study where it was found that mechanical skills of writing was a significant predictor for the length and quality of a students' writing within grades 1 through 6 (Graham, Berninger, Abbott, Abbott, & Whitaker, 1997). Thus, achieving proficiency in transcription is important for students to transition from using lower-level to higher-level processes. As students' writing abilities progress they begin to automatize the motor skills involved with the production of written language (neurodevelopmental constraints) and focus on generating sentences (linguistic constraints). Once these processes are automatized, students can fully engage in planning and revising their written work (cognitive constraints).

Previous research has identified a strong association between attention and performance on tasks measuring writing skills (Kent et al., 2013). These results suggest that attention is an important part of written expression that can allow students to progress from the lower- to higher-level processes. Progression through the stages requires sufficient opportunities to respond, however, if student are easily distracted, they may not be able to remain on-task when completing their writing assignments. As such, attention is an important factor that might contribute to elementary students' writing difficulties. Therefore, future research should investigate the impact attention has on students' improvement of their writing skills within the context of a performance feedback intervention.

Behavioral Predictors of Academic Performance

In addition to the multiple processes described above, there are other factors, like student behavior, that can contribute to the writing process and academic performance as a whole. A few studies from a considerable literature base of research further examining this topic are highlighted below. The first three studies represent seminal work that utilizes direct observation techniques to examine the relation between student behavior and performance across several academic areas. Newer subsequent studies utilizing teacher-report measures to examine the relation between student behaviors and writing performance are also described.

In an initial correlational study, Lahaderne (1968) investigated whether classroom attentiveness in 125 sixth-grade students enrolled in four general education classrooms was associated with their academic achievement. Data regarding student attention was gathered through use of a modified version of the Jackson-Hudgins Observation Schedule (Jackson & Hudgins, 1965) of direct observation that focused on measuring student attention and inattention. Attention was defined as attending to the area specified by the teacher (e.g., attending to the activity or paying attention to teacher instruction). Inattentiveness was defined as not attending to a teacher-specified area (e.g., horseplay, working on an activity different from the one prescribed by the teacher, and/or doodling). Student academic achievement was measured by administering the Stanford Achievement Test (SAT) and the Scott-Foresman Basic Reading Test. Observers were not blind to students' levels of academic achievement. Although data were collected over the course of 37 hours of observation for approximately three consecutive months, no specification was provided regarding the data collection procedures for individual students (e.g., length of observation per student, timing of observation, observation sampling

technique). Interobserver agreement was only collected during the training of observers and ranged from 83% to 100%.

Data were analyzed separately for males and females. Results indicated a statistically significant and positive relations between student attention and their performance on all achievement measures for males (range, r = .46 to .53) and females (range, r = .37 to .49). In addition, a negative and statistically significant relation between student inattention and their performance on all achievement measures for males (range, r = -.42 to -.52) and females (range, r = -.38 to -.53). These results suggest that students who demonstrated higher rates of attention during class obtained higher achievement scores, suggesting that classroom behaviors are clearly influential. An inverse relation was also found to be true, wherein the students who demonstrated higher rates of inattention obtained lower achievement scores. The results also demonstrated a slightly higher correlation between attentiveness and inattentiveness with most measures of academic achievement for males when compared to the correlations between attentiveness and inattentiveness with measures of academic achievement for females.

Lahaderne's research (1968) was one of the first studies to separate males and females in order to examine gender differences regarding attention and achievement. The findings from this study suggested that attention and inattention are important factors that contribute to students' academic achievement. Despite these strengths, the lack of information provided (e.g., type of sampling procedure, length of observation per student, and interobserver agreement) limits the internal validity of the study.

Expanding upon the work of Lahaderne (1968), Samuels and Turnure (1974) investigated the relation between classroom attentiveness and reading achievement among first-grade students. The authors argued the importance of assessing younger students in examination of

this topic in order to limit the impact of prior educational experiences, such as years of school successes or failures. In this study, classroom behaviors were assessed with 88 first-grade students enrolled in four general education classrooms. Similar to Lahaderne (1968), data concerning student attention (e.g., orienting eyes to work or teacher and/or working on activity assigned by teacher) was collected using direct observation techniques. In addition, direct observation was used to collect information about inattention, which was defined as behaviors not pertaining to the task (e.g., not following directions, closing eyes, etc.). Interobserver reliability (89%) was assessed only during training.

During the observations, a 6 sec interval recording method was used to collect observational data on each student, in which each student was observed for 4 sec, with 2 sec allotted for the observer to record the student's behavior. Although the authors described the observational recording method, the type of sampling procedure (i.e., whole or partial interval) was not specified. Approximately 15 observation sessions each lasting one-hour occurred over the course of a single month. Attention scores were calculated and divided into four quartiles, where the first quartile represented students with the lowest attention score and the fourth quartile represented students with the highest attention scores. Reading achievement was determined by administering the Dolch (1956) list of basic sight words and was operationalized as the number of correct responses. Observers were not blind to individual student achievement.

Results of this study were similar to those reported by Lahaderne (1968) and suggested a positive relation between attention and performance on the reading word recognition task such that students who were ranked at the fourth quartile (i.e., attention scores 88% or greater) demonstrated more correct responses when compared to students who were ranked at the first quartile (i.e., attention scores 68% or less) of the time. In addition, a statistically significant

difference was found between the mean attention scores and students' gender, such that females attained a higher mean attention score when compared to males, suggesting a moderated relation between differences in scores found in reading achievement between males and females. In addition, a correlational analysis between attention and word recognition resulted in a value (r = .44) similar to the correlation reported by Lahaderne (1968). However, a correlational analysis between attention and reading achievement was not computed for each gender.

This was one of the first studies that attempted to examine behavioral predictors of academic performance by dividing attention into different levels based on percentage of attentiveness. Findings suggested that attention is a contributing factor to both high and low reading achievement and results demonstrated a correlation similar to the reports of Lahaderne (1968). However, the use of mean scores on the word recognition measure used to determine reading achievement makes it difficult to interpret and to compare these findings to other measures of achievement. In addition, the lack of information provided regarding interobserver agreement and type of sampling procedures limits the internal validity of this study.

In a third study, Cobb (1972) examined the association between several classroom behaviors on students' academic achievement in reading and mathematics. A total of 103 fourth-grade students enrolled in five general education classrooms across two elementary schools participated in the study. Observers, blind to the achievement level of individual students, collected information on each student for nine consecutive days. Observers used a coding system that recorded 8 classroom behaviors. Similar to studies by Lahaderne (1968) and Samuels and Turnure (1974), attention was coded if a student engaged in one of the following behaviors: (a) looking at teacher, (b) looking at another student who is talking to the class, or (c) writing down an answer. Inattention was operationalized into three different categories: (a) not

attending to assignment; (b) looking around; and (c) out-of-chair. Additional classroom behaviors were coded in this study and included: (a) talk-to-peer-positive (e.g., about academic work); (b) volunteers (e.g., raises hand to answer teacher's question); (c) compliance; and (d) self-stimulation (e.g., student is not paying attention to assignment because they are scratching self, rubbing material of clothing between two fingers, etc.). The type of sampling procedure by which data was collected was not provided. Interobserver reliability was assessed at two separate time points (training reliability = 85%; classroom observation reliability = 88%). Academic achievement was assessed through administration of the Arithmetic, Spelling, and Reading subtests of the Stanford Achievement Test.

Behavioral data and scores on the two achievement measures were analyzed using stepwise regression. The findings from this study suggested that different classroom behaviors were identified as significant predictors for students' academic achievement in different content areas. For example, of all the observed classroom behaviors, attention (*M r* = .44) was found to be the single best predictor of arithmetic achievement. Conversely, in the area of reading and spelling, talk-to-peer-positively (*r*= .42) and out-of-chair were (*r* = -.25) were found to be the best predictors of reading and spelling achievement.

This was one of the first studies to define classroom behaviors into more discrete behaviors. However, by breaking down the general response class of classroom behaviors into several behaviors, the ability to predict achievement was likely weakened. For example, defining inattention to include out-of-chair, looking around, and not attending might provide a stronger correlation when combined than when separated. Furthermore, the independent variables were entered together and the program selected the variable that provided the greatest contribution. Therefore, variances of other predictors were not partialed out of the analyses and

it is possible that other variables within the regression analysis that were not controlled for could have impacted the results. In addition, the results from the previous two studies mentioned above (Lahaderne, 1968; Samuels & Turnure, 1974) indicate that gender differences exist between behavioral predictors and academic achievement. This study did not examine any differences between males and females. In addition, a lack of information regarding the type of observational sampling procedure used limits the internal validity of this study.

The three aforementioned studies reflect the seminal work examining behavioral predictors of students' academic achievement. However, these studies share several methodological limitations. First, of the three studies mentioned above, only one study (Cobb, 1972) collected and reported interobserver reliability data. Second, classroom observations methods (e.g., sampling techniques, duration of intervals, student sampling techniques) were not specified in any of these studies. As a result, the weaknesses associated with internal validity of the aforementioned studies significantly limits the conclusions that can be drawn from their results regarding the relationship between classroom behavior and academic achievement.

More recent research has started to focus on this area. Two recent studies from a considerable research base spanning more than 40 years examining this topic are highlighted in this discussion. The first includes a longitudinal study examining the relation between kindergarten component skills (e.g., transcription skills, oral language, reading skills, and attention) and first-grade writing quality and fluency (Kent, Wanzek, Petscher, Otaiba, & Kim, 2013). Within this study, a cohort of 265 kindergarten students across 10 schools and 31 classrooms participated in a longitudinal examination of their emerging academic skill development across a one-year period. When students were in kindergarten they were assessed in the following areas using multiple measures: transcription (e.g., accuracy and fluency in

writing individual letters), oral language (e.g., expressive vocabulary), reading skills (e.g., letter and word reading and decoding), and attention. In contrast to the previously mentioned studies, which used behavioral observations to measure attention, Kent et al. (2013) assessed attention through teacher report of the Strengths and Weaknesses of ADHD-symptoms and Normal Behavior Rating Scale (SWAN; Swanson et al., 2006) where students were rated by teachers in comparison to their peers on 30 items with a 7-point Likert scale for each item. In addition, writing skills were assessed. When students were in kindergarten, writing samples in response to prompts were scored for the number of words, sentences, and ideas (ideas required a predicate and a subject) through the use of a previously developed coding scheme (Puranik, Lombardino, & Altmann, 2007). When students entered first-grade, narrative text in response to a story prompt (McMaster, Du, & Petursdorrir, 2009) was evaluated for organization of text structure (e.g., is there a clear beginning, middle, and end?), sentence fluency (e.g., sentences are grammatically correct), word choice (e.g., use of specific words), and correct word sequence (e.g., two correctly spelled words that are adjacent to each other and make sense within the context of the sentence). In contrast to two of the previously mentioned studies (Lahaderne, 1968; Samuels & Turnure, 1974), this study did not control for gender.

Structural equation modeling was utilized to examine kindergarten component skills that predict kindergarten and first grade writing quality and fluency. After controlling for oral language, transcription, and reading skills, the results of this study indicated a statistically significant relation between students' attention skills and kindergarten composition fluency. In addition, attention in kindergarten showed a statistically significant relationship to first grade compositional fluency and quality. Results indicated that a model including attention ($\Delta x^2 = 73.5$, df = 4, $p < .001$) demonstrated a significantly better fit than a model that only included

transcription skills, oral language, and reading skills. These findings suggest that attention is an important contributor to students' early written composition skills.

This study was unique in that it examined teachers' perceptions of student attention in relation to other literacy and language skills in the early school years. Unlike the previously reviewed studies (Cobb, 1972; Lahaderne, 1968; Samuels & Turnure, 1974), this study examined longitudinal effects of attention on students' writing skills. Results demonstrated that attention is an important predictor of students' written composition skills. However, unlike two of the previously reviewed studies (Lahaderne, 1968; Samuels & Turnure, 1974), this study did not take into account the influence gender plays on the relation between attention and written expression skills. This is an important demographic variable to consider because results from previous studies (Lahaderne, 1968; Samuels & Turnure, 1974) indicate gender differences between behavioral predictors and academic achievement. Another consideration presented in this study was the use of relying upon teacher report of students' attention as opposed to utilizing direct assessments of attention using behavioral observations. Although the teacher rating scale used in this study appears to capture students' regulation of attention, it was developed for use within the context of clinical assessments of attention. As such, it is narrow in focus and does not to account for classroom factors, such as performance demands in relation to completing work accurately that may impact students' academic productivity and ultimately their writing performance. A comprehensive assessment of attention using additional measures that are sensitive to factors associated with students' attention in the classroom would strengthen our understanding of the relation between students' attention and the development of their writing skills. In addition, this rating scale does not provide norms based on gender and age.

Another recent study examined language and cognitive predictors of written composition skills among 494 second- and third-grade students (Kim, Al Otaiba, Wanzek, & Gatlin, 2014). Students across 10 schools in 76 classrooms participated in this cross-sectional study. Several measures were administered to evaluate the following skills: oral language, reading, spelling, letter writing automaticity, story copying, attention, and rapid automatized naming. Similar to the work by Kent et al. (2013) attention was measured using the SWAN (Swanson et al., 2006). However, only the first nine items of the SWAN were used to measure attentiveness because previous research has shown through factor analysis that these items were related to behaviors important in sustaining attention to tasks (Saez, Folsom, Al Otaiba, & Schatschneider, 2011). The authors reasoned that the other items assessed constructs that they were not directly related to attention (i.e., hyperactivity, aggression). In addition, unlike Kent et al. (2013), this study accounted for gender differences among students. Students' written expression skills were examined using three writing measures (i.e., narrative, experimental, expository), which were evaluated using three writing outcomes: quality (i.e., the development and organization of presented ideas were evaluated on a 7-point rating scale), productivity (i.e., total number of words written and total number of ideas), and fluency outcomes (i.e., correct writing sequences).

This study used confirmatory factor analysis to test three models for each of the writing outcomes described above. The first model examined the relationship of language and cognitive skills with writing outcomes, the second model examined the relation between gender and writing outcomes, and the third model examined the relation between gender and writing outcomes after controlling for language and cognitive skills. The results of this study suggested that although the first model demonstrated that attention was a statistically significant predictor of students' writing quality and fluency outcomes, and the second model indicated that gender

was a significant predictor for all three writing outcomes, the results of the third model revealed that attention was a significant predictor for writing fluency, but not a significant predictor of writing productivity and writing quality. Thus, once gender was accounted for in model 3, attention was no longer a statistically significant predictor for writing quality (as was originally seen in model 1).

This study was unique in that it comprehensively evaluated writing in relation to attention. In comparison with the previously reviewed studies that used behavioral observations to record attention (Lahaderne, 1968; Samuels & Turnure, 1974), the present study instead used teacher-rating scales. Gender differences in regards to behavioral predictors of academic performance were also demonstrated. However, this study more specifically examined and found gender differences related to each of the identified dimensions of writing. In comparison to Kent et al. (2013), both studies found attention to be significantly related to writing fluency and quality. However, this relation differed when gender was taken into account. Although the models tested and the analytic approaches differed, a potential factor that may have accounted for some of the differences in findings between this study and Kent et al.'s (2013) findings is that this study only used the first nine items of the SWAN to assess students' attention, whereas all 18 items of the SWAN were used to assess students' attention and hyperactivity/impulsivity in the Kim et al. (2014) study. By relying upon an even narrower assessment of students' attention, the impact of additional classroom behaviors that may influence their written expression skills, such as performance demands in relation to completing work accurately, remains unknown. In addition, the sensitivity of this measure to gender and age remains unknown, as the norms for these factors were not evaluated. Further, given that schools are moving towards providing multi-tiered models (e.g., response to intervention) of academic support for students in relation to

their academic skill development, it is important for future research to examine the relation between students' behavioral predictors and academic performance from a more dynamic perspective.

Multi-Tiered Model of Academic Support

The multi-tiered model of academic support is based on the public health model whereby a three-stage prevention model provides educators with a different way to consider how to support their student's learning. The introduction of federal acts (Individuals with Disabilities Education Act [IDEA], 2004; No Child Left Behind Act [NCLB], 2002) emphasizing prevention efforts sparked a change in educational practices that highlighted the importance of continual data collection to examine students' academic achievement in relation to instructional supports in the classroom (Nantais, Martin, & Barnes, 2014). As part of these changes, multi-tiered systems of academic support are used to prevent academic achievement difficulties, and focus on implementing evidence-based interventions in the classroom to increase students' academic performance.

The majority of multi-tiered models of academic support feature three tiers (Walker, & Shinn, 2010). The first tier consists of providing evidence-based instruction to all students in the general education classroom. Tier 1 interventions are high quality, scientifically based, and universal. It is effective instruction that can be delivered to students within a classroom or can be delivered school-wide. For those students who do not benefit from this level of support, a second tier of intervention is provided that consists of evidence-based interventions that are conducted in small group formats. The final tier consists of intensive interventions directed at individual students who have demonstrated chronic academic and behavioral problems that were unable to be resolved in the first two tiers. Although multi-tiered models of support have been

thoroughly discussed within the literature, it does not consider the influences of behavior as a way to explain academic intervention failure.

It is important to understand the impact of behavior on a student's response to academic intervention. As described in the previously reviewed studies (Cobb, 1972; Kent et al., 2013; Kim et al., 2014; Lahaderne, 1968; Samuels & Turnure, 1974), behavioral predictors can impact assessments of student learning over time. Thus, student behavior might help to explain why a student is not responding to an academic intervention. As such it might be beneficial to modify intervention to target student behavior in order to indirectly improve academic performance. The findings from these studies emphasize the importance of examining the role of behavioral predictors within the context of a multi-tiered model of academic support. To date, no studies have explicitly examined this.

Purpose of the Present Study

Given the importance of writing skills throughout life, it is unfortunate that not all students will achieve acceptable performance in this domain (National Center for Education Statistics, 2012). The findings from all the studies previously reviewed (Cobb, 1972; Lahaderne, 1968; Samuels & Turnure, 1974) suggest that there is an association between behavioral predictors and students' academic performance. More specifically, a few studies have identified a relation between attention and writing performance (Kent et al., 2013; Kim et al., 2014). Beyond these findings, no research to date has investigated behavioral predictors of writing in elementary-aged students that are specific to the classroom environment. In addition, no studies to date have examined student's writing performance in relation to behavioral predictors within the context of an intervention targeting student's writing performance.

The main aim of this study was to identify the impact of classroom behaviors (defined as student performance outcomes, behaviors contributing to classroom success, and the inhibition

of impulses) and attention (as defined as on-task behavior) on written expression performance of male and female students within the context of a Tier 1 class-wide writing intervention (e.g., performance feedback). To address the study aims, the following research questions were posed: (1) What behavioral predictors (attentive and/or academic behaviors) are associated with each writing productivity and fluency outcome measure after receiving a Tier 1 performance feedback intervention?, (2) Are there differences in these predictors for male and female students?, and (3) is gender a moderator across rating measures and writing outcomes?

Previous studies have not assessed the relation between classroom behaviors and written expression. However, because the rating scales used to assess classroom behaviors (Academic Performance Rating Scales, APRS; DuPaul, Rapport, & Perriello, 1991) directly addresses behaviors related to student writing, it was hypothesized that this teacher rating scale would be significantly related to the writing outcome measures of all students, regardless of gender. In addition, it was hypothesized that this relation would continue to hold significance even when the statistical model examined male and female students separately. Because the results from Kim et al., (2014) found differences in the writing performance between male and female students (i.e., female students tended to outperform their same-aged male peers on writing measures), it was hypothesized that the relation between classroom behaviors and writing performance may be moderated by gender.

In regards to attentive behaviors, it was hypothesized that the rating scale measuring these behaviors (Strengths and Weaknesses of ADHD Symptoms and Normal Behavior Rating Scales, SWAN; Swanson et al., 2006) would be significantly related to written expression for all participants regardless of gender. Because this measure directly assesses attention, this hypothesis was based on the results from Kent et al., (2013) and Kim et al., (2014). In addition,

it was hypothesized that this measure would be significantly related to the writing outcome measures even when examining male and female students separately. Furthermore, given the results from Kim et al., (2014) it was hypothesized that gender would moderate the relation between written expression and attentive behaviors.

Method

Participants and Setting

Approval from the Institutional Review Board and from the participating school district was attained before commencement of the study. In addition, parent consent, student assent, and teacher consent was obtained. After attaining necessary approval, third-grade students in general education classrooms were screened for eligibility prior to the start of the study. Students who fit the eligibility criteria did: (a) not have any serious motor deficits (e.g., neurological conditions) that may impact their writing performance; (b) not have serious cognitive impairments (e.g., intellectual disability, traumatic brain injury, autism with accompanying intellectual impairment) which can impact the student's writing performance; (c) not have any significant hearing or vision impairments; (d) speak and be able to write English at a proficient level (as determined by the general education teacher); and (e) demonstrate minimum proficiency by scoring above the first percentile for Total Words Written on an AIMSweb Written Expression Measure at the winter benchmark. The eligibility criteria were examined for each student by reviewing information gathered from student records and/or teacher interviews. Those students who were determined through this screening to be ineligible for participation in this study completed alternative instructional activities assigned by their teachers during data collection.

A total of 108 third grade students were recruited for this study. Of these students, six moved and four students did not receive parental consent to participate in the study. Of the 98 remaining students, teachers identified 8 students within their classrooms who were English Language Learners and were experiencing significant difficulties with oral and written expression in English. These identified students were excluded from the present study. Teachers also identified six students within their classrooms who had a disability with an IEP and as a result have poor written expression skills. These identified students were excluded from this study. Of the remaining 84 students, the teachers failed to submit measures for two of the students. Finally, two students were not included in this study because they did not demonstrate a minimum proficiency level on the AIMSweb Written Expression Measure during the screening assessment. Therefore, a sample of 80 third-grade students was used for this study and received a Tier 1 performance feedback intervention (see Figure 1).

The mean age of the participants was 8.4 years old. The participants were sampled across four different general education classrooms. Of the 80 third-grade students who participated in this study, 51% (n = 41) identified as female and 49% (n = 39) identified as males. The majority of participants (50%) identified as White, with a smaller percentage identified as Black or African American (30%), two or more races (12.5%), Hispanic or Latino (9%), Asian or Native Hawaiian/Other Pacific Islander (5%), and American Indian or Alaska Native (2.5%; see Table 1). In addition, 7 of the 80 participants were eligible for special education services (see Table 1), however none of the participants had a Section 504 plan.

The study was conducted in an urban elementary school located in a moderately-sized city in the northeast. According to the most recent New York State School Report Card (2013-14), 642 kindergarten through eighth-grade students were enrolled in this school. Most of the

students (86%) were eligible for free or reduced-priced lunch. The majority of students enrolled in this school were identified as White (66%), with a smaller percentage identified as Black or African American (51%), Hispanic or Latino (12%), Asian or Native Hawaiian/Other Pacific Islander (8%), two or more races (8%), and American Indian or Alaska Native (2%).
Data collection sessions were approximately 30 min in duration and occurred during the students' general education classes.

Experimenters

Doctoral students in school psychology and advanced undergraduates served as research assistants. Prior to the start of data collection, all research assistants were required to complete formal training in research ethics. This online training program (e.g., Collaborative Institute Training Initiative) emphasized the protection and ethical treatment of human research participants. Documentation of successful completion from this training program in the following courses was obtained from all research assistants: Social and Behavioral Focus and Responsible Conduct of Research.

Research assistants also received training in the following areas: (a) administration and scoring of dependent measures, (b) conducting procedural integrity observations, and (c) entering data. Research assistants were provided with a procedural script to be used during the administration of dependent measures and procedural integrity observations. In addition, a manual that explains the scoring procedures for the dependent measure was given to the research assistants. After the research assistants finished training, they practiced scoring writing probes and received immediate feedback. Before beginning data collection, research assistants demonstrated 100% proficiency in administering and scoring dependent measures and conducting procedural integrity observations.

Materials

During intervention, the primary outcome measure that was utilized to evaluate participants' writing fluency were Curriculum-Based Measurement in Written Expression (CBM-WE) probes taken from a technical report by McMaster, Wayman, Deno, and Yeo (2010). In addition, teachers were asked to complete the Academic Performance Rating Scale (APRS; DuPaul, Rapport, & Perriello, 1991) and the Strengths and Weaknesses of ADHD-symptoms and Normal behavior scale (SWAN; Swanson et al., 2006) for each student.

Curriculum-Based Measurement in Written Expression. To measure students writing fluency, Curriculum-Based Measurement in Written Expression (CBM-WE) probes were utilized. This measure required students to create a written response to a brief story starter (e.g., "One day my mom surprised me and brought home a…"). In addition, the written expression probe collected during the session at which the sample average demonstrated a 50% increase in correct writing sequences from their baseline written expression score was used as the outcome measures for the purposes of this study. Student written responses were scored for fluency (e.g., accuracy and rate) and productivity. Writing fluency was measured by correct writing sequences (CWS), which has been defined as "two adjacent, correctly spelled words that are acceptable within the context of the phrase to a native speaker of the English language" (Videen et al., 1982). Writing productivity was measured by total number of ideas (TNI), which determines writing samples that elaborate upon the topic by providing detail. TNI is defined as a sentence that incorporates a predicate and an argument.

The psychometric properties of the writing probes were demonstrated to have strong alternate-form reliability (r = .73 to .90) and low to moderate criterion validity (range, r = .29 to .63; McMaster, Wayman, Deno, Espin, & Yeo, 2010). In addition, moderate alternate-slope

reliability coefficients (r = .45) were obtained among second- and third- grades students (McMaster et al., 2010).

Academic Performance Rating Scale. The Academic Performance Rating Scale (APRS; DuPaul, Rapport, & Perriello, 1991; see Appendix A) is a teacher questionnaire developed to assess a student's academic performance and behavioral conduct within the school setting. The measure contains 22 items that are rated on a 5-point Likert-type scale, where lower values reflect areas of weakness and higher values reflect areas of strength. Seven items on the measure (items 1, 3, 4, 5, 10, 11, and 15) are reverse-scored. A higher total score on the measure suggests greater skills. Separate norms for this measure are provided for males versus females. The sum of the total score for the APRS was utilized in the analyses of the current study.

An exploratory factor analysis was conducted on the APRS and resulted in the following three domains: Academic Success (7 items), Impulse Control (3 items), and/or Academic Productivity (12 items; DuPaul et al., 1991). The scale has high internal consistency for the Total score (α = .95), Academic Success factor (α = .94), and Academic Productivity factor (α = .94). However, the Impulse Control factor demonstrated a slightly lower level of internal consistency (α = .72). The criterion validity of the APRS was variable when compared to the following measures: The ADHD Rating Scale, teacher report (DuPaul, 1991; r = -.72), direct observations of on-task behavior (r = .29), percentage of assignments completed accurately (r = .53), and the Comprehensive Test of Basic Skills, a norm-referenced achievement tests (r = .53).

Strengths and Weaknesses of ADHD Symptoms and Normal Behavior Rating Scales. The average score of the first nine items assessing attention on the Strengths and Weaknesses of ADHD Symptoms and Normal Behavior Rating Scale (SWAN; Swanson et al., 2006) was utilized in this study to assess attention (See Appendix B). Therefore, although the

SWAN is an 18-item diagnostic scale based on the ADHD criteria listed in the DSM-IV, the current study utilized this scale as a proxy for attention and not as a measure for ADHD. Unlike other rating scales that focus on the severity of the student's ADHD symptomology, each item on the SWAN is phrased in a neutral way that allows the teacher to compare the student's behavior to that of his or her peers. Each item is scored on a 7-point scale where a score of -3 reflects "far above " average behavior, a score of 0 reflects "average" behavior, and a score of 3 reflects "far below" average behavior.

A factor analysis conducted by the authors revealed that the SWAN items load on two factors: Inattentiveness (items 1 though 9) and Hyperactivity/Impulsivity (items 10 through 18). Additional studies of the psychometric properties of the scale indicate strong internal consistency ($\alpha = .88$; Arnett et al., 2011). In addition, evidence for convergent validity was obtained when the Hyperactivity/Inattentiveness subscale of a parent rating scale (Strengths and Difficulties Questionnaire; Goodman & Scott, 1999) was correlated with the SWAN ($r = .54$, $p < .01$; Lakes, Swanson, & Riggs, 2011). Further, a strong relationship (Cramer's V = .53) between a parent report questionnaire of behavior (Disruptive Behavior Rating Scale; DuPaul et al., 1998) and the SWAN was obtained (Arnett et al., 2011).

Procedures

This study was conducted from late January to early March of 2016 (see Figure 1). Students participating in this study were part of a larger randomized controlled trial examining the effectiveness of a performance feedback intervention for improving students' written expression skills. For the purposes of this study, data from those students assigned to the performance feedback intervention was used.

Assessment of behavioral predictors. Each teacher was given five packets per week. Each packet included one APRS and one SWAN for one student in their class. Thus, behavioral information on five students in each classroom was collected each week. This information was collected prior to the start of the intervention.

Tier 1 performance feedback intervention. The session was 30 min in duration and conducted in the students' classroom. Previous randomized control trial research has demonstrated the effectiveness of an individualized performance feedback intervention in improving the writing fluency of students within a general education classroom (Hier & Eckert, 2014). The results from these research studies demonstrate that this intervention, which is targeted at improving student's writing fluency skills, is effective when implemented as a Tier 1 performance feedback intervention.

The Tier 1 performance feedback intervention was a classwide intervention where verbal instructions were provided to all students at the group level. These instructions explained to the students how they could interpret the written feedback they received. Although this was a class-wide intervention, the written feedback was individualized within each packet. Students were provided with a both visual and oral feedback concerning their text production (see Appendix C). The visual feedback included a box that contained the total number of words the student wrote during the previous session as well as an arrow that points upwards, points downwards, or has an equal sign to indicate whether the child wrote more, less, or the same amount of words relative to the week prior. The research assistant orally read from a procedural script to the entire class and explained that by counting all the words written by each student the research assistant was able to compute the total number of words written. The research assistant stated, "The box in the middle of the page [The 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 down towards the floor, then that means you wrote fewer words since the last time I worked with you. If you have an equal sign instead of an arrow, then 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."

Dependent Measures

Student writing samples obtained from the completion of CBM-WE probes were scored for correct writing sequences. This scoring procedure has been found to be an accurate measure of fluency for assessing students' growth over time (Hubbard, 1996). This measure was calculated by following the scoring procedures outlined by Shapiro (2004), in order to evaluate the accuracy (e.g., punctuation, capitalization, spelling, and syntax) and fluency of the writing sample. For correct writing sequences scoring procedures see Appendix D.

Student writing samples was also scored for total number of ideas (Puranik, Lombardino, & Altmann, 2007, 2008). Total number of ideas was defined as a proposition that includes a predicate and an argument. For example, "I went upstairs and took a bath" was counted as two ideas because "going upstairs" is considered the first idea and "taking a bath" is the second idea. Ideas that are repeated are only counted once. This metric will provide information regarding a student's writing productivity. For total number of ideas scoring procedures see Appendix E.

Experimental Design

This study used regression analyses to examine the association between student academic and attentive behavior with writing fluency and productivity within a Tier 1 performance feedback intervention model. An a priori power analysis using the software GPower (Erdfelder, Faul, & Buchner, 1996) was conducted. A medium recommended effect size ($f^2 = .15$; Cohen,

1988) was used for this assessment. The alpha level that will be used for this analysis is $p < .05$. Results from this analysis indicated that 55 participants in total were required. A total of 80 third-grade students (39 males and 41 females) participated in this study. Analyses that included the entire sample in order to examine this association exceeded requirements set by the power analysis. Analyses examining male and female students separately did not meet the requirements set by the power analysis.

Procedural Integrity

To assess procedural integrity, the primary experimenter followed a procedural script and manually checked off every individual step completed. A secondary experimenter followed along with the procedural script and manually checked off all the steps they observed the primary experimenter complete. Agreements between the primary and secondary researcher were tallied up to calculate agreement. In order to measure procedural integrity, the total number of agreements was divided by the sum of agreements and disagreements. The mean procedural integrity was 100%.

Interscorer Agreement

After all data was collected, 40% of the CBM-WE probes were randomly selected and rescored for CWS and TNI. Interscorer agreement was calculated by dividing the number of agreements by the sum of agreements and disagreements. The mean percentage of interscorer agreement for CWS was 97.8% (range, 91% to 100%). In order to account for chance agreements, kappa coefficients for CWS were calculated ($M = .92$, range, 0.65 to 1.00). The mean percentage of interscorer agreement for TNI was 99% (range, 89% to 100%). Kappa coefficients for TNI revealed a mean of 0.97 (range, 0.68 to 1.00). For instances of

disagreement, an advanced graduate student determined the scoring that closely followed the procedures outlined in the manual. This corrected scoring was then used in the analysis.

Results

Preliminary Analysis

Data input and consistency checks. The primary researcher was responsible for entering raw data into a spreadsheet in Microsoft Excel. In order to ensure the accuracy of data entry, a double data entry technique was utilized. Data were then transferred from Excel to SPSS 23 (SPSS Inc., 2015). Within SPSS, descriptive statistics were computed and revealed no missing data.

Data inspection. All data were inspected for violations of assumptions of normality. Normality was assessed through examination of the Shapiro-Wilk test, calculation of skewness and kurtosis, and examination of graphs. Data were considered normal if the values of skewness and kurtosis fell within the range of +1 to -1. In addition, case-wise diagnostics was used to inspect outliers. From these analyses one participant's scores on writing fluency (as measured by correct writing sequences) was identified to be an outlier. However, removal of this student's scores was not elected because the scores appeared to be representative of the true distribution of scores associated with the two measures. In addition, removal of this outlier did not did not significantly impact the results. Homogeneity of variance was assessed using scatterplots of standardized residuals and determined that variance around the fit line remained consistent. To examine linearity and multicollinearity, Pearson correlations and scatterplots were used. Results indicated that APRS total sum and the average inattention score on the SWAN demonstrated a statistically significant correlation for both females ($r = -.775$, $p < .001$) and males ($r = -.790$, $p <$

.001) students (see Table 2). Thus due to multicollinearity, APRS total and the inattention factor from the SWAN were separated in further analyses.

Descriptive and inferential statistics. The writing outcome utilized was collected at the point during which the sample average demonstrated a 50% increase in correct writing sequences. Individual differences in the changes between baseline scores and outcome scores was analyzed and indicated a range between a 100% decrease in performance to a 2,400% increase in correct writing sequences. Of the 80 participants, 58 (72.5%) demonstrated an increase in their correct writing sequences from baseline to the time at which outcome data was collected.

Descriptive statistics for predictors and dependent variables were analyzed to determine whether differences exist between male and female students (see Table 3). On the Curriculum-Based Measurement in Written Expression probe, female students achieved higher mean scores on measures assessing writing fluency (M = 30.22, SD = 14.67) in comparison to their male peers (M = 23.23, SD = 10.46); t (72) = 2.46, p = .016). Similarly, on the Curriculum-Based Measurement in Written Expression probe, female student achieved higher mean scores on measures assessing writing productivity (M = 5.37, SD = 2.44) in comparison to their male peers (M = 3.77, SD = 2.29); t (78) = 3.01, p = .004.

No statistically significant differences between genders in the mean classroom behavior score measured by the APRS was found to exist, t (78) = 1.05, p = .296. In contrast to the APRS, statistically significant differences between genders in the mean attention scores (measured by the first nine items on the SWAN) were found such that males achieved significantly higher scores (indicating below average performance; M = .350, SD = 1.08) in comparison to females (M = -.241, SD = 1.02); t (77) = -2.50, p = .014.

The relation between each of these four measures was examined and Pearson correlation coefficients are reported in Table 2. As discussed above, scores on the APRS for males (r = -.790, p < .001) and females (r = -.775, p < .001) were significantly correlated with SWAN scores. APRS scores were also significantly correlated with writing fluency (r = .461, p = .002) for females but not males (r = 0.179, p = .275). In contrast, APRS scores were not significantly correlated with writing productivity for females (r = .229, p = .15) or males (r = .018, p = .915). The SWAN scores were significantly correlated with writing fluency for female students (r = -.315, p = .045) but not for male students (r = -.103, p = .532). For both males and females, SWAN scores were weakly correlated with writing productivity (females: r = -.179, p = .262; males: r = -.030, p = .856). Writing fluency for both females (r = .773, p < .001) and males (r = .684, p < .001) was significantly and highly correlated with writing productivity.

In order to determine if the results produced meaningful effects despite the limited sample size for analyses examining male and female students separately, Cohen's f^2 (Cohen, 1977) was calculated. An analysis of the relation between writing fluency and the APRS revealed a medium effect size (f^2 = .269, 95% CI = .001, .731) for females and a small effect size (f^2 = .033, 95% CI = -.066, .155) for males. An analysis of the relation between writing productivity and the APRS revealed a small effect size (f^2 = .055, 95% confidence interval = -.068 to .216) for females and a null effect (f^2 < .001, 95% CI = -.001, .001) for males. An analysis of the relation between writing fluency and the SWAN revealed a small effect size (f^2 = .099, 95% CI = -.064, .331) for females and a null effect (f^2 = .011, 95% CI = -.064, .102) for males. Finally, an analysis of the relation between writing productivity and the SWAN revealed a small effect (f^2 = .033, 95% CI = -.092,.199) for females and a null effect (f^2 = .001, 95% CI = -.023,.026) for males.

Overview of Data Analysis

Due to multicollinearity between the average inattention score on the SWAN and the APRS summed total score, separate regression analyses were conducted for each predictor. In addition, in order to examine whether there were differences between predictors for each gender, separate regression analyses were conducted. Thus, two linear regression analyses for each writing outcome (writing fluency and writing productivity) were conducted separately for each gender. Through this analysis, student behaviors significantly related to each writing outcome were examined. Because there was a wide range of individual percentage change between pre- and post-intervention scores, hierarchical regressions were initially conducted, where baseline scores on the associated writing measures (e.g., fluency and productivity) were controlled for in the analyses. However, it was predicted that entering the baseline writing measure into the model might have taken away variance from the other predictors. Therefore, a follow-up analysis using simple linear regression was conducted.

Finally, the previous literature (Kim et al., 2014; Samuels & Turnure, 1974) has suggested gender to be a moderator between student behavior and academic performance. As such, an interaction term was created, and the following analyses were conducted: gender by attentive behavior (SWAN) and gender by academic behavior (APRS). Within the moderator analysis, two predictors (e.g., gender and total score on either the SWAN or APRS) were entered into the first step of the multiple regression model and the interaction term was entered into the second step of the model.

Behavioral Predictors of Writing Performance While Controlling for Baseline

In an analysis that did not account for gender, baseline writing performance was controlled for and behavioral predictors were examined in relation to students' writing

performance outcomes following the Tier 1 performance feedback intervention. Results from step two of this analysis indicated that the model including APRS was statistically significant for post intervention writing fluency (correct writing sequences), $R^2 = .393$, $F_{(2,77)} = 24.92$, $p \leq .001$. Baseline writing fluency was identified as a significant predictor of post intervention writing fluency ($\beta = .554$, $t = 5.72$, $p \leq .001$), however the APRS was not ($\beta = .146$, $t = 1.50$, $p = .136$). Similar to writing fluency, results indicated that a model including the APRS was statistically significant for post intervention writing productivity (total number of ideas), $R^2 = .106$, $F_{(2,77)} = 4.56$, $p = .013$. In addition, baseline writing productivity was identified as a significant predictor of post intervention writing productivity ($\beta = .292$, $t = 2.61$, $p = .011$), however the APRS was not ($\beta = .083$, $t = .744$, $p = .459$).

Similar to the results stated above, results indicated that a model including the SWAN was statistically significant for post intervention writing fluency, $R^2 = .387$, $F_{(2,77)} = 24.26$, $p \leq .001$. Baseline writing fluency was identified as a significant predictor of post intervention writing fluency ($\beta = .580$, $t = 6.225$, $p \leq .001$), however the SWAN was not ($\beta = -.112$, $t = -1.19$, $p = .235$). Similar to writing productivity, results indicated that a model including the SWAN was statistically significant for post intervention writing productivity, $R^2 = .117$, $F_{(2,77)} = 5.10$, $p = .008$. In addition, baseline writing productivity was identified as a significant predictor of post intervention writing productivity ($\beta = .292$, $t = 2.68$, $p = .009$), however the APRS was not ($\beta = -.135$, $t = -1.23$, $p = .220$).

Behavioral Predictors for Females. To examine whether behavioral predictors of student writing performance after receipt of the intervention differed due to gender, the above analyses were examined between female and male students. Results indicated that for female students, a model including the APRS was statistically significant for post intervention writing

fluency, R^2 = .533, $F_{(2,38)}$ = 21.72, $p \leq .001$. However, baseline writing fluency alone was a significant predictor of post intervention writing fluency (β = .618, t = 5.11, $p \leq .001$). The APRS was not determined to be significant (β = .216, t = 1.78, p = .082). A similar pattern of results indicated that a model including the APRS was statistically significant for post intervention writing productivity, R^2 = .206, $F_{(2,38)}$ = 4.94, p =.012. Baseline writing productivity alone was a significant predictor of post intervention writing productivity (β = .417, t = 2.71, p = .010). The APRS was not determined to be significant (β = .088, t = .570, p = .572).

In regards to attention, a model including the SWAN was statistically significant for post intervention writing fluency, R^2 = .520, $F_{(2,38)}$ = 20.59, $p \leq .001$. Baseline writing fluency was a significant predictor of post intervention writing fluency (β = .666, t = 5.77, $p \leq .001$), however the SWAN was not (β = -.165, t = -1.42, p = .161). Similarly, a model including the SWAN was statistically significant for post intervention writing productivity, R^2 = .211, $F_{(2,38)}$ = 5.07, p = .011. Baseline writing productivity was a significant predictor of post intervention writing productivity (β = .429, t = 2.93, p = .006), however the SWAN was not (β = -.107, t = -.735, p = .467).

Behavioral Predictors for Males. In contrast to their female peers, results indicated that for male students a model including APRS was not statistically significant for writing fluency, R^2 = .093, $F_{(2,36)}$ = 1.84, p = .173. In addition, neither baseline writing fluency (β = .267, t = 1.55, p = .130) nor the APRS (β = .077, t = .447, p = .658) were determined to be significant predictors. A similar pattern of results indicated that a model including the APRS was not statistically significant for post intervention writing productivity, $R^2 \leq .001$, $F_{(2,36)}$ = .009, p = .991. Neither baseline writing productivity (β = -.014, t = -.081, p = .936) nor the APRS (β = .020, t = .116, p = .908) were determined to be significant predictors.

In regards to attention, a model including the SWAN was not statistically significant for post intervention writing fluency, $R^2 = .088$, $F_{(2,36)} = 1.74$, $p = .190$. Both baseline writing fluency ($\beta = .290$, $t = 1.74$, $p = .089$) and the SWAN ($\beta = -.021$, $t = -.125$, $p = .901$) were not significant predictors of post intervention writing fluency. Similarly, a model including the SWAN was not statistically significant for post intervention writing productivity, $R^2 = .001$, $F_{(2,36)} = .019$, $p = .981$. Both baseline writing productivity ($\beta = -.013$, $t = -.078$, $p = .938$) and the SWAN ($\beta = -.031$, $t = -.185$, $p = .854$) were not significant predictors of post intervention writing fluency.

Academic Behaviors and Attention as Predictors of Written Expression

Results from the hierarchical regression reported above indicated that behavior was not a significant predictor for writing performance. However, it was suspected that baseline writing performance consumed a large portion of the variance within the equation. Therefore, this type of analysis may not have accurately depicted the relation between behavioral predictors and writing outcome. Thus, the following simple linear regressions were conducted in order to further examine the relation.

In an analysis that did not account for gender, behavioral predictors were examined in relation to students' writing performance outcomes following the Tier 1 performance feedback intervention. Results from this analysis indicated the APRS was a statistically significant predictor for writing fluency, $R^2 = .134$, $F_{(1,78)} = 12.10$, $p = .001$. In contrast to correct writing sequences, the APRS was not found to be a statistically significant predictor for writing productivity ($R^2 = .027$, $F_{(1,78)} = 2.15$, $p = .146$). The SWAN was identified as a statistically significant predictor for writing fluency, $R^2 = .078$, $F_{(1,78)} = 6.59$, $p = .012$. However, the SWAN

was not found to be a statistically significant predictor for writing productivity, $R^2 = .034$, $F_{(1,78)} = 2.77$, $p = .10$.

Behavioral Predictors for Females. To examine whether behavioral predictors of student writing performance after receipt of the intervention differed based on gender, the above analyses were examined between female and male students. Results indicated the APRS was a statistically significant predictor for writing fluency in female students, $R^2 = .212$, $F_{(1,39)} = 10.50$, $p = .002$. These findings suggest that for females, better-developed classroom behaviors predicted increased correct writing sequences following the intervention. In contrast, the APRS was not found to be a statistically significant predictor for writing productivity among female students, $R^2 = .053$, $F_{(1,39)} = 2.16$, $p = .150$. In addition, scores on the SWAN were statistically significant predictor for writing fluency among female students, $R^2 = .099$, $F_{(1,39)} = 4.29$, $p = .045$. In contrast, SWAN scores did not significantly predict writing productivity for females, $R^2 = 0.032$, $F_{(1,39)} = 1.29$, $p = .262$.

Behavioral Predictors for Males. In contrast to females, the APRS total score did not significantly predict writing fluency for males, $R^2 = .032$, $F_{(1,37)} = 1.22$, $p = .275$. Similarly, the APRS did not significant predict writing productivity for male students, $R^2 < .001$, $F_{(1,37)} = .012$, $p = .915$. In addition, scores on the SWAN did not significantly predict writing fluency among males, $R^2 = .011$, $F_{(1,37)} = .399$, $p = .532$. Similarly, the SWAN was not a statistically significant predictor of writing productivity among male students, $R^2 = .001$, $F_{(1,37)} = .034$, $p = .856$.

Impact of Gender Across Rating Measures and Writing Outcomes

Previous literature has identified gender as a moderator in the relation between behavior and academic performance (Samuels & Turnure, 1974), as well as in the relation between behavior and writing performance (Kim, Al Otaiba, Wanzek, & Gatlin, 2014). As such,

additional analyses were conducted to examine gender as a moderator in the relation between students' writing fluency and writing productivity with each behavior rating measure (APRS and SWAN).

Gender as a moderator between writing outcomes and APRS. Results indicated that an interaction term between gender and the APRS did not account for a significant proportion of the variance in writing fluency, $\Delta R^2 = .029$, $\Delta F_{(1, 76)} = 2.78$, $p = .099$. Similarly, results indicated that an interaction term between gender and the APRS did not account for a significant proportion of the variance in writing productivity, $\Delta R^2 = .010$, $\Delta F_{(1, 76)} = .843$, $p = .361$,

Gender as a moderator between writing outcomes and SWAN. Results indicated that an interaction term between gender and the SWAN did not account for a significant proportion of the variance in writing fluency, $\Delta R^2 = .019$, $\Delta F_{(1, 76)} = 1.64$, $p = .204$. Similarly, results indicated that an interaction term between gender and the SWAN did not account for a significant proportion of the variance in writing productivity, $\Delta R^2 = .004$, $\Delta F_{(1, 76)} = .362$, $p = .549$.

Discussion

The majority of our nation's students are underperforming in regards to written expression (National Center for Education Statistics, 2012). This highlights the need for evidence-based interventions to improve this skill. However, not all students respond positively to Tier 1 interventions and require more individualized interventions. Therefore, the primary aim of this study was to understand behavioral factors that contribute to writing performance within the context of a Tier 1 performance feedback intervention. Given the existing literature that established a relation between behavioral factors (e.g., attention) and academic performance (Cobb, 1972; Lahaderne, 1968; Samuels & Turnure, 1974; Kent et al., 2013; Kim et al., 2014),

the present study examined behavior as a contributor to writing fluency and productivity within the context of a Tier-1 class-wide performance feedback intervention. This study was unique from the previous literature in three distinct ways. First, it examined academic behaviors (i.e., APRS; academic productivity, academic success, impulsive control) as predictors for writing outcomes. Second, it examined gender differences in academic and attentive behaviors as predictors of written expression. Third, it examined predictors of written expression within the context of a Tier 1 performance feedback intervention.

Academic Behaviors as Predictors of Written Expression

This study examined the relation between students' academic behaviors displayed in the classroom and their writing performance. Results from hierarchical regression controlling for baseline writing performance did not yield significant results. Although these findings suggest that classroom behaviors are not an important contributor to the writing process, it is suspected that baseline writing performance consumed a large portion of the variance from the regression. Therefore, follow-up analyses were conducted and results from these analyses supported the hypothesis that academic behaviors, assessed via the APRS, would contribute to students' written expression skills. More specifically, results indicated that regardless of gender, academic behavior was an important predictor of students' writing fluency. This finding suggests that students' classroom performance outcomes, the behaviors they use to achieve these outcomes, and their ability to inhibit their impulses are important contributors to their writing performance. Furthermore, this result suggests that, in general, students with better-developed academic behaviors (i.e., higher scores on the APRS) will achieve higher writing fluency within the context of a performance feedback intervention.

In contrast to writing fluency, academic behaviors were not shown to predict student performance on measures of writing productivity. Although Kim et al. (2014) did not explicitly measure academic behaviors, results from their study suggested that there are very few variables (language, cognitive, and behavioral) that were identified to be significantly related to writing productivity. Therefore results from Kim et al. (2014) and the current study suggest that factors contributing to writing productivity still need to be identified. One possible explanation may be attributed to the scoring procedures used. Writing fluency utilized a method that was able to attain a greater amount of variance in comparison to the methods utilized within the scoring of writing productivity. As such, the differences between students within each of these domains was much more apparent.

Gender differences. A statistically significant difference in academic behavior (as measured through the APRS) between male and female students was not found to exist within this current study. This is consistent with normative data collected from the APRS, which identified a statistically significant gender difference in academic behavior beginning at grade 5 and above (DuPaul, Rapport, & Perriello, 1991). In regards to writing performance, the current study found that male students demonstrated lower scores on all measures of writing (fluency and productivity) in comparison to their female peers. This finding is consistent with the literature, which suggests that gender differences exist across several measures of writing, such that females tend to outperform their same-aged male peers (Fearrington et al., 2013).

Previous research has attempted to explain this pattern of results through the examination of gender differences in factors that contribute to the writing process. Berninger and Fuller (1992) suggested that the reason female students perform better on measures of written expression in comparison to their male peers may be due in part to gender differences in

orthographic-motor integration skills. Research has indicated that in comparison to male students, female students demonstrate an advanced skill in their ability to retrieve letter representation from memory and transcribe that information into written text (Berninger & Fuller, 1992). As such, female students may have automatized this process resulting in their ability to produce a larger quantity of text for this current study in comparison to their male peers. In line with Abbott and Berninger's (1993) theory, neurodevelopmental constraints may be more prevalent in the writing process for male students, resulting in poor overall text production. Gender differences in orthographic-motor integration skills may also provide another possible explanation for the findings from this current study that suggest APRS is a significant predictor for writing fluency in female students but not male students. It is possible that for male students, neurodevelopmental constraints are a stronger predictor of writing performance for male students receiving a tier 1 performance feedback intervention than academic behaviors.

A second possible explanation as to why APRS was a significant predictor for writing fluency in female students but not male students may also relate to the level of functioning of male students recruited in this study. The male sample demonstrated significant differences in writing fluency as well as academic behaviors when compared to normative data. In contrast, the female sample recruited in this study demonstrated significant differences from the normative sample for academic behaviors alone. These differences may help to explain this pattern of results such that although female students within this sample demonstrated suppressed classroom behavior scores, they appear to be related to their normative level performance on measures assessing writing fluency. For the male students, both academic behaviors and writing fluency were areas of struggle for this sample and no relation between the two existed.

In addition, another explanation for these results may relate to the differences between the groups (male and female) in the amount of variance that was apparent in scores on the writing fluency measure as well as the APRS. Female students obtained a wider range of scores on these measures in comparison to their male peers. As such, a significant relation among these variables may have been easier to detect in the female sample as compared to the male students.

A final possible explanation as to why the APRS was a significant predictor for writing fluency in the combined sample and females alone but not for male students may be due to power. A calculation of effect size revealed low power and found small effects with regard to the model that only included male participants. In comparison, this analysis revealed a higher level of power and found moderate effects with regard to the model that only included female participants. Thus, it is possible that this relation between the APRS and writing fluency for males would have a stronger level of significance if given more statistical power.

Attention as a Predictor of Written Expression

Previous literature has identified attention as an important contributor to student academic performance (Cobb, 1972; Lahaderne, 1968; Samuels & Turnure, 1974) and written expression (Kent et al., 2013; Kim, Al Otaiba, Wanzek, & Gatlin, 2014). Results from hierarchical regression controlling for baseline writing performance did not yield significant results. Although these findings contrast previous literature and suggest that attention is not an important contributor to the writing process, it is suspected that baseline writing performance consumed a large portion of the variance from the regression. Therefore, follow-up analyses were conducted and results findings from this analysis align well with the previous literature as a relation between attention (as measured by the SWAN) and writing fluency for all students, regardless of gender, was shown to exist. This result suggests that students with a greater ability

greater ability to maintain attention (i.e., higher scores on the SWAN) will achieve higher writing fluency scores.

In contrast to writing fluency, the SWAN was not shown to be a significant predictor of writing productivity. These results are similar to Kim et al. (2014), who did not find a significant relation between attention and writing productivity even after controlling for language and cognitive skills. Therefore results from the current study and Kim et al. (2014) suggest that attention is not a significant contributor to writing productivity. However, it is important to note that this finding may be due to the limited variance within this writing outcome measure.

Gender differences. Similar to Kim et al., (2014), results from this current study revealed that male students demonstrated higher scores on the SWAN, indicating below average performance in comparison to their same-aged female peers. In other words, male students appeared to struggle in their ability to maintain attention relative to their female peers. In addition to revealing a significant difference between the genders, the SWAN scores were significantly correlated with correct writing sequences for female students but not for male students. As such, the SWAN scores were found to be significant predictors of correct writing sequences in female students but not for male students.

This finding is partially supported by the results from Kim et al., (2014) as they noted that attention continued to remain a significant predictor of writing fluency even after gender was accounted for. However, for the male students in the current study attention was not found to significantly predict writing fluency. It is possible that this pattern of results may be explained by the insufficient sample size for male students. Therefore, the relation between the SWAN and writing fluency for males may have demonstrated a stronger level of significance if it were given more statistical power. It is also possible that another predictor might better explain the writing

fluency outcome for male students. Given the significant differences that existed between male and female students initial writing productivity and fluency scores, it is possible that neurodevelopmental constraints (e.g., motor control) instead of behavior may weigh more heavily on the writing process for male students in comparison to their female peers.

Limitations

Due to the correlational nature of this study, it is important to note that some of the methodological aspects utilized may limit the confidence in the reliability of the results. One such important limitation of this study is related to errors associated with the rating scales utilized in this study (APRS and SWAN). For example, because of the subjective nature inherent to rating scales, it is possible that these measures were susceptible errors like the halo effect (i.e., ratings reflect impression rather than actual performance) and/or error of central tendency (i.e., scores tending to hover in the middle of the Likert scale and do not accurately reflect student behavior). As such, the results of the current study should be interpreted cautiously.

Another aspect of this study that may limit the generalizability of the findings relate to the population that was sampled. The primary aim of this study was to examine the relation between student behavior and writing performance among elementary-aged students. This study was conducted primarily on third-grade students enrolled in an urban school. Comparison between the variables collected within this study with normative data revealed significant differences in regards to behavior and writing performance, wherein the sample's performance was low for writing performance and high for behavioral impairment. As a result, the generalizability of the results is restricted to samples with similar demographics.

Directions for Future Research

A large amount of the nation's students are struggling in regards to writing performance (National Center for Education Statistics, 2012). The primary goal of this study was to understand the underlying factors that contribute to writing performance in order to bolster the effectiveness of writing interventions. This study attempted to examine variables above and beyond the constraints proposed by Abbott and Berninger (1993) in order to identify other factors that are important in the writing process.

Results of the current study indicated that although academic behaviors and attention was predictive of writing fluency within the context of a Tier 1 performance feedback intervention for all students, a model including male students alone did not yield significant results. Future studies should first examine other variables that predict writing performance outside of the context of intervention in order to better understand the initial predictors that contribute to writing performance for both male and female students. For instance, previous research (Berninger & Fuller, 1992) suggests that ortho-graphic motor skills are important contributors to the writing process. In addition, Abbott and Berninger (1993) suggested that this neurodevelopmental constraint is important in the writing process for young writers. They also emphasize the impact linguistic constraints hold on the writing process for young writers. Therefore it is possible that these other variables (e.g., the motor production of written text and/or word retrieval) carry a greater weight for male students in the writing process as compared to academic and attentive behaviors. Once these initial predictors have been identified, future research should identify whether these predictors contribute to student writing performance within the context of a Tier 1 performance feedback intervention.

Results from this current study indicated that academic behaviors and attention contribute to writing fluency for female students. Furthermore, there was a significant difference in the academic behaviors of female students in the current sample and female students in a normative sample. In order to better understand the relation between academic behaviors and writing fluency for female students, future studies should examine the effectiveness of behavioral interventions targeting classroom behaviors at improving writing fluency for female students who demonstrate suppressed academic behaviors. Furthermore, to better understand the generalizability of these results, future studies should examine the effectiveness of behavioral interventions targeting classroom behaviors at improving writing fluency for female students who demonstrate normative level performance for academic behaviors.

On the same note, in order to examine the generalizability of the findings of the current study, this study should be replicated with a different population of third-grade students (e.g., students from a school that is determined as high socioeconomic status, students with significant writing impairments, etc.). In addition, given the sample size of the current study and concerns regarding power when analyzing the data separately based on student gender, it is recommended that future research repeat the current study with a larger sample size in order to better understand how power significantly impacted the findings of this current study. In addition, the current study should be repeated with behavioral observations instead of rating scales in order to determine the validity and reliability of teacher report measures on the findings of this study.

Finally, few studies have examined the longitudinal impact of childhood behavior on future writing performance. Kent et al., (2013) examined the relation between attention and written expression in a sample of students when they were in kindergarten and later when they were in first grade. However, information regarding how student behavior early in a student's

elementary school years will impact their writing performance throughout their academic career is currently unavailable.

Conclusions

Writing is an important skill utilized across many different academic areas (National Commission on Writing, 2003). Furthermore, young students who fail to master writing skills may face negative long-term consequences (NCES, 2005). Given its importance, writing is an important area to target with interventions for beginning writers. Thus, it is important for researchers and practitioners to develop a comprehensive understanding of factors that predict writing performance within the context of a writing intervention.

Currently, no previous research studies examining behavioral predictors of writing performance explicitly examined this relation within the context of a Tier 1 evidence based performance feedback intervention for writing. Even more generally, few studies targeting this relation have explicitly examined student gender within this relation (Kim et al., 2014). The current study sought to extend upon the previous literature that has examined this relation by not only examining academic behaviors in addition to attention but also by identifying gender differences in the relation between behavior and writing performance within the context of a Tier 1 performance feedback intervention. In relation to the study aims, academic behaviors and attention were identified to be important predictors of writing fluency for female students but neither behavioral measures were shown to be important predictors for writing productivity in female students. In regards to male students, neither of the behavioral measures were identified as significant predictors for male writing fluency or productivity. However, results indicated that academic behaviors and attention were important predictors of writing fluency for all students, regardless of gender. Thus, the results from this study highlight the importance of addressing student attention and classroom behaviors as a possible reason why some students might fail to

some students might fail to respond to academic interventions. These results offer some guidance on the underlying factors that may contribute to the effectiveness of written expression interventions. Future research studies should continue to examine other possible predictors of writing within the context of Tier 1 performance feedback interventions.

Table 1

Student Demographic Information (N=79)

	M / %	(SD) / *n*
Age	8.04	(.5)
Gender		
Female	51.2%	*41*
Male	48.8%	*39*
Race		
American Indian or Alaska Native	2.5%	(2)
Asian or Native Hawaiian/Other Pacific Islander	5%	(4)
Black or African American	30%	(24)
White	50%	(40)
Two or More Races	12.5%	(10)
Ethnicity		
Hispanic or Latino	8.8%	(7)
Not Hispanic or Latino	91.3%	(73)

Table 2

Summary of Intercorrelations for APRS, SWAN, CWS, and TNI Scores as a Function of Gender

Females (*n* = 40)

Measure		1	2	3	4
1	Academic Performance Rating Scale total	-			
2	The Strengths and Weaknesses of ADHD Symptoms and Normal Behavior Rating Scales total	-0.651***	-		
3	Correct Writing Sequences	0.461**	-0.296	-	
4	Total Number of Ideas	0.229	-0.174	0.773**	-

*p< .05. **p< .01. ***p<.001

Males (*n* = 39)

Measure		1	2	3	4
1	Academic Performance Rating Scale total	-			
2	The Strengths and Weaknesses of ADHD Symptoms and Normal Behavior Rating Scales total	-0.725***	-		
3	Correct Writing Sequences	0.179	-0.096	-	
4	Total Number of Ideas	0.018	-0.058	0.684**	-

*p< .05. **p< .01.

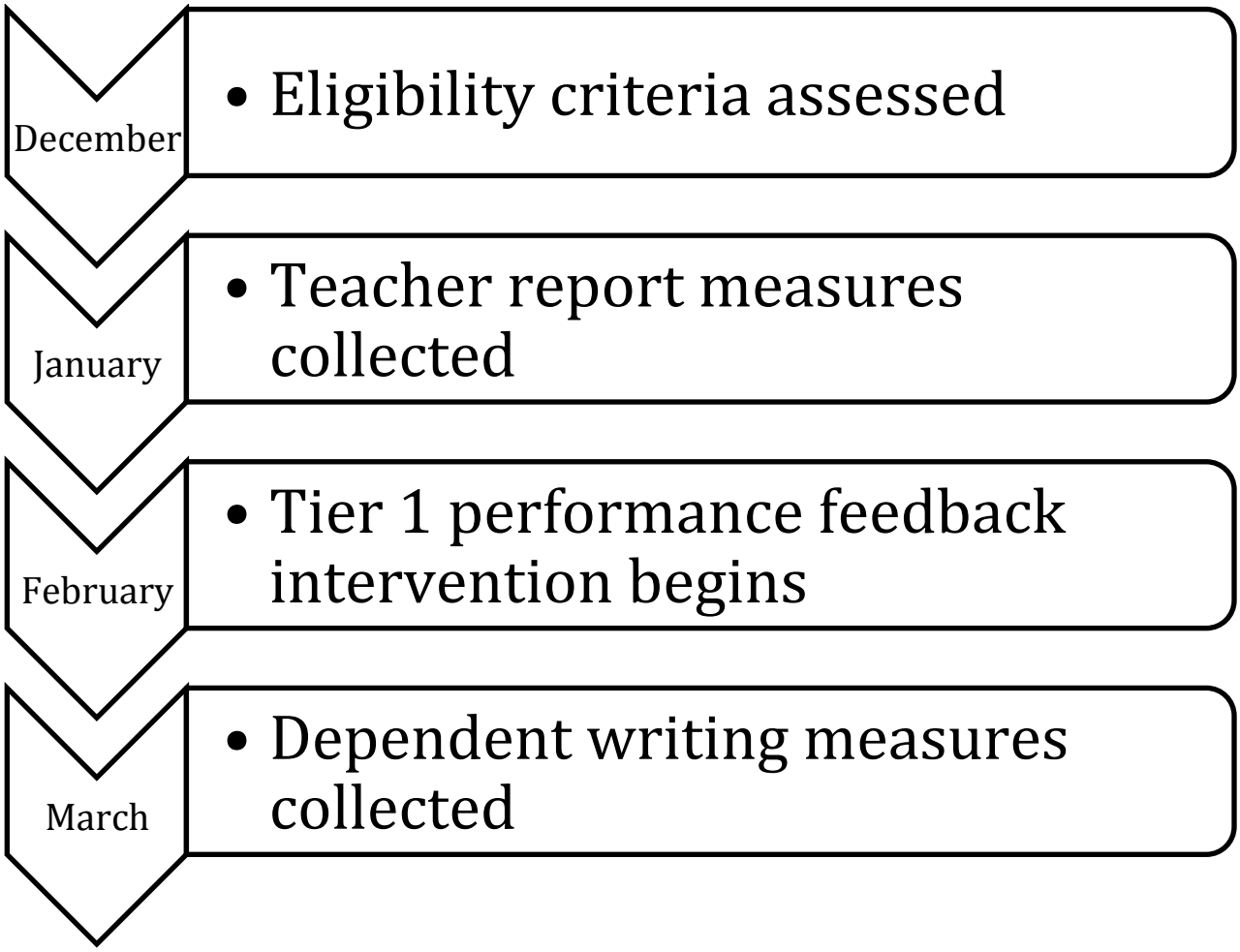
Table 3

Students' Average Scores on Measures of Writing Performance and Behavioral Assessments

	Females		Males			
	M	(*SD*)	*M*	(*SD*)	*t*	*p*
Correct Writing Sequences	30.22	(14.67)	23.23	(10.46)	2.46	.016
Total Number of Ideas	5.37	(2.44)	3.77	(2.29)	3.01	.004
Academic Performance Rating Scale	48	(8.38)	46.10	(7.70)	1.05	.296
The Strengths and Weaknesses of ADHD Symptoms and Normal Behavior Rating Scales	-6.34	(17.86)	2.74	(20.06)	-2.13	.036

Figure 1

Study Procedures



Appendix A
Modified Academic Performance Rating Scale - for Male Student

Directions: Attached are 2 rating scales for 2 students in your classroom. Each scale should only take 2-3 minutes to complete. When you complete the rating scales, please estimate the student's performance over the PAST WEEK. For each item, please circle one choice only.

Teacher: _____ Student's Name: _____Spring 2016

Classroom Behaviors					
How frequently does he take more time to complete work than his classmates?	Never	Rarely	Sometimes	Often	Very Often
How often is he able to pay attention without you prompting him?	Never	Rarely	Sometimes	Often	Very Often
How often does he begin written work prior to understanding the directions?	Never	Rarely	Sometimes	Often	Very Often
How often does he appear to be staring excessively or "spaced out"?	Never	Rarely	Sometimes	Often	Very Often
How often does he appear withdrawn or lack an emotional response in a social situation?	Never	Rarely	Sometimes	Often	Very Often
Following Instructions					
How frequently does he accurately follow your instructions during large-group instruction?	Never	Rarely	Sometimes	Often	Very Often
How frequently does he accurately follow your instructions during small-group instruction?	Never	Rarely	Sometimes	Often	Very Often
Learning					
How consistent has the quality of his academic work been over the past week?	Consistently Poor	More Poor Than Successful	Variable	More Successful Than Poor	Consistently Successful
How quickly does he learn new material (i.e., pick up novel concepts)?	Very Slowly	Slowly	Average	Quickly	Very Quickly
How frequently does he require your assistance to accurately complete academic work?	Never	Rarely	Sometimes	Often	Very Often
How frequently does he have difficulty recalling material from a previous day's lesson?	Never	Rarely	Sometimes	Often	Very Often

Literacy Skills					
What is the quality or neatness of his handwriting?	Poor	Fair	Average	Above Average	Excellent
What is the quality of his reading skills?	Poor	Fair	Average	Above Average	Excellent
What is the quality of his writing skills?	Poor	Fair	Average	Above Average	Excellent
How often does he complete written work in a careless or hasty fashion?	Never	Rarely	Sometimes	Often	Very Often
Mathematics and Language Arts					
Estimate his **accuracy** of completed written **math** work:	Mostly Incorrect	More Incorrect Than Correct	Variable	More Correct Than Incorrect	Mostly Correct
Estimate his **accuracy** of completed written **language arts** work:	Mostly Incorrect	More Incorrect Than correct	Variable	More Correct Than Incorrect	Mostly Correct
Estimate the **percentage of written math work** completed relative to his classmates, regardless of accuracy:	0-49%	50-69%	70-79%	80-89%	90-100%
Estimate the **percentage of written language arts work** completed relative to his classmates, regardless of accuracy:	0-49%	50-69%	70-79%	80-89%	90-100%

Appendix B

Strengths and Weaknesses of ADHD Symptoms and Normal Behavior Rating Scales (SWAN)

Teacher: _____ Name: _____Spring 2016

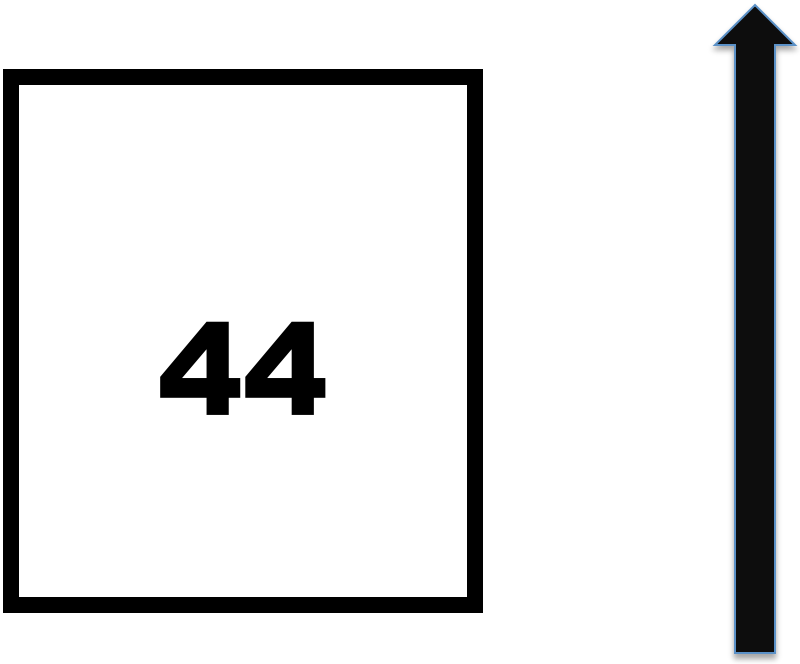
Children differ in their abilities to focus attention, control activity, and inhibit impulses. For each item listed below, how does this child compare to other children of the same age? Please select the best rating based on your observations over the past month.

Compared to other children, how does this child do the following:	far below avg.	below	slightly below avg.	avg.	slightly above avg.	above	far above avg.
1. Give close attention to detail and avoid careless mistakes	____	____	____	____	____	____	____
2. Sustain attention on tasks or play activities	____	____	____	____	____	____	____
3. Listen when spoken to directly	____	____	____	____	____	____	____
4. Follow through on instructions and finish school work or chores	____	____	____	____	____	____	____
5. Organize tasks and activities	____	____	____	____	____	____	____
6. Engage in tasks that require sustained mental effort	____	____	____	____	____	____	____
7. Keep track of things necessary for activities	____	____	____	____	____	____	____
8. Ignore extraneous stimuli	____	____	____	____	____	____	____
9. Remember daily activities	____	____	____	____	____	____	____
10. Sit still (control movement of hands or feet or control squirming)	____	____	____	____	____	____	____
11. Stay seated (when required by class rules or social conventions)	____	____	____	____	____	____	____
12. Modulate motor activity (inhibit inappropriate running or climbing)	____	____	____	____	____	____	____
13. Play quietly (keep noise level reasonable)	____	____	____	____	____	____	____
14. Settle down and rest (control constant activity)	____	____	____	____	____	____	____
15. Modulate verbal activity (control excess talking)	____	____	____	____	____	____	____
16. Reflect on questions (control blurting out answers)	____	____	____	____	____	____	____
17. Await turn (stand in line and take turns)	____	____	____	____	____	____	____
18. Enter into conversations & games without interrupting or intruding	____	____	____	____	____	____	____

Appendix C

Individualized Performance Feedback

Last week, you wrote this many words:

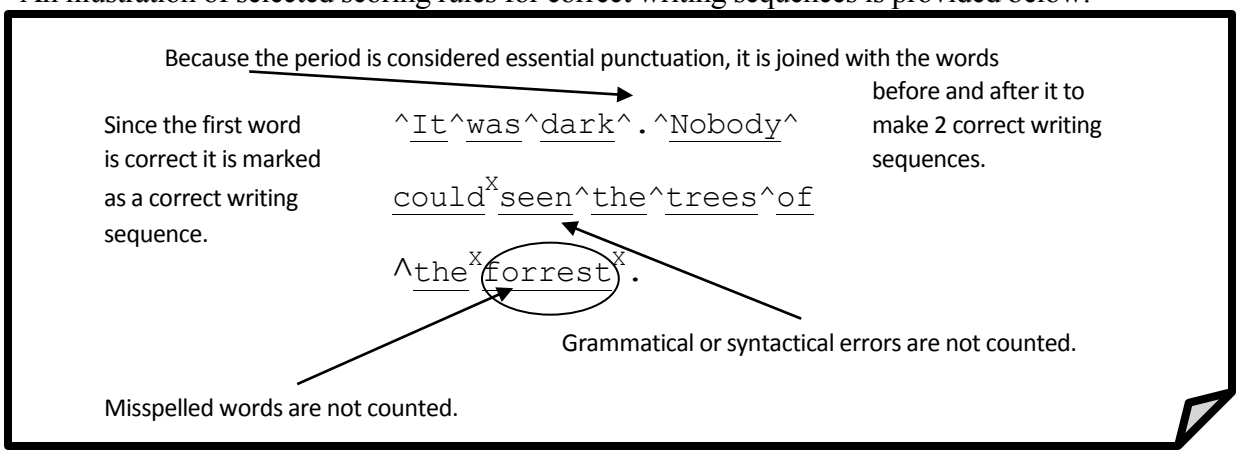


Appendix D

Curriculum-Based Measurement Scoring Criteria for Correct Writing Sequences (CWS)

When scoring correct writing sequences, the examiner goes beyond the confines of the isolated word to consider units of writing and their relation to one another. Using this approach, the examiner starts at the beginning of the writing sample and looks at each successive pair of writing units (writing sequence). Words are considered separate writing units, as are essential marks of punctuation. To receive credit, writing sequences must be correctly spelled, and be grammatically correct. Each sequence should be examined in isolation and credit should be given when the sequence is correct (e.g., "seen the") or marked incorrect when the sequence is not correct (e.g., "could seen"). In effect, the student's writing is judged according to the standards of informal standard American English. A caret (^) is used to mark the presence of a correct writing sequence.

An illustration of selected scoring rules for correct writing sequences is provided below:



Rules:

1. Correctly spelled words make up a correct writing sequence. Reversed letters are acceptable, so long as they do not lead to misspellings
2. Necessary end marks of punctuation (periods, question marks, and exclamation points) are included in correct writing sequences
3. Syntactically correct words (i.e., correct word order or structure in sentence) make up a correct writing sequence
4. Semantically correct words (i.e., grammatically correct) make up a correct writing sequence:
5. If correct and capitalized, the initial word of a writing sample is counted as a correct writing sequence:
6. Titles are included in the correct writing sequence count, but not the words "The End":
7. Numbers are counted within correct writing sequences

Appendix E

Curriculum-Based Measurement Scoring Criteria for Total Number of Ideas (TNI)

The examiner counts and records the total number of ideas written during the 3-minute writing probe. Total number of ideas yields an estimate of writing quality and productivity– that is, how many ideas can the student include within their written text – without examining the accuracy of spelling, punctuation, and other writing conventions.

An idea is defined as a sentence that includes a predicate and an argument. A predicate is a verb and an argument completes the meaning of a verb

For example: I went to the park

Went = verb

To the park = completes the meaning of the verb

Rules/Considerations:

a) Misspelled words (e.g., You goes two park wid your bro) are **counted**.
   - **a.** If the mispelled verb becomes a different correctly spelled word, **TNI is not counted.**
     i. E.g., I wash

b) Grammatically incorrect sentences
   1. Ideas not ending in a punctuation (e.g., run-on sentences) are **counted**:
      E.g., I went to the movies and Ryan bought a coke and the movie was terrible and my mom drove me home and I played on the computer = 5TNI

c) When a form of "to be" (e.g., would, was, were) precedes another verb and follows an argument it would be counted as **1 TNI**. For example: I was going to the park.

d) If one sentence has two verbs (e.g., I drank and ate the food) 1 **TNI** are recorded

e) If a sentence has two arguments (e.g., I made touch downs and kick offs) 1 **TNI** is recorded

f) If student rewrites the story starter, TNI will not be scored

g) If student does not finish writing the argument, TNI is not scored
   a. E.g., I teleported and ended up at the

h) When verbs are in the argument, count only ideas that can stand alone
   a. E.g., I tried not to get caught = 1 TNI because I tried not to get does not make sense. Also, I tried not to caught does not make sense.
   b. E.g., He said I am coming for you = 2 TNI because He said I am = 1 and Coming for you = 1.

i) **HIGHLIGHT** each idea

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